INTERNATIONAL STANDARD

ISO/IEC 30112

First edition
2020-09

Information technology — Specification methods for cultural conventions

Technologies de l'information — Méthodes de spécification des conventions culturelles

Reference number
ISO/IEC 30112:2020(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document defines general mechanisms to specify cultural conventions. It also defines formats for a number of specific cultural conventions in the areas of character classification and conversion, sorting, number formatting, monetary formatting, date formatting, message display, addressing of persons, postal address formatting, and telephone number handling.

The benefits from this document are:

Rigid specification Using this document, a user can rigidly specify a number of the cultural conventions that apply to their information technology environment.

Cultural adaptability If an application has been designed and built in a culturally neutral manner, the application can use the specifications as data to its application programming interfaces (APIs), and thus the same application can accommodate different users in a culturally acceptable way to each of the users, without change of the binary application.

Productivity This document specifies cultural conventions and how to specify data for them. With that data, an application developer is released from getting the different information to support all the cultural environments for the expected customers of the product. The application developer is assured of culturally correct behaviour as specified by the customer, and more markets can potentially be reached as customers can provide the data themselves for markets that were not targeted.

Uniform behaviour When a number of applications share one cultural specification, which may be supplied from the user or provided by the application or operating system, their behaviour for cultural adaptation becomes uniform.

The specification formats are independent of platforms and specific encoding and they are designed to be usable from a wide range of programming languages.

A number of cultural conventions, such as spelling, hyphenation rules and terminology, are not specifiable with this document, but the document provides mechanisms to define new categories and also new keywords within existing categories. An internationalized application can take advantage of information provided with the FDCC-set (such as the language) to provide further internationalized services to the user.

This document defines a format compatible with the one used in ISO/IEC 14651.

This document is upward compatible with elements of ISO/IEC/IEEE 9945, especially those on POSIX locales and charmaps – a locale or charmap conformant to POSIX specifications will also be conformant to specifications in this document, while the reverse condition will not hold. Some of the descriptions are intended to be coded in text files to be used via APIs developed for a number of systems which comply with ISO/IEC/IEEE 9945.

This document has enhanced functionality in a number of areas such as ISO/IEC 10646 support, more classification of characters, transliteration, dual (multi) currency support, enhanced date and time formatting, personal name writing, postal address formatting, telephone number handling, keyboard handling, and management of categories. There is enhanced support for character sets including ISO/IEC 2022 handling and an enhanced method to separate the specification of cultural conventions from an actual encoding via a description of the character repertoire employed. A standard set of values for all the categories has been defined covering the repertoire of ISO/IEC 10646.

This document has been developed to align with ISO/IEC/IEEE 9945. The major extensions from ISO/IEC/IEEE 9945 are listed in Annex A.

A rationale for elements of this document is found in Annex B.

A BNF specification of the syntax for formats in this document is given in Annex C.

The relation to the taxonomy of ISO/IEC TR 24785 is listed in Annex D.

A listing of the implementation of the specifications of this document in the GNU libc compiler product is given in Annex E.

The relation between formats and APIs of this document is listed in Annex F.

A guideline for a method to bind APIs of other programming languages to APIs defined in this document is specified in Annex G.

Information technology — Specification methods for cultural conventions

1 Scope

This document specifies description formats and functionality for the specification of cultural conventions, description formats for character sets, and description formats for binding character names to ISO/IEC 10646, as well as a set of default values for some of these items.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639 (all parts), *Codes for the representation of names of languages*

ISO/IEC 2022, *Information technology — Character code structure and extension techniques*

ISO 3166 (all parts), *Codes for the representation of names of countries and their subdivisions*

ISO 4217, *Codes for the representation of currencies*

ISO 8601, *Date and time — Representations for information interchange*

ISO/IEC 9899, *Information technology — Programming languages — C*

ISO/IEC/IEEE 9945, *Information technology — Portable Operating System Interface (POSIX) Base Specifications, Issue 7*

ISO/IEC 10646, *Information technology — Universal Coded Character Set (UCS)*

ISO/IEC 14651, *Information technology — International string ordering and comparison — Method for comparing character strings and description of the common template tailorable ordering*

ISO/IEC 15897:2011, *Information technology — User interfaces — Procedures for the registration of cultural elements*

ISO 15924, *Information and documentation — Codes for the representation of names of scripts*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Bytes and characters

3.1.1
byte
individually addressable unit of data storage that is equal to or larger than an octet, used to store a character or a portion of a character

Note 1 to entry: A byte is composed of a contiguous sequence of bits, the number of which is implementation defined. The least significant bit is called the low-order bit; the most significant bit is called the high-order bit.

3.1.2
character
member of a set of elements used for the organization, control or representation of data

3.1.3
coded character
sequence of one or more bytes representing a single character

3.1.4
text file
file that contains characters organized into one or more lines

3.2 Cultural and other major concepts

3.2.1
cultural convention
data item for information technology that may vary dependent on language, territory, or other cultural habits

3.2.2
FDCC
formal definition of a cultural convention
cultural convention put into a formal definition scheme

3.2.3
FDCC-set
set of FDCCs
subset of a user's information technology environment that depends on language and cultural conventions

Note 1 to entry: The FDCC-set is a superset of the "locale" term in C and POSIX.

3.2.4
charmap
definition of a mapping between symbolic character names and character codes, plus related information

3.2.5
repertoiremap
definition of a mapping between symbolic character names and characters for the repertoire of characters used in a FDCC-set

Note 1 to entry: This is further described in Clause 7.

3.3 FDCC-related categories

3.3.1
character class
named set of characters sharing an attribute associated with the name of the class

3.3.2
collation
logical ordering of strings according to defined precedence rules

3.3.3
collating element
smallest entity used to determine logical ordering

Note 1 to entry: See collating sequence. A collating element consists of either a single character, or two or more characters collating as a single entity. The LC_COLLATE category in the associated FDCC-set determines the set of collating elements.

3.3.4
multicharacter collating element
sequence of two or more characters that collate as an entity

Note 1 to entry: For example, in some languages two characters are sorted as one letter, as in the case for Danish and Norwegian "aa".

3.3.5
collating sequence
relative order of collating elements as determined by the setting of the LC_COLLATE category in the applied FDCC-set

3.3.6
equivalence class
set of collating elements with the same primary collation weight

Note 1 to entry: Elements in an equivalence class are typically elements that naturally group together, such as all accented letters based on the same letter. The collation order of elements within an equivalence class is determined by the weights assigned on any subsequent levels after the primary weight.

4 Notations

4.1 Notation for defining syntax

In this document, the description of an individual record in a FDCC-set is done using the syntax notation given in the following.

The syntax notation:

"<format>",[<arg1>,<arg2>,...,<argn>]

The <format> is given in a format string enclosed in double quotes, followed by a number of parameters, separated by commas. It is similar to the format specification defined in ISO/IEC/IEEE 9945 and the format specification used in C language printf() function. The format of each parameter is given by an escape sequence:

%s specifies a string

%d specifies a decimal integer

%c specifies a character

%o specifies an octal integer

%x specifies a hexadecimal integer

A " " (an empty character position) in the syntax string represents one or more <blank> characters.

All other characters in the format string represent themselves, except:

%% specifies a single %

\n specifies an end-of-line

The notation "..." is used to specify that repetition of the previous specification is optional, and this is done in both the format string and in the parameter list.

4.2 Portable character set

A set of symbolic names for characters in Table 1, which is called the portable character set, is used in character description text of this specification. The first eight entries in Table 1 are defined in ISO/IEC 6429 and the rest are defined in ISO/IEC/IEEE 9945 with some additional definitions from ISO/IEC 10646.

Table 1 — Portable character set

Symbolic name	Glyph	UCS	Description
<NUL>		<U0000>	NULL (NUL)
<alert>		<U0007>	BELL (BEL)
<backspace>		<U0008>	BACKSPACE (BS)
<tab>		<U0009>	CHARACTER TABULATION (HT)
<carriage-return>		<U000D>	CARRIAGE RETURN (CR)
<newline>		<U000A>	LINE FEED (LF)
<vertical-tab>		<U000B>	LINE TABULATION (VT)
<form-feed>		<U000C>	FORM FEED (FF)
<space>		<U0020>	SPACE
<exclamation-mark>	!	<U0021>	EXCLAMATION MARK
<quotation-mark>	"	<U0022>	QUOTATION MARK
<number-sign>	#	<U0023>	NUMBER SIGN
<dollar-sign>	$	<U0024>	DOLLAR SIGN
<percent-sign>	%	<U0025>	PERCENT SIGN
<ampersand>	&	<U0026>	AMPERSAND
<apostrophe>	'	<U0027>	APOSTROPHE
<left-parenthesis>	(	<U0028>	LEFT PARENTHESIS
<right-parenthesis>	)	<U0029>	RIGHT PARENTHESIS
<asterisk>	*	<U002A>	ASTERISK
<plus-sign>	+	<U002B>	PLUS SIGN
<comma>	,	<U002C>	COMMA
<hyphen-minus>	-	<U002D>	HYPHEN-MINUS
<hyphen>	-	<U002D>	HYPHEN-MINUS
<full-stop>	.	<U002E>	FULL STOP
<period>	.	<U002E>	FULL STOP
<slash>	/	<U002F>	SOLIDUS
<solidus>	/	<U002F>	SOLIDUS
<zero>	0	<U0030>	DIGIT ZERO
<one>	1	<U0031>	DIGIT ONE
<two>	2	<U0032>	DIGIT TWO
<three>	3	<U0033>	DIGIT THREE

<four>	4	<U0034>	DIGIT FOUR
<five>	5	<U0035>	DIGIT FIVE
<six>	6	<U0036>	DIGIT SIX
<seven>	7	<U0037>	DIGIT SEVEN
<eight>	8	<U0038>	DIGIT EIGHT
<nine>	9	<U0039>	DIGIT NINE
<colon>	:	<U003A>	COLON
<semicolon>	;	<U003B>	SEMICOLON
<less-than-sign>	<	<U003C>	LESS-THAN SIGN
<equals-sign>	=	<U003D>	EQUALS SIGN
<greater-than-sign>	>	<U003E>	GREATER-THAN SIGN
<question-mark>	?	<U003F>	QUESTION MARK
<commercial-at>	@	<U0040>	COMMERCIAL AT
<A>	A	<U0041>	LATIN CAPITAL LETTER A
<B>	B	<U0042>	LATIN CAPITAL LETTER B
<C>	C	<U0043>	LATIN CAPITAL LETTER C
<D>	D	<U0044>	LATIN CAPITAL LETTER D
<E>	E	<U0045>	LATIN CAPITAL LETTER E
<F>	F	<U0046>	LATIN CAPITAL LETTER F
<G>	G	<U0047>	LATIN CAPITAL LETTER G
<H>	H	<U0048>	LATIN CAPITAL LETTER H
<I>	I	<U0049>	LATIN CAPITAL LETTER I
<J>	J	<U004A>	LATIN CAPITAL LETTER J
<K>	K	<U004B>	LATIN CAPITAL LETTER K
<L>	L	<U004C>	LATIN CAPITAL LETTER L
<M>	M	<U004D>	LATIN CAPITAL LETTER M
<N>	N	<U004E>	LATIN CAPITAL LETTER N
<O>	O	<U004F>	LATIN CAPITAL LETTER O
<P>	P	<U0050>	LATIN CAPITAL LETTER P
<Q>	Q	<U0051>	LATIN CAPITAL LETTER Q
<R>	R	<U0052>	LATIN CAPITAL LETTER R
<S>	S	<U0053>	LATIN CAPITAL LETTER S
<T>	T	<U0054>	LATIN CAPITAL LETTER T
<U>	U	<U0055>	LATIN CAPITAL LETTER U
<V>	V	<U0056>	LATIN CAPITAL LETTER V
<W>	W	<U0057>	LATIN CAPITAL LETTER W
<X>	X	<U0058>	LATIN CAPITAL LETTER X
<Y>	Y	<U0059>	LATIN CAPITAL LETTER Y
<Z>	Z	<U005A>	LATIN CAPITAL LETTER Z
<left-square-bracket>	[	<U005B>	LEFT SQUARE BRACKET
<backslash>	\	<U005C>	REVERSE SOLIDUS
<reverse-solidus>	\	<U005C>	REVERSE SOLIDUS
<right-square-bracket>	]	<U005D>	RIGHT SQUARE BRACKET
<circumflex-accent>	^	<U005E>	CIRCUMFLEX ACCENT
<circumflex>	^	<U005E>	CIRCUMFLEX ACCENT
<low-line>	_	<U005F>	LOW LINE
<underscore>	_	<U005F>	LOW LINE
<grave-accent>	`	<U0060>	GRAVE ACCENT
<a>	a	<U0061>	LATIN SMALL LETTER A
<b>	b	<U0062>	LATIN SMALL LETTER B
<c>	c	<U0063>	LATIN SMALL LETTER C
<d>	d	<U0064>	LATIN SMALL LETTER D
<e>	e	<U0065>	LATIN SMALL LETTER E
<f>	f	<U0066>	LATIN SMALL LETTER F
<g>	g	<U0067>	LATIN SMALL LETTER G
<h>	h	<U0068>	LATIN SMALL LETTER H
<i>	I	<U0069>	LATIN SMALL LETTER I
<j>	j	<U006A>	LATIN SMALL LETTER J
<k>	k	<U006B>	LATIN SMALL LETTER K
<l>	l	<U006C>	LATIN SMALL LETTER L
<m>	m	<U006D>	LATIN SMALL LETTER M
<n>	n	<U006E>	LATIN SMALL LETTER N

```
<o>                     o           <U006F>    LATIN SMALL LETTER O
<p>                     p           <U0070>    LATIN SMALL LETTER P
<q>                     q           <U0071>    LATIN SMALL LETTER Q
<r>                     r           <U0072>    LATIN SMALL LETTER R
<s>                     s           <U0073>    LATIN SMALL LETTER S
<t>                     t           <U0074>    LATIN SMALL LETTER T
<u>                     u           <U0075>    LATIN SMALL LETTER U
<v>                     v           <U0076>    LATIN SMALL LETTER V
<w>                     w           <U0077>    LATIN SMALL LETTER W
<x>                     x           <U0078>    LATIN SMALL LETTER X
<y>                     y           <U0079>    LATIN SMALL LETTER Y
<z>                     z           <U007A>    LATIN SMALL LETTER Z
<left-brace>            {           <U007B>    LEFT CURLY BRACKET
<left-curly-bracket>    {           <U007B>    LEFT CURLY BRACKET
<vertical-line>         |           <U007C>    VERTICAL LINE
<right-brace>           }           <U007D>    RIGHT CURLY BRACKET
<right-curly-bracket>   }           <U007D>    RIGHT CURLY BRACKET
<tilde>                 ~           <U007E>    TILDE
```

This document may use other symbolic character names than the above in examples, to illustrate the use of the range of symbols allowed by the syntax specified in subclause 4.1.

5 FDCC-set

5.1 General

A FDCC-set is the definition of the subset of a user's information technology environment that depends on language and cultural conventions. A FDCC-set is made up from one or more categories. Each category is identified by its name and controls specific aspects of the behaviour of components of the system. The functionality is implied by the description of the categories. This document defines the following categories.

LC_IDENTIFICATION	Versions and status of categories.
LC_CTYPE	Character classification, case conversion and code transformation.
LC_COLLATE	Collation order.
LC_TIME	Date and time formats.
LC_NUMERIC	Numeric, non-monetary formatting.
LC_MONETARY	Monetary formatting.
LC_MESSAGES	Formats of informative and diagnostic messages and interactive responses.
LC_XLITERATE	Character transliteration.
LC_NAME	Format of writing personal names.
LC_ADDRESS	Format of postal addresses.
LC_TELEPHONE	Format for telephone numbers, and other telephone information.
LC_PAPER	Paper format.

LC_MEASUREMENT Information on measurement system.

LC_KEYBOARD Format for identifying keyboard.

Other category names beginning with the 3 characters "LC_" are reserved for future standardization, except for category names beginning with the five characters "LC_X_" which are not used for the future addition of categories specified in this document. An application may thus use category names beginning with the five characters "LC_X_" for application defined categories to avoid clashes with future standardized categories.

This document also defines an FDCC-set named "i18n" with values for some of the above categories in order to simplify FDCC-set descriptions for a number of cultures. The contents of "i18n" categories should not necessarily be considered as the most commonly accepted values; in many cases it could be the recommended values. The complete "i18n" FDCC-set is defined as the sum of the "i18n" categories specified in subclause 5.2. The "i18n" FDCC-set and its parts are released under the GNU public license, version 2, as it is taken from glibc sources.

5.2 FDCC-set description

5.2.1 General

FDCC-sets are described with the syntax presented in this subclause. For the purposes of this document, the text is referred to as the FDCC-set definition text or FDCC-set source text.

The **FDCC-set definition text** contains one or more FDCC-set category source definitions and does not contain more than one definition for the same FDCC-set category. If the text contains source definitions for more than one category, application-defined categories, if present, appear after the categories defined by this clause. A category source definition contains either the definition of a category or a copy directive. In the event that some of the information for a FDCC-set category (as specified in this document) is missing from the FDCC-set source definition, the behaviour of that category, if it is referenced, is unspecified. A FDCC-set category is the normal way of specifying a single FDCC.

There are no **naming conventions** for FDCC-sets specified in this document, but ISO/IEC 15897:2011, Clause 15 specifies naming rules for POSIX locales, charmaps and repertoiremaps, that may also be applied to FDCC-sets, charmaps and repertoiremaps specified according to this document.

A **category source definition** consists of a category header, a category body, and a category trailer. A category header consists of the character string naming of the category, beginning with the characters "LC_". The category trailer consists of the string "END", followed by one or more "blank"s and the string used in the corresponding category header.

The **category body** consists of one or more lines of text. Each line is one of the following:

— A line containing an identifier, optionally followed by one or more operands. Identifiers are either keywords, identifying a particular FDCC, or collating elements, or section symbols.

— One of the transliteration statements defined in subclause 5.10.

In addition to the keywords defined in this document, the source may contain application-defined keywords. Each **keyword** within a category has a unique name (i.e., two categories may have a commonly named keyword); no keyword starts with the characters "LC_". Identifiers are separated from the operands by one or more "blank"s.

Operands are characters, collating elements, section symbols, or strings of characters. Strings are enclosed in double-quotes. Literal double-quotes within strings are preceded by the <escape character>, described in subclause 5.2.5.3. When a keyword is followed by more than one operand, the operands are separated by semicolons; "blank"s are allowed before and/or after a semicolon.

5.2.2 Character representation

Individual characters, characters in strings, and collating elements are represented using symbolic names, UCS notation or characters themselves, or as octal, hexadecimal or decimal constants as defined below. When constant notation is used, the resultant FDCC-set definitions need not be portable between systems.

(0) The left angle bracket (<) is a reserved symbol, denoting the start of a symbolic name; when used to represent itself outside a symbolic name it is preceded by the escape character.

(1) A character can be represented via a **symbolic name**, enclosed within angle brackets (< and >). The symbolic name, including the angle brackets, exactly matches a symbolic name defined in a charmap or a repertoiremap to be used, and is replaced by a character value determined from the value associated with the symbolic name in the charmap or a value associated via a repertoiremap. Repertoiremaps have predefined symbolic names for UCS characters, see Clause 6. A FDCC-set may also use the UCS notation of Clause 6 to represent characters, without a repertoiremap being defined for the FDCC-set. Use of the escape character or a right-angle bracket within a symbolic name is invalid unless the character is preceded by the escape character.

EXAMPLE <c>;<c-cedilla> "<M><a><y>"

The items (2), (3), (4) and (5) are deprecated and are retained for compatibility with ISO/IEC/IEEE 9945. FDCC-sets should be specified in a coded character set independent way, using symbolic names. To make actual use of the FDCC-set, it is used together with either charmaps or repertoiremaps or both, so that the symbolic character names can be resolved into the actual character encoding used.

(2) A character can be represented by the character itself, in which case the value of the character is application-defined. Within a string, the double-quote character, the escape character and the right-angle bracket character are escaped (preceded by the escape character) to be interpreted as the character itself. Outside strings, the characters:

, ; < > escape_char

are escaped by the escape character to be interpreted as the character itself.

EXAMPLE c ä "May".

(3) A character can be represented as an octal constant. An octal constant is specified as the escape character followed by two or more octal digits. Each constant represents a byte value.

EXAMPLE \143; \347; "\115".

(4) A character can be represented as a hexadecimal constant. A hexadecimal constant is specified as the escape character followed by an x followed by two or more hexadecimal digits. Each constant represents a byte value.

EXAMPLE \x63;\xe7.

(5) A character can be represented as a decimal constant. A decimal constant is specified as the escape character followed by a d followed by two or more decimal digits. Each constant represents a byte value.

EXAMPLE \d99; \d231;

(6) Multibyte characters can be represented by concatenated constants specified in byte order with the last constant specifying the least significant byte of the character. Concatenated constants can include a mix of the above character representations.

EXAMPLE \143\xe7; "\115\xe7\d171"

Only characters existing in the character set for which the FDCC-set definition is created are specified, whether using symbolic names, the characters themselves, or octal, decimal or hexadecimal constants. If a charmap is present, only characters defined in the charmap can be specified using octal, decimal or hexadecimal constants. Symbolic names not present in the charmap may be specified and are ignored, as specified under item (1).

NOTE The <character> symbolic character notation is preferred for specifying all characters in a FDCC-set, to facilitate portability of the FDCC-sets, as the coded character set of the application of the FDCC-set could be different from the coded character set of the FDCC-set source. This is also preferred for format effectors in strings, such as in LC_DATE or LC_ADDRESS, where the format effectors are allowed to be stored together with the rest of the string, in a binary string with a different encoding from that of the source FDCC-set.

5.2.3 Continuation of lines

A line in a specification can be continued by placing an escape character as the last visible graphic character on the line; this continuation character is discarded from the input. The line is continued to the next non-comment line.

5.2.4 Names for copy keyword

In most of the categories a "copy" keyword is allowed. The name specified with this copy keyword is one of:

— "i18n" which indicate the "i18n" FDCC-set defined in this specification,

— the name of a FDCC-set or POSIX locale registered by the process defined in ISO/IEC 15897,

— any other name which may be recognized in some local context – not being recommended as an international specification.

5.2.5 Pre-category statements

5.2.5.1 General

In a FDCC-set the statements in subclauses 5.2.5.2 through 5.2.5.5 may precede category specifications, and they apply to all categories in the specified FDCC-set.

5.2.5.2 comment_char

The following line in a FDCC-set modifies the comment character. It has the following syntax, starting in column 1:

"comment_char %c\n", <comment_character>

The comment character defaults to the number-sign (#). All examples in this document use "%" as the <comment_character>, except where otherwise noted. Blank lines and lines containing the <comment_character> in the first position are ignored. In collating statements, a <comment_character> occurring where the delimiter ";" may occur, terminates the collating statement.

5.2.5.3 escape_char

The following line in a FDCC-set modifies the escape character to be used in the text. It has the following syntax, starting in column 1:

"escape_char %c\n", <escape_character>

The escape character is used for representing characters in subclause 4.1 and for continuing lines.

The escape character defaults to backslash "\". All examples in this document uses "/" as the escape character, except where otherwise noted.

5.2.5.4 repertoiremap

The following line in a FDCC-set specifies the name of a repertoiremap used to define the symbolic character names in the FDCC-set. There may be at most one "repertoiremap" line. It has the following syntax, starting in column 1:

"repertoiremap %s\n", <repertoiremap>

The name is one of:

— "i18nrep" which indicates the "i18nrep" repertoiremap defined in this specification,

— the name of a <repertoiremap> registered by the process defined in ISO/IEC 15897,

— any other name which may be recognized in some local context – not being recommended as an international specification.

5.2.5.5 charmap

The following line in a FDCC-set specifies the name of a charmap which may be used with the FDCC-set. It has the following syntax, starting in column 1:

"charmap %s\n",<charmap>

This keyword gives a hint on which charmaps a FDCC-set is meant to be supported by. There may be more than one charmap specification useful with a FDCC-set. It is an application's responsibility to decide what charmap specification is to be used with that application.

The name is one of:

— the name of a <charmap> registered by the process defined in ISO/IEC 15897,

— any other name which may be recognized in some local context – not being recommended as an international specification.

5.3 LC_IDENTIFICATION

The LC_IDENTIFICATION category defines properties of the FDCC-set, and which specification methods the FDCC-set is conforming to. Values shall be supplied for all unless otherwise noted, and the operands are strings. The following keywords are defined.

title Title of the FDCC-set.

source	Organization name of provider of the source.
address	Organization postal address.
contact	Name of contact person. This keyword is optional.
email	Electronic mail address of the organization or contact person. This keyword is optional.
tel	Telephone number for the organization, in international format. This keyword is optional.
fax	Fax number for the organization, in international format. This keyword is optional.
language	Natural language to which the FDCC-set applies, as specified in ISO 639. If a two-letter code exists for this language, it is used, else the three-letter code is used. This keyword is optional.
territory	The geographic area where the FDCC-set applies (where applicable), in two-letter form as specified in ISO 3166. This keyword is optional.
script	Script that the FDCC-set especially uses, as defined by ISO/IEC 15924 and its registry. This keyword is optional.
audience	If not for general use, an indication of the intended user audience. This keyword is optional.
application	If for use of a special application, a description of the application. This keyword is optional.
abbreviation	Short name for provider of the source. This keyword is optional.
revision	Revision number consisting of digits and zero or more full stops ("..").
date	Revision date in the format according to this example: "1995-02-05" meaning 5 February 1995.

NOTE Only one language per territory can be addressed with a single FDCC-set; an additional FDCC-set is required for each additional language for that territory.

category	Is used to define that a category is present and what specification the category is claiming conformance to. The first operand is a string in double-quotes that describes the specification that the category is claiming conformance to, and the following values are defined: ”i18n:2004” "i18n:2012" “i18n:2018” "posix:1993" The second operand is a string with the category name, where the category names of Clause 4 are defined. More than one "category" keyword may be given, but only one per category name.

The "i18n" LC_IDENTIFICATION category is:

```
LC_IDENTIFICATION
 % This is the ISO/IEC 30112 "i18n" definition for
 % the LC_IDENTIFICATION category.
 %
 title                  "ISO/IEC 30112 i18n FDCC-set"
 source                 "ISO/IEC Copyright Office"
 address                "Case postale 56, CH-1211 Geneve 20, Switzerland"
 contact                ""
 email                  ""
 tel                    ""
 fax                    ""
 language               ""
 territory              ""
 revision               "1.2"
 date                   "2018-10-31"
  %
  category  "i18n:2004";LC_IDENTIFICATION
  category  "i18n:2012";LC_CTYPE
  category  "i18n:2004";LC_COLLATE
  category  "i18n:2004";LC_TIME
  category  "i18n:2004";LC_NUMERIC
  category  "i18n:2004";LC_MONETARY
  category  "i18n:2004";LC_MESSAGES
  category  "i18n:2004";LC_NAME
  category  "i18n:2004";LC_ADDRESS
  category  "i18n:2004";LC_TELEPHONE
  category  "i18n:2012";LC_PAPER
  category  "i18n:2012";LC_MEASUREMENT
  category  "i18n:2012";LC_KEYBOARD

  END LC_IDENTIFICATION
```

5.4 LC_CTYPE

5.4.1 General

The LC_CTYPE category defines character classification, case conversion, character transformation, and other character attribute mappings. Support for the portable character set is required.

A series of characters in a specification can be represented by the hexadecimal symbolic ellipsis symbol ".." (two dots), the decimal symbolic ellipses symbols "...." (4 dots), the double increment hexadecimal symbolic ellipses "..(2).." or the absolute ellipses "..." (3 dots).

The **hexadecimal symbolic ellipsis** (..") specification is only valid between symbolic character names. The symbolic names consists of zero or more nonnumeric characters from the set shown with visible glyphs in Table 1, followed by an integer formed by one or more hexadecimal digits, using uppercase letters only for the range "A" to "F". The characters preceding the hexadecimal integer are identical in the two symbolic names, and the integer formed by the hexadecimal digits in the second symbolic name are identical to or greater than the integer formed by the hexadecimal digits in the first name. This is interpreted as a series of symbolic names formed from the common part and each of the integers in hexadecimal format using uppercase letters only between the first and the second integer, inclusive, and with a length of the symbolic names generated that is equal to the length of the first (and also the second) symbolic name. As an example, <U010E>..<U0111> is interpreted as the symbolic names <U010E>, <U010F>, <U0110>, and <U0111>, in that order.

The **decimal symbolic ellipsis** ("....") specification is only valid between symbolic character names. The symbolic names consist of zero or more nonnumeric characters from the set shown with visible glyphs in Table 1, followed by an integer formed by one or more decimal digits. The characters preceding the

decimal integer are identical in the two symbolic names, and the integer formed by the decimal digits in the second symbolic name is identical to or greater than the integer formed by the decimal digits in the first name. This is interpreted as a series of symbolic names formed from the common part and each of the integers in decimal format between the first and the second integer, inclusive, and with a length of the symbolic names generated that is equal to the length of the first (and also the second) symbolic name. As an example, <j0101>....<j0104> is interpreted as the symbolic names <j0101>, <j0102>, <j0103>, and <j0104>, in that order.

The **double increment hexadecimal symbolic ellipses** ("..(2)..") works like the hexadecimal symbolic ellipses, but generates only every other of the symbolic character names. As an example. <U01AC>..(2)..<U01B2> is interpreted as the symbolic character names <U01AC>, <U01AE>, <U01B0>, and <U01B2>, in that order.

The **absolute ellipsis** specification is only valid within a single encoded character set. An ellipsis is interpreted as including in the list all characters with an encoded value higher than the encoded value of the character preceding the ellipsis and lower than the encoded value of the character following the ellipsis. The absolute ellipsis specification is deprecated, as this is only relevant to FDCC-sets not using symbolic characters.

As an example, \x30;...;\x39 includes in the character class all characters with encoded values between the endpoints.

5.4.2 Character classification keywords

The following keywords are recognized. In the descriptions, the term "automatically included" means that it is not an error to either include the referenced characters or to omit them; the interpreting system provides them if missing and accept them silently if present.

copy — Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

upper — Define characters to be classified as uppercase letters. No character specified for the keywords "cntrl", "digit", "punct", or "space" is specified. The uppercase letters A through Z of the portable character set automatically belong to this class, with application-defined character values. The keyword may be omitted.

lower — Define characters to be classified as lowercase letters. No character specified for the keywords "cntrl", "digit", "punct", or "space" is specified. The lowercase letters a through z of the portable character set, automatically belong to this class, with application-defined character values. The keyword may be omitted.

alpha — Define characters to be classified as used to spell out the words for natural languages; such as letters, syllabic or ideographic characters. No character specified for the keywords "cntrl", "digit", "punct", or "space" is specified. In addition, characters classified as either "upper" or "lower" automatically belong to this class. The keyword may be omitted.

digit — Define the characters to be classified as decimal digits. Digits corresponding to the values 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 can be specified in groups of 10 digits, and in ascending order of the values they represent. The digits of the portable character set are automatically included. If this

keyword is not specified, the digits 0 through 9 of the portable character set automatically belong to this class, with application-defined character values. The "digit" keyword is used to specify which characters are accepted as digits in input to an application, such as characters typed in or scanned in from an input text file and should list digits used with all the scripts supported by the FDCC-set. The keyword may be omitted.

alnum Define the characters to be classified as used to spell out the words for natural languages, and numeric digits. The characters of the "alpha" and "digit" classes are automatically included in this class. The keyword may be omitted.

outdigit Define the characters to be classified as decimal digits for output from an application, such as to a printer or a display or a output text file. Decimal digits corresponding to the values <0>, <1>, <2>, <3>, <4>, <5>, <6>, <7>, <8>, and <9> can be specified, and in ascending order of the values they represent. The intended use is for all places where decimal digits are used for output, including numeric and monetary formatting, and date and time formatting. Only one set of 10 decimal digits may be specified. If this keyword is not specified, the decimal digits 0 through 9 of the portable character set automatically belong to this class, with application-defined character values. The keyword may be omitted.

blank Define characters to be classified as "blank" characters. If this keyword is unspecified, the characters <space> and <tab>, with application-defined character values, belong to this character class.

space Define characters to be classified as white-space characters, to find syntactical boundaries. No character specified for the keywords "upper", "lower", "alpha", "digit", "graph", or "xdigit" is specified. If this keyword is not specified, the characters <space>, <form-feed>, <newline>, <carriage-return>, <tab>, and <vertical-tab>, automatically belong to this class, with application-defined character values. Any characters included in the class "blank" are automatically included. The class should not include the NO-BREAK spaces characters <U00A0>, <U2007>, <UFEFF>, as these characters should not be used for word boundaries. The keyword may be omitted.

cntrl Define characters to be classified as control characters. No character specified for the keywords "upper", "lower", "alpha", "digit", "punct", "graph", "print", or "xdigit" is specified. The keyword is specified.

punct Define characters to be classified as punctuation characters. No character specified for the keywords "upper", "lower", "alpha", "digit", "cntrl", "xdigit", or as the <space> character is specified. The keyword is specified.

xdigit Define the characters to be classified as hexadecimal digits. Only the characters defined for the class "digit" are specified, in ascending sequence by numerical value, followed by sets of six characters representing the hexadecimal digits 10 through 15 in ascending order (for example <A>, <B>, <C>, <D>, <E>, <F>, <a>, <b>, <c>, <d>, <e>, <f>). The digits <0> through <9>, the uppercase letters <A> through <F>, and the lowercase letters <a> through <f>, automatically belong to this class, with application-defined character values.

graph Define characters to be classified as printable characters, not including the <space> character. If this keyword is not specified, characters specified for the keywords "upper", "lower", "alpha", "digit", "xdigit", and "punct" belong to this character class. No character specified for the keyword "cntrl" is specified.

print Define characters to be classified as printable characters, including the <space> character. If this keyword is not provided, characters specified for the keywords upper, lower, alpha, digit, xdigit, punct, graph, and the <space> character belong to this character class. No character specified for the keyword "cntrl" is specified.

toupper Define the mapping of lowercase letters to uppercase letters. The operand consists of character pairs, separated by semicolons. The characters in each character pair are separated by a comma and the pair enclosed by parentheses. The first character in each pair is the lowercase letter, the second the corresponding uppercase letter. Only characters specified for the keywords "lower" and "upper" are specified. If this keyword is not specified, the lowercase letters <a> through <z>, and their corresponding uppercase letters <A> through <Z>, are automatically included, with application-defined character values.

tolower Define the mapping of uppercase letters to lowercase letters. The operand consists of character pairs, separated by semicolons. The characters in each character pair are separated by a comma and the pair enclosed by parentheses. The first character in each pair is the uppercase letter, the second the corresponding lowercase letter. Only characters specified for the keywords "lower" and "upper" are specified. If this keyword is specified, the uppercase letters <A> through <Z>, and their corresponding lowercase letter, are specified. If this keyword is not specified, the mapping is the reverse mapping of the one specified for toupper.

class Define characters to be classified in the class with the name given in the first operand, which is a string. This string only contains characters of the portable character set that either has the string "LETTER" in its description or is a digit or <hyphen-minus> or <low-line>. The following operands are characters. This keyword is optional. The keyword may only be specified once per named class. The following class names are recognized:

combining Characters to form composite graphic symbols.

combining_level3 Characters to form composite graphic symbols, that may also be represented by other characters.

The class names "upper", "lower", "alpha", "digit", "space", "cntrl", "punct", "graph", "print", "xdigit", and "blank" are taken to mean the classes defined by the respective keywords.

width Define the column width of characters, for example for use of the C function wcwidth(). The operands are first a list for characters, possibly using various ellipses, and semicolon separated, then a <colon>, and then the width of these characters given as an unsigned positive integer. Such width-lists separated by <semicolon> may be given for the various widths. The default value of width of characters in class "cntrl" and class

"combining" is 0, else the default value of width is 1. A width for a character may be overridden by a WIDTH specification in a charmap. This keyword is optional.

map Define the mapping of characters to other characters. The first operand is a string, defining the name of the mapping. The string only contains letters, digits and <hyphen-minus> and <low-line> from the portable character set. The following operands consist of character pairs, separated by semicolons. The characters in each character pair are separated by a comma and the pair enclosed by parentheses. The first character in each pair is the character to map from, the second the corresponding character to map to. This keyword is optional. The keyword may only be specified once per named mapping. The following mapping names are recognized:

The mapping names "toupper", and "tolower" are taken to mean the mapping defined by the respective keywords.

Example of use of the "map" keyword:

map "kana",(<U30AB>,<U304B>);(<U30AC>,<U304C>);(<U30AD>,<U304D>)

This example introduces a new mapping "kana" that maps three Katakana characters to corresponding Hiragana characters.

Table 2 shows the allowed character class combinations.

Table 2 — Valid Character Class Combinations

Class	upper	lower	alpha	digit	space	cntrl	punct	graph	print	xdigit	blank
upper		+	A	x	x	x	x	A	A	+	x
lower	+		A	x	x	x	x	A	A	+	x
alpha	+	+		x	x	x	x	A	A	+	x
digit	x	x	x		x	x	x	A	A	A	x
space	x	x	x	x		+	[a]	[a]	[a]	x	+
cntrl	x	x	x	x	+		x	x	x	x	+
punct	x	x	x	x	+	x		A	A	x	+
graph	+	+	+	+	+	x	+		A	+	+
print	+	+	+	+	+	x	+	+		+	+
xdigit	+	+	+	+	x	x	x	A	A		x
blank	x	x	x	x	A	+	[a]	[a]	[a]	x	

Key
A automatically included
\+ permitted
X mutually exclusive

[a] The <space> character, which is part of the "space" and "blank" class, cannot belong to "punct" or "graph", but automatically belong to the "print" class. Other "space" or "blank" characters can be classified as "punct", "graph", and/or "print".

5.4.3 Character string transliteration

The following keywords may be used to transliterate strings. The transliteration may for example be from the Cyrillic script to the Latin script. Transliteration is often language dependent, and the language to be transliterated to is identified with the FDCC-set, which may also be used to identify a specific language to be transliterated from. Transliteration of an incoming character string to a character string in a FDCC-set can be specified with the following keywords and transliteration statements.

translit_start The "translit_start" keyword is followed by one or more transliteration statements assigning character transliteration values to transliterating elements, and include statements copying transliteration specifications from other FDCC-sets.

translit_end The end of the transliteration statements.

NOTE For other keywords and transliteration statements, see subclause 5.10 on LC_XLITERATE.

5.4.4 "i18n" LC_CTYPE category

The "i18n" FDCC-set for the LC_CTYPE is defined as follows:

```
LC_CTYPE
% The following is the ISO/IEC 30112 i18n fdcc-set LC_CTYPE category.
% It covers ISO/IEC 10646
 collection 307 (Unicode version 5.0.0).
% The character classes and mapping tables were automatically generated
% using the gen-unicode-ctype.c program from the glibc project.
% This data reflects data from glibc version 2.14.1.
%
% The plan is to update this information to be aligned with a newer
% version of ISO/IEC 14651 and specification of the Unicode Standard.

% The "upper" class reflects the uppercase characters of class "alpha"
upper /
% BASIC LATIN/
   <U0041>..<U005A>;/
% LATIN-1 SUPPLEMENT/
   <U00C0>..<U00D6>;<U00D8>..<U00DE>;/
% LATIN EXTENDED-A/
   <U0100>..(2)..<U0136>;/
   <U0139>..(2)..<U0147>;/
   <U014A>..(2)..<U0178>;/
   <U0179>..(2)..<U017D>;/
% LATIN EXTENDED-B/
   <U0181>;<U0182>..(2)..<U0186>;<U0187>;/
   <U0189>..<U018B>;<U018E>..<U0191>;<U0193>;<U0194>;/
   <U0196>..<U0198>;<U019C>;<U019D>;<U019F>;/
   <U01A0>..(2)..<U01A4>;/
   <U01A6>;<U01A7>;<U01A9>;<U01AC>;<U01AE>;<U01AF>;<U01B1>..<U01B3>;/
   <U01B5>;<U01B7>;<U01B8>;<U01BC>;<U01C4>;<U01C5>;<U01C7>;<U01C8>;/
   <U01CA>;<U01CB>;/
   <U01CD>..(2)..<U01DB>;/
   <U01DE>..(2)..<U01EE>;/
   <U01F1>;<U01F2>;<U01F4>;<U01F6>..<U01F8>;<U01FA>..(2)..<U01FE>;/
   <U0200>..(2)..<U0232>;/
   <U023A>;<U023B>;<U023D>;<U023E>;/
   <U0241>;<U0243>..<U0246>;<U0248>;<U024A>;<U024C>;<U024E>;/
% BASIC GREEK/
   <U0370>;<U0372>;<U0376>;/
   <U0386>;<U0388>..<U038A>;<U038C>;<U038E>;<U038F>;<U0391>..<U03A1>;/
   <U03A3>..<U03AB>;<U03D8>..(2)..<U03DE>;/
% GREEK SYMBOLS AND COPTIC/
   <U03E0>..(2)..<U03EE>;<U03F4>;/
```

```
   <U03F7>;<U03F9>..<U03FA>;<U03FD>..<U03FF>;/
% CYRILLIC/
   <U0400>..<U042F>;<U0460>..(2)..<U047E>;/
   <U0480>;<U048A>..(2)..<U04BE>;<U04C0>;<U04C1>..(2)..<U04CD>;/
   <U04D0>..(2)..<U04FE>;/
% CYRILLIC SUPPLEMENT/
   <U0500>..(2)..<U0522>;/
% ARMENIAN/
   <U0531>..<U0556>;/
% GEORGIAN/
% is not addressed as the letters does not have a uppercase/lowercase relation/
% well, there are three georgian blocks defined; one caseless (the one usually/
% used), one defined as uppercase and one as lowercase. defining the uppercase one here/
   <U10A0>..<U10C5>;/
% LATIN EXTENDED ADDITIONAL/
   <U1E00>..(2)..<U1E7E>;/
   <U1E80>..(2)..<U1E94>;<U1E9E>;/
   <U1EA0>..(2)..<U1EFE>;/
% GREEK EXTENDED/
   <U1F08>..<U1F0F>;<U1F18>..<U1F1D>;<U1F28>..<U1F2F>;<U1F38>..<U1F3F>;/
   <U1F48>..<U1F4D>;<U1F59>..(2)..<U1F5F>;<U1F68>..<U1F6F>;/
   <U1F88>..<U1F8F>;<U1F98>..<U1F9F>;<U1FA8>..<U1FAF>;<U1FB8>..<U1FBC>;/
   <U1FC8>..<U1FCC>;<U1FD8>..<U1FDB>;<U1FE8>..<U1FEC>;<U1FF8>..<U1FFC>;/
% LETTERLIKE SYMBOLS/
   <U2126>;<U212A>..<U212B>;/
   <U2132>;/
% NUMBER FORMS/
   <U2160>..<U216F>;/
   <U2183>;/
% ENCLOSED ALPHANUMERICS/
   <U24B6>..<U24CF>;/
% GLAGOLITIC/
   <U2C00>..<U2C2E>;/
% LATIN EXTENDED-C/
   <U2C60>;<U2C62>..<U2C64>;<U2C67>..(2)..<U2C6B>;<U2C6D>..<U2C6F>;/
   <U2C72>;<U2C75>;<UA78B>;/
% COPTIC/
   <U2C80>..(2)..<U2CE2>;/
% CYRILLIC SUPPLEMENT 2/
   <UA640>..(2)..<UA65E>;<UA662>..(2)..<UA66C>;<UA680>..(2)..<UA696>;/
% LATIN EXTENDED-D/
   <UA722>..(2)..<UA72E>;<UA732>..(2)..<UA76E>;<UA779>..(2)..<UA77D>;/
   <UA77E>..(2)..<UA786>;/
% HALFWIDTH AND FULLWIDTH FORMS/
   <UFF21>..<UFF3A>;/
% DESERET/
   <U00010400>..<U00010427>

% The "lower" class reflects the lowercase characters of class "alpha"
lower /
% BASIC LATIN/
   <U0061>..<U007A>;/
% LATIN-1 SUPPLEMENT/
   <U00B5>;<U00DF>..<U00F6>;<U00F8>..<U00FF>;/
% LATIN EXTENDED-A/
   <U0101>..(2)..<U0137>;<U013A>..(2)..<U0148>;/
   <U014B>..(2)..<U0177>;<U017A>..(2)..<U017E>;<U017F>;/
% LATIN EXTENDED-B/
   <U0180>;<U0183>;<U0185>;<U0188>;<U018C>;<U0192>;<U0195>;/
   <U0199>;<U019A>;<U019E>;<U01A1>;<U01A3>;<U01A5>;<U01A8>;<U01AD>;/
   <U01B0>;<U01B4>;<U01B6>;<U01B9>;<U01BD>;<U01BF>;<U01C5>;<U01C6>;/
   <U01C8>;<U01C9>;<U01CB>;<U01CC>..(2)..<U01DC>;/
   <U01DD>..(2)..<U01EF>;<U01F2>;<U01F3>;<U01F5>;<U01F9>..(2)..<U01FF>;/
   <U0201>..(2)..<U021F>;<U0223>..(2)..<U0233>;/
   <U023C>;<U0242>;<U0247>..(2)..<U024F>;/
% IPA EXTENSIONS/
   <U0253>;<U0254>;<U0256>;<U0257>;<U0259>;<U025B>;<U0260>;<U0263>;<U0268>;/
   <U0269>;<U026B>;<U026F>;<U0272>;<U0275>;<U027D>;<U0280>;<U0283>;<U0288>..<U028C>;/
   <U0292>;/
```

```
% COMBINING DIACRITICAL MARKS/
   <U0345>;/
% BASIC GREEK/
   <U0371>;<U0373>;<U0377>;/
   <U037B>..<U037D>;/
   <U03AC>..<U03AF>;<U03B1>..<U03CE>;/
% GREEK SYMBOLS AND COPTIC/
   <U03D0>;<U03D1>;<U03D5>;<U03D6>;<U03D9>..(2)..<U03EF>;<U03F0>..<U03F2>;/
   <U03F5>;<U03F8>;<U03FB>;/
% CYRILLIC/
   <U0430>..<U045F>;<U0461>..(2)..<U047F>;/
   <U0481>;<U048B>..(2)..<U04BF>;<U04C2>..(2)..<U04CE>;/
   <U04CF>;/
   <U04D1>..(2)..<U0523>;/
% ARMENIAN/
   <U0561>..<U0586>;/
% PHONETIC EXTENSIONS/
   <U1D7D>;/
% LATIN EXTENDED ADDITIONAL/
   <U1E01>..(2)..<U1E95>;<U1E9B>..<U1E9D>;<U1E9F>;<U1EA1>..(2)..<U1EFF>;/
% GREEK EXTENDED/
   <U1F00>..<U1F07>;<U1F10>..<U1F15>;<U1F20>..<U1F27>;<U1F30>..<U1F37>;/
   <U1F40>..<U1F45>;<U1F51>..(2)..<U1F57>;<U1F60>..<U1F67>;<U1F70>..<U1F7D>;/
   <U1F80>..<U1F87>;<U1F90>..<U1F97>;<U1FA0>..<U1FA7>;<U1FB0>;<U1FB1>;/
   <U1FB3>;<U1FBE>;<U1FC3>;<U1FD0>;<U1FD1>;<U1FE0>;<U1FE1>;<U1FE5>;/
   <U1FF3>;/
% LETTERLIKE SYMBOLS/
   <U214E>;/
% NUMBER FORMS/
   <U2170>..<U217F>;<U2188>;/
% ENCLOSED ALPHANUMERICS/
   <U24D0>..<U24E9>;/
% GLAGOLITIC/
   <U2C30>..<U2C5E>;/
% LATIN EXTENDED-C/
   <U2C61>;<U2C65>;<U2C66>..(2)..<U2C6C>;<U2C71>;<U2C73>;<U2C74>;/
   <U2C76>..<U2C7A>;/
% COPTIC/
   <U2C81>..(2)..<U2CE3>;/
% GEORGIAN SUPPLEMENT/
% well, there are three georgian blocks defined; one caseless (the one usually/
% used), one defined as uppercase and one as lowercase. defining the lowercase one here/
   <U2D00>..<U2D25>;/
% CYRILLIC SUPPLEMENT 2/
   <UA641>..(2)..<UA65F>;<UA663>..(2)..<UA66D>;<UA681>..(2)..<UA697>;/
% LATIN EXTENDED-D/
   <UA723>..(2)..<UA72F>;<UA730>;<UA731>..(2)..<UA76F>;<UA771>..<UA778>;/
   <UA77A>..(2)..<UA77C>;<UA77F>..(2)..<UA787>;<UA78C>;/
% HALFWIDTH AND FULLWIDTH FORMS/
   <UFF41>..<UFF5A>;/
% DESERET/
   <U00010428>..<U0001044F>

% The "alpha" class of the "i18n" FDCC-set is reflecting
% the recommendations in TR 10176 annex A
alpha /
% BASIC LATIN/
   <U0041>..<U005A>;<U0061>..<U007A>;/
% LATIN-1 SUPPLEMENT/
   <U00AA>;<U00B5>;<U00BA>;<U00C0>..<U00D6>;<U00D8>..<U00F6>;/
   <U00F8>..<U00FF>;/
% LATIN EXTENDED-A/
   <U0100>..<U017F>;/
% LATIN EXTENDED-B/
   <U0180>..<U024F>;/
% IPA EXTENSIONS/
   <U0250>..<U02AF>;/
% SPACING MODIFIER LETTERS/
   <U02B0>..<U02C1>;<U02C6>..<U02D1>;<U02E0>..<U02E4>;/
```

```
   <U02EE>;/
% COMBINING DIACRITICAL MARKS/
   <U0345>;/
% BASIC GREEK/
   <U0370>..<U0373>;<U0376>..<U0377>;<U037A>..<U037D>;<U0386>;/
   <U0388>..<U038A>;<U038C>;<U038E>..<U03A1>;/
   <U03A3>..<U03CE>;/
% GREEK SYMBOLS AND COPTIC/
   <U03D0>..<U03F5>;<U03F7>..<U03FF>;/
% CYRILLIC/
   <U0400>..<U0481>;<U048A>..<U04FF>;/
% CYRILLIC SUPPLEMENT/
   <U0500>..<U0523>;/
% ARMENIAN/
   <U0531>..<U0556>;<U0559>;<U0561>..<U0587>;/
% HEBREW/
   <U05D0>..<U05EA>;<U05F0>..<U05F2>;/
% ARABIC/
   <U0621>..<U064A>;<U066E>..<U066F>;<U0671>..<U06D3>;/
   <U06D5>;<U06E5>..<U06E6>;<U06EE>..<U06EF>;<U06FA>..<U06FC>;<U06FF>;/
% SYRIAC/
   <U0710>;<U0712>..<U072F>;<U074D>..<U074F>;/
% ARABIC SUPPLEMENT/
   <U0750>..<U077F>;/
% THAANA/
   <U0780>..<U07A5>;<U07B1>;/
% NKO/
   <U07C0>..<U07EA>;<U07F4>..<U07F5>;<U07FA>;/
% - All Matras of Indic and Sinhala are moved from punct to alpha class/
% - Added Unicode 5.1 charctares of Indic scripts/
% DEVANAGARI/
   <U0901>..<U0939>;<U093C>..<U094D>;/
   <U0950>..<U0954>;<U0958>..<U0961>;/
   <U0962>;<U0963>;<U0972>;<U097B>..<U097F>;/
% TABLE 18 BENGALI/
   <U0981>..<U0983>;<U0985>..<U098C>;<U098F>;<U0990>;<U0993>..<U09A8>;/
   <U09AA>..<U09B0>;<U09B2>;<U09B6>..<U09B9>;<U09BC>..<U09C4>;/
   <U09C7>;<U09C8>;<U09CB>..<U09CE>;<U09D7>;/
   <U09DC>;<U09DD>;<U09DF>..<U09E3>;<U09F0>..<U09FA>;/
% GURMUKHI/
   <U0A01>..<U0A03>;<U0A05>..<U0A0A>;<U0A0F>;<U0A10>;<U0A13>..<U0A28>;/
   <U0A2A>..<U0A30>;<U0A32>;<U0A33>;<U0A35>;<U0A36>;<U0A38>;<U0A39>;/
   <U0A3C>;<U0A3E>..<U0A42>;<U0A47>;<U0A48>;<U0A4B>..<U0A4D>;<U0A51>;/
   <U0A59>..<U0A5C>;<U0A5E>;<U0A70>..<U0A75>;/
% GUJARATI/
   <U0A81>..<U0A83>;/
   <U0A85>..<U0A8D>;<U0A8F>..<U0A91>;<U0A93>..<U0AA8>;/
   <U0AAA>..<U0AB0>;<U0AB2>;<U0AB3>;<U0AB5>..<U0AB9>;<U0ABC>..<U0AC5>;/
   <U0AC7>..<U0AC9>;<U0ACB>..<U0ACD>;/
   <U0AD0>;<U0AE0>..<U0AE3>;<U0AF1>;/
% ORIYA/
   <U0B01>..<U0B03>;<U0B05>..<U0B0C>;<U0B0F>;<U0B10>;<U0B13>..<U0B28>;/
   <U0B2A>..<U0B30>;<U0B32>;<U0B33>;<U0B35>..<U0B39>;<U0B3C>..<U0B44>;/
   <U0B47>..<U0B48>;<U0B4B>..<U0B4D>;<U0B56>..<U0B57>;<U0B5C>;<U0B5D>;/
   <U0B5F>..<U0B63>;<U0B70>;<U0B71>;/
% TAMIL/
   <U0B82>;<U0B83>;<U0B85>..<U0B8A>;<U0B8E>..<U0B90>;<U0B92>..<U0B95>;<U0B99>;/
   <U0B9A>;<U0B9C>;<U0B9E>;<U0B9F>;<U0BA3>;<U0BA4>;<U0BA8>..<U0BAA>;/
   <U0BAE>..<U0BB9>;<U0BBE>..<U0BC2>;<U0BC6>..<U0BC8>;<U0BCA>..<U0BCD>;/
  <U0BD0>;<U0BD7>;<U0BF0>..<U0BFA>;/
% TELUGU/
   <U0C01>..<U0C03>;<U0C05>..<U0C0C>;<U0C0E>..<U0C10>;<U0C12>..<U0C28>;/
   <U0C2A>..<U0C33>;<U0C35>..<U0C39>;<U0C3D>..<U0C44>;<U0C46>..<U0C48>;/
   <U0C4A>..<U0C4D>;<U0C55>..<U0C56>;<U0C58>..<U0C59>;<U0C60>..<U0C63>;/
% KANNADA/
   <U0C82>..<U0C83>;<U0C85>..<U0C8C>;<U0C8E>..<U0C90>;<U0C92>..<U0CA8>;/
   <U0CAA>..<U0CB3>;<U0CB5>..<U0CB9>;<U0CBC>..<U0CC4>;<U0CC6>..<U0CC8>;<U0CCA>..<U0CCD>;/
   <U0CD5>..<U0CD6>;<U0CDE>;<U0CE0>..<U0CE3>;<U0CF1>;<U0CF2>;/
% MALAYALAM/
```

```
   <U0D02>..<U0D03>;<U0D05>..<U0D0C>;<U0D0E>..<U0D10>;<U0D12>..<U0D28>;/
   <U0D2A>..<U0D39>;<U0D3D>..<U0D44>;/
   <U0D46>..<U0D48>;<U0D4A>..<U0D4D>;<U0D57>;/
   <U0D60>..<U0D63>;<U0D79>..<U0D7F>;/
% SINHALA/
   <U0D82>..<U0D83>;<U0D85>..<U0D96>;<U0D9A>..<U0DB1>;<U0DB3>..<U0DBB>;<U0DBD>;/
   <U0DC0>..<U0DC6>;<U0DCA>;/
   <U0DCF>..<U0DD4>;<U0DD6>;<U0DD8>..<U0DDF>;<U0DF2>..<U0DF4>;/
% THAI/
   <U0E01>..<U0E2E>;<U0E30>..<U0E3A>;<U0E40>..<U0E45>;<U0E47>..<U0E4E>;/
% LAO/
   <U0E81>..<U0E82>;<U0E84>;<U0E87>..<U0E88>;<U0E8A>;<U0E8D>;/
   <U0E94>..<U0E97>;<U0E99>..<U0E9F>;<U0EA1>..<U0EA3>;<U0EA5>;<U0EA7>;/
   <U0EAA>..<U0EAB>;<U0EAD>..<U0EB0>;<U0EB2>..<U0EB3>;<U0EBD>;/
   <U0EC0>..<U0EC4>;<U0EC6>;<U0EDC>..<U0EDD>;/
% TIBETAN/
   <U0F00>;<U0F40>..<U0F47>;<U0F49>..<U0F6C>;<U0F88>..<U0F8B>;/
% MYANMAR/
   <U1000>..<U102A>;<U1050>..<U1055>;<U105A>..<U105D>;<U1061>;<U0165>;/
   <U1066>;<U106E>..<U1070>;<U1075>..<U1081>;<U108E>;/
% GEORGIAN/
   <U10A0>..<U10C5>;<U10D0>..<U10FA>;<U10FC>;/
% HANGUL JAMO/
   <U1100>..<U1159>;<U115F>..<U11A2>;<U11A8>..<U11F9>;/
% ETHIOPIC/
   <U1200>..<U1248>;<U124A>..<U124D>;/
   <U1250>..<U1256>;<U1258>;<U125A>..<U125D>;<U1260>..<U1288>;/
   <U128A>..<U128D>;<U1290>..<U12B0>;<U12B2>..<U12B5>;/
   <U12B8>..<U12BE>;<U12C0>;<U12C2>..<U12C5>;<U12C8>..<U12D6>;/
   <U12D8>..<U1310>;/
   <U1312>..<U1315>;<U1318>..<U135A>;/
% ETHIOPIC EXTENDED/
   <U1380>..<U138F>;/
% CHEROKEE/
   <U13A0>..<U13F4>;/
% UNIFIED CANADIAN ABORIGINAL SYLLABICS/
   <U1401>..<U166C>;<U166F>..<U1676>;/
% OGHAM/
   <U1681>..<U169A>;/
% RUNIC/
   <U16A0>..<U16EA>;<U16EE>..<U16F0>;/
% TAGALOG/
   <U1700>..<U170C>;<U170E>..<U1711>;/
% HANUNOO/
   <U1720>..<U1731>;/
% BUHID/
   <U1740>..<U1751>;/
% TAGBANWA/
   <U1760>..<U176C>;<U176E>..<U1770>;/
% KHMER/
   <U1780>..<U17B3>;<U17D7>;<U17DC>;/
% MONGOLIAN/
   <U1820>..<U1877>;<U1880>..<U18A8>;<U18AA>;/
% LIMBU/
   <U1900>..<U191C>;<U1946>..<U194F>;/
% TAI LE/
   <U1950>..<U196D>;<U1970>..<U1974>;/
% NEW TAI LUE/
   <U1980>..<U19A9>;<U19C1>..<U19C7>;<U19D0>..<U19D9>;/
% BUGINESE/
   <U1A00>..<U1A16>;/
% BALINESE/
   <U1B05>..<U1B33>;<U1B45>..<U1B4B>;<U1B50>..<U1B59>;/
% SUNDANESE/
   <U1B83>..<U1BA0>;<U1BAE>..<U1BAF>;/
% LEPCHA/
   <U1C00>..<U1C23>;<U1C4D>..<U1C4F>;/
% OL CHIKI/
   <U1C5A>..<U1C7D>;/
```

```
% PHONETIC EXTENSIONS/
   <U1D00>..<U1DBF>;/
% LATIN EXTENDED ADDITIONAL/
   <U1E00>..<U1E9F>;<U1EA0>..<U1EFF>;/
% GREEK EXTENDED/
   <U1F00>..<U1F15>;<U1F18>..<U1F1D>;<U1F20>..<U1F45>;<U1F48>..<U1F4D>;/
   <U1F50>..<U1F57>;<U1F59>;<U1F5B>;<U1F5D>;<U1F5F>..<U1F7D>;/
   <U1F80>..<U1FB4>;<U1FB6>..<U1FBC>;<U1FBE>;<U1FC2>..<U1FC4>;/
   <U1FC6>..<U1FCC>;<U1FD0>..<U1FD3>;<U1FD6>..<U1FDB>;<U1FE0>..<U1FEC>;/
   <U1FF2>..<U1FF4>;<U1FF6>..<U1FFC>;/
% SUPERSCRIPTS AND SUBSCRIPTS/
   <U2071>;<U207F>;<U2090>..<U2094>;/
% LETTERLIKE SYMBOLS/
   <U2102>;<U2107>;<U210A>..<U2113>;<U2115>;<U2119>..<U211D>;<U2124>;/
   <U2126>;<U2128>..<U212D>;<U212F>..<U2139>;/
   <U213C>..<U213F>;<U2145>..<U2149>;<U214E>;/
% NUMBER FORMS/
   <U2160>..<U2188>;/
% ENCLOSED ALPHANUMERICS/
   <U249C>..<U24E9>;/
% GLAGOLITIC/
   <U2C00>..<U2C2E>;<U2C30>..<U2C5E>;/
% LATIN EXTENDED-C/
   <U2C60>..<U2C6F>;<U2C71>..<U2C7D>;/
% COPTIC/
   <U2C80>..<U2CE4>;/
% GEORGIAN SUPPLEMENT/
   <U2D00>..<U2D25>;/
% TIFINAGH/
   <U2D30>..<U2D65>;<U2D6F>;/
% ETHIOPIC EXTENDED/
   <U2D80>..<U2D96>;<U2DA0>..<U2DA6>;<U2DA8>..<U2DAE>;<U2DB0>..<U2DB6>;/
   <U2DB8>..<U2DBE>;<U2DC0>..<U2DC6>;<U2DC8>..<U2DCE>;<U2DD0>..<U2DD6>;/
   <U2DD8>..<U2DDE>;/
% CJK SYMBOLS AND PUNCTUATION/
   <U3005>..<U3007>;<U3021>..<U3029>;<U3031>..<U3035>;<U3038>..<U303C>;/
% HIRAGANA/
   <U3041>..<U3096>;<U309D>..<U309F>;/
% KATAKANA/
   <U30A1>..<U30FA>;<U30FC>..<U30FF>;/
% BOPOMOFO/
   <U3105>..<U312D>;/
% HANGUL COMPATIBILITY JAMO/
   <U3131>..<U318E>;/
% BOPOMOFO EXTENDED/
   <U31A0>..<U31B7>;/
% KATAKANA PHONETIC EXTENSIONS/
   <U31F0>..<U31FF>;/
% CJK UNIFIED IDEOGRAPHS EXTENSION/
   <U3400>..<U4DB5>;/
% CJK UNIFIED IDEOGRAPHS/
   <U4E00>..<U9FBB>;/
% YI SYLLABLES/
   <UA000>..<UA48C>;/
% VAI SYLLABLES/
   <UA500>..<UA60B>;<UA610>..<UA61F>;<UA62A>..<UA62B>;/
% CYRILLIC SUPPLEMENT 2/
   <UA640>..<UA65F>;<UA662>..<UA66E>;<UA680>..<UA697>;/
% LATIN EXTENDED-D/
   <UA717>..<UA71F>;<UA722>..<UA78C>;<UA7FB>..<UA7FF>;/
% SYLOTI NEGRI/
   <UA800>;<UA801>;<UA803>..<UA805>;<UA807>..<UA80A>;<UA80C>..<UA822>;/
% PHAGS PA/
   <UA840>..<UA873>;/
% SAURASHTRA/
   <UA882>..<UA8B3>;/
% KAYAH LI/
   <UA90A>..<UA92D>;/
% REJANG/
```

```
   <UA930>..<UA946>;/
% CHAM/
   <UAA00>..<UAA28>;<UAA40>..<UAA42>;<UAA44>..<UAA4B>;/
% HANGUL SYLLABLES/
   <UAC00>..<UD7A3>;/
% CJK COMPATIBILITY IDEOGRAPHS/
   <UF900>..<UFA2D>;<UFA30>..<UFA6A>;/
   <UFA70>..<UFAD9>;/
% ALPHABETIC PRESENTATION FORMS/
   <UFB00>..<UFB06>;<UFB13>..<UFB17>;<UFB1D>;<UFB1F>..<UFB28>;/
   <UFB2A>..<UFB36>;<UFB38>..<UFB3C>;<UFB3E>;<UFB40>;<UFB41>;<UFB43>;/
   <UFB44>;<UFB46>..<UFB4F>;/
% ARABIC PRESENTATION FORMS-A/
   <UFB50>..<UFBB1>;<UFBD3>..<UFD3D>;<UFD50>..<UFD8F>;<UFD92>..<UFDC7>;/
   <UFDF0>..<UFDFB>;/
% ARABIC PRESENTATION FORMS-B/
   <UFE70>..<UFE74>;<UFE76>..<UFEFC>;/
% HALFWIDTH AND FULLWIDTH FORMS/
   <UFF21>..<UFF3A>;<UFF41>..<UFF5A>;<UFF66>..<UFFBE>;<UFFC2>..<UFFC7>;/
   <UFFCA>..<UFFCF>;<UFFD2>..<UFFD7>;<UFFDA>..<UFFDC>;/
% LINEAR B SYLLABARY/
   <U00010000>..<U0001000B>;<U0001000D>..<U00010026>;/
   <U00010028>..<U0001003A>;<U0001003C>..<U0001003D>;/
   <U0001003F>..<U0001004D>;<U00010050>..<U0001005D>;/
% LINEAR B IDEOGRAMS/
   <U00010080>..<U000100FA>;/
% ANCIENT GREEK NUMBERS/
   <U00010140>..<U00010174>;/
% LYCIAN/
   <U00010280>..<U0001029C>;/
% CARIAN/
   <U000102A0>..<U000102D0>;/
% OLD ITALIC/
   <U00010300>..<U0001031E>;/
% GOTHIC/
   <U00010330>..<U0001034A>;/
% UGARITIC/
   <U00010380>..<U0001039D>;/
% OLD PERSIAN/
   <U000103A0>..<U000103C3>;<U000103C8>..<U000103CF>;/
   <U000103D1>..<U000103D5>;/
% DESERET/
   <U00010400>..<U0001044F>;/
% SHAVIAN/
   <U00010450>..<U0001047F>;/
% OSMANYA/
   <U00010480>..<U0001049D>;<U000104A0>..<U000104A9>;/
% CYPRIOT SYLLABARY/
   <U00010800>..<U00010805>;<U00010808>;<U0001080A>..<U00010835>;/
   <U00010837>..<U00010838>;<U0001083C>;<U0001083F>;/
% PHOENICIAN/
   <U00010900>..<U00010915>;<U00010A00>;<U00010A10>..<U00010A13>;/
% KHAROSHTI/
   <U00010A15>..<U00010A17>;<U00010A19>..<U00010A33>;/
% CUNEIFORM/
   <U00012000>..<U0001236E>;/
% CUNEIFORM NUMBERS AND PONCTUATION/
   <U00012400>..<U00012462>;/
% BYZANTINE MUSICAL SYMBOLS/
% MATHEMATICAL ALPHANUMERIC SYMBOLS/
   <U0001D400>..<U0001D454>;<U0001D456>..<U0001D49C>;/
   <U0001D49E>..<U0001D49F>;<U0001D4A2>;<U0001D4A5>..<U0001D4A6>;/
   <U0001D4A9>..<U0001D4AC>;<U0001D4AE>..<U0001D4B9>;<U0001D4BB>;/
   <U0001D4BD>..<U0001D4C3>;<U0001D4C5>..<U0001D505>;/
   <U0001D507>..<U0001D50A>;<U0001D50D>..<U0001D514>;/
   <U0001D516>..<U0001D51C>;<U0001D51E>..<U0001D539>;/
   <U0001D53B>..<U0001D53E>;<U0001D540>..<U0001D544>;<U0001D546>;/
   <U0001D54A>..<U0001D550>;<U0001D552>..<U0001D6A5>;/
   <U0001D6A8>..<U0001D6C0>;<U0001D6C2>..<U0001D6DA>;/
```

```
   <U0001D6DC>..<U0001D6FA>;<U0001D6FC>..<U0001D714>;/
   <U0001D716>..<U0001D734>;<U0001D736>..<U0001D74E>;/
   <U0001D750>..<U0001D76E>;<U0001D770>..<U0001D788>;/
   <U0001D78A>..<U0001D7A8>;<U0001D7AA>..<U0001D7C2>;/
   <U0001D7C4>..<U0001D7CB>;<U0001D7CE>..<U0001D7FF>;/
% CJK UNIFIED IDEOGRAPHS EXTENSION/
   <U00020000>..<U0002A6D6>;/
% CJK COMPATIBILITY IDEOGRAPHS SUPPLEMENT/
   <U0002F800>..<U0002FA1D>;/
% The non-ASCII number characters are included here because ISO C 99    /
% forbids us to classify them as digits; however, they behave more like /
% alphanumeric than like punctuation.                                   /
% ARABIC/
   <U0660>..<U0669>;<U06F0>..<U06F9>;/
% DEVANAGARI/
   <U0966>..<U096F>;/
% BENGALI/
   <U09E6>..<U09EF>;/
% GURMUKHI/
   <U0A66>..<U0A6F>;/
% GUJARATI/
   <U0AE6>..<U0AEF>;/
% ORIYA/
   <U0B66>..<U0B6F>;/
% TAMIL/
   <U0BE6>..<U0BEF>;/
% TELUGU/
   <U0C66>..<U0C6F>;<U0C78>..<U0C7F>;/
% KANNADA/
   <U0CE6>..<U0CEF>;/
% MALAYALAM/
   <U0D66>..<U0D75>;<U0D70>..<U0D75>;/
% THAI/
   <U0E50>..<U0E59>;/
% LAO/
   <U0ED0>..<U0ED9>;/
% TIBETAN/
   <U0F20>..<U0F29>;/
% MYANMAR/
   <U1040>..<U1049>;/
% KHMER/
   <U17E0>..<U17E9>;/
% MONGOLIAN/
   <U1810>..<U1819>;/
% SUNDANESE/
   <U1BB0>..<U1BB9>;/
% LEPCHA/
   <U1C40>..<U1C49>;/
% OL CHIKI/
   <U1C50>..<U1C59>;/
% VAI/
   <UA620>..<UA629>;/
% SAURASHTRA/
   <UA8D0>..<UA8D9>;/
% KAYAH LI/
   <UA900>..<UA909>;/
% CHAM/
   <UAA50>..<UAA59>;/
% HALFWIDTH AND FULLWIDTH FORMS/
   <UFF10>..<UFF19>

% The "digit" class must only contain the BASIC LATIN digits, says ISO C 99
% (sections 7.25.2.1.5 and 5.2.1).
digit /
   <U0030>..<U0039>

% The "outdigit" information is by default "0" to "9".  We don't have to
% provide it here since localedef will fill in the bits and it would
% prevent locales copy-ing this file define their own values.
```

```
% outdigit <U0030>..<U0039>

space /
% ISO/IEC 6429/
   <U0009>..<U000D>;/
% BASIC LATIN/
   <U0020>;/
% OGHAM/
   <U1680>;/
% MONGOL/
   <U180E>;/
% GENERAL PUNCTUATION/
   <U2000>..<U2006>;<U2008>..<U200A>;<U2028>;<U2029>;<U205F>;/
% CJK SYMBOLS AND PUNCTUATION, HIRAGANA/
   <U3000>

cntrl /
   <U0000>..<U001F>;<U007F>..<U009F>;/
% Treat the Line/Paragraph Separators as control characters, like Line Feed./
   <U2028>;<U2029>

punct /
   <U0021>..<U002F>;<U003A>..<U0040>;<U005B>..<U0060>;<U007B>..<U007E>;/
   <U00A0>..<U00A9>;<U00AB>..<U00B4>;<U00B6>..<U00B9>;<U00BB>..<U00BF>;/
   <U00D7>;<U00F7>;<U02C2>..<U02C5>;<U02D2>..<U02DF>;<U02E5>..<U02ED>;/
   <U02EF>..<U0344>;<U0346>..<U036F>;<U0374>..<U0375>;<U037E>;/
   <U0384>..<U0385>;<U0387>;<U03F6>;<U0482>..<U0486>;<U0488>..<U0489>;/
   <U055A>..<U055F>;<U0589>..<U058A>;<U0591>..<U05C7>;<U05F3>..<U05F4>;/
   <U0600>..<U0603>;<U060B>..<U061B>;<U061E>..<U061F>;/
   <U064B>..<U065E>;<U066A>..<U066D>;<U0670>;<U06D4>;<U06D6>..<U06E4>;/
   <U06E7>..<U06ED>;<U06FD>..<U06FE>;<U0700>..<U070D>;<U070F>;<U0711>;/
   <U0730>..<U074A>;<U07A6>..<U07B0>;<U07EB>..<U07F3>;<U07F6>..<U07F9>;/
   <U0964>;<U0965>;/
   <U0E2F>;/
   <U0E3F>;<U0E46>;<U0E4F>;<U0E5A>..<U0E5B>;<U0EB1>;<U0EB4>..<U0EB9>;/
   <U0EBB>..<U0EBC>;<U0EC8>..<U0ECD>;<U0F01>..<U0F1F>;<U0F2A>..<U0F3F>;/
   <U0F71>..<U0F87>;<U0F90>..<U0F97>;<U0F99>..<U0FBC>;<U0FBE>..<U0FCC>;/
   <U0FCE>..<U0FD4>;<U102B>..<U103F>;<U104A>..<U104F>;<U1056>..<U1059>;/
   <U105E>..<U1060>;<U1062>..<U1064>;<U1067>..<U106D>;<U1071>..<U1074>;/
   <U1082>..<U108D>;<U108F>..<U1099>;<U109E>;<U109F>;/
   <U10FB>;<U135F>..<U137C>;<U1390>..<U1399>;/
   <U166D>..<U166E>;<U169B>..<U169C>;<U16EB>..<U16ED>;<U1712>..<U1714>;/
   <U1732>..<U1736>;<U1752>..<U1753>;<U1772>..<U1773>;<U17B4>..<U17D6>;/
   <U17D8>..<U17DB>;<U17DD>;<U17F0>..<U17F9>;<U1800>..<U180D>;<U18A9>;/
   <U1920>..<U192B>;<U1930>..<U193B>;<U1940>;<U1944>..<U1945>;/
   <U19B0>..<U19C0>;<U19C8>..<U19C9>;<U19DE>..<U19FF>;<U1A17>..<U1A1B>;/
   <U1A1E>..<U1A1F>;<U1B00>..<U1B04>;<U1B34>..<U1B44>;<U1B5A>..<U1B7C>;/
   <U1B80>..<U1B82>;<U1BA1>..<U1BAA>;<U1C24>..<U1C37>;<U1C3B>..<U1C3F>;/
   <U1C7E>..<U1C7F>;/
   <U1DC0>..<U1DE6>;<U1DFE>..<U1DFF>;<U1FBD>;<U1FBF>..<U1FC1>;/
   <U1FCD>..<U1FCF>;<U1FDD>..<U1FDF>;<U1FED>..<U1FEF>;<U1FFD>..<U1FFE>;/
   <U2000>;<U200B>..<U2027>;<U202A>..<U205E>;<U2060>..<U2064>;/
   <U206A>..<U2070>;<U2074>..<U207E>;<U2080>..<U208E>;<U20A0>..<U20B5>;/
   <U20D0>..<U20F0>;<U2100>..<U2101>;<U2103>..<U2106>;<U2108>..<U2109>;/
   <U2114>;<U2116>..<U2118>;<U211E>..<U2123>;<U2125>;<U2127>;<U212E>;/
   <U213A>..<U213B>;<U2140>..<U2144>;<U214A>..<U214D>;<U2153>..<U215F>;/
   <U2190>..<U23E7>;<U2400>..<U2426>;<U2440>..<U244A>;<U2460>..<U249B>;/
   <U24EA>..<U269D>;<U26A0>..<U26C3>;<U2701>..<U2704>;<U2706>..<U2709>;/
   <U270C>..<U2727>;<U2729>..<U274B>;<U274D>;<U274F>..<U2752>;<U2756>;/
   <U2758>..<U275E>;<U2761>..<U2794>;<U2798>..<U27AF>;<U27B1>..<U27BE>;/
   <U27C0>..<U27CA>;<U27CC>;<U27D0>..<U27EF>;<U27F0>..<U2B4C>;/
   <U2B50>..<U2B54>;<U2DE0>..<U2DFF>;/
   <U2CE5>..<U2CEA>;<U2CF9>..<U2CFF>;<U2E00>..<U2E30>;/
   <U2E80>..<U2E99>;<U2E9B>..<U2EF3>;<U2F00>..<U2FD5>;<U2FF0>..<U2FFB>;/
   <U3001>..<U3004>;<U3008>..<U3020>;<U302A>..<U3030>;<U3036>..<U3037>;/
   <U303D>..<U303F>;<U3099>..<U309C>;<U30A0>;<U30FB>;<U3190>..<U319F>;/
   <U31C0>..<U31CF>;<U3200>..<U321E>;<U3220>..<U3243>;<U3250>..<U32FE>;/
   <U3300>..<U33FF>;<U4DC0>..<U4DFF>;<UA490>..<UA4C6>;<UA60C>..<UA60F>;/
   <UA66F>..<UA673>;<UA67C>..<UA67F>;<UA700>..<UA716>;/
```

```
    <UA720>..<UA721>;<UA802>;<UA806>;<UA80B>;<UA823>..<UA82B>;/
    <UA874>..<UA877>;<UA880>;<UA881>;<UA8B4>..<UA8C4>;<UA8CE>..<UA8CF>;/
    <UA92E>..<UA92F>;<UA947>..<UA953>;<UA95F>;<UAA29>..<UAA36>;<UAA43>;/
    <UAA4C>..<UAA4D>;<UAA5C>..<UAA5F>;/
    <UE000>..<UF8FF>;<UFB1E>;<UFB29>;<UFD3E>..<UFD3F>;/
    <UFDFC>..<UFDFD>;<UFE00>..<UFE19>;<UFE20>..<UFE26>;<UFE30>..<UFE52>;/
    <UFE54>..<UFE66>;<UFE68>..<UFE6B>;<UFEFF>;<UFF01>..<UFF0F>;/
    <UFF1A>..<UFF20>;<UFF3B>..<UFF40>;<UFF5B>..<UFF65>;<UFFE0>..<UFFE6>;/
    <UFFE8>..<UFFEE>;<UFFF9>..<UFFFD>;<U00010100>..<U00010102>;/
    <U00010107>..<U00010133>;<U00010137>..<U0001013F>;/
    <U00010175>..<U0001018A>;<U00010320>..<U00010323>;<U0001039F>;/
    <U000103D0>;<U00010916>..<U00010919>;<U0001091F>;/
    <U00010A01>..<U00010A03>;<U00010A05>..<U00010A06>;/
    <U00010A0C>..<U00010A0F>;<U00010A38>..<U00010A3A>;/
    <U00010A3F>..<U00010A47>;<U00010A50>..<U00010A58>;/
    <U00012470>..<U00012473>;<U0001D000>..<U0001D0F5>;/
    <U0001D100>..<U0001D126>;<U0001D129>..<U0001D1DD>;/
    <U0001D200>..<U0001D245>;<U0001D300>..<U0001D356>;/
    <U0001D360>..<U0001D371>;<U0001D6C1>;<U0001D6DB>;<U0001D6FB>;<U0001D715>;/
    <U0001D735>;<U0001D74F>;<U0001D76F>;<U0001D789>;<U0001D7A9>;<U0001D7C3>;/
    <U000E0001>;<U000E0020>..<U000E007F>;<U000E0100>..<U000E01EF>;/
    <U000F0000>..<U000FFFFD>;<U00100000>..<U0010FFFD>

graph /
    <U0021>..<U007E>;<U00A0>..<U0377>;<U037A>..<U037E>;/
    <U0384>..<U038A>;<U038C>;<U038E>..<U03A1>;<U03A3>..<U0486>;/
    <U0488>..<U0523>;<U0531>..<U0556>;<U0559>..<U055F>;/
    <U0561>..<U0587>;<U0589>..<U058A>;<U0591>..<U05C7>;<U05D0>..<U05EA>;/
    <U05F0>..<U05F4>;<U0600>..<U0603>;<U0606>..<U061B>;/
    <U061E>..<U061F>;<U0621>..<U065E>;<U0660>..<U070D>;/
    <U070F>..<U074A>;<U074D>..<U07B1>;<U07C0>..<U07FA>;/
    <U0901>..<U0939>;<U093C>..<U094D>;<U0950>..<U0954>;<U0958>..<U0972>;/
    <U097B>..<U097F>;<U0981>..<U0983>;<U0985>..<U098C>;<U098F>..<U0990>;/
    <U0993>..<U09A8>;<U09AA>..<U09B0>;<U09B2>;<U09B6>..<U09B9>;/
    <U09BC>..<U09C4>;<U09C7>..<U09C8>;<U09CB>..<U09CE>;<U09D7>;/
    <U09DC>..<U09DD>;<U09DF>..<U09E3>;<U09E6>..<U09FA>;<U0A01>..<U0A03>;/
    <U0A05>..<U0A0A>;<U0A0F>..<U0A10>;<U0A13>..<U0A28>;<U0A2A>..<U0A30>;/
    <U0A32>..<U0A33>;<U0A35>..<U0A36>;<U0A38>..<U0A39>;<U0A3C>;/
    <U0A3E>..<U0A42>;<U0A47>..<U0A48>;<U0A4B>..<U0A4D>;<U0A51>;/
    <U0A59>..<U0A5C>;/
    <U0A5E>;<U0A66>..<U0A75>;<U0A81>..<U0A83>;<U0A85>..<U0A8D>;/
    <U0A8F>..<U0A91>;<U0A93>..<U0AA8>;<U0AAA>..<U0AB0>;<U0AB2>..<U0AB3>;/
    <U0AB5>..<U0AB9>;<U0ABC>..<U0AC5>;<U0AC7>..<U0AC9>;<U0ACB>..<U0ACD>;/
    <U0AD0>;<U0AE0>..<U0AE3>;<U0AE6>..<U0AEF>;<U0AF1>;<U0B01>..<U0B03>;/
    <U0B05>..<U0B0C>;<U0B0F>..<U0B10>;<U0B13>..<U0B28>;<U0B2A>..<U0B30>;/
    <U0B32>..<U0B33>;<U0B35>..<U0B39>;<U0B3C>..<U0B44>;<U0B47>..<U0B48>;/
    <U0B4B>..<U0B4D>;<U0B56>..<U0B57>;<U0B5C>..<U0B5D>;<U0B5F>..<U0B63>;/
    <U0B66>..<U0B71>;<U0B82>..<U0B83>;<U0B85>..<U0B8A>;<U0B8E>..<U0B90>;/
    <U0B92>..<U0B95>;<U0B99>..<U0B9A>;<U0B9C>;<U0B9E>..<U0B9F>;/
    <U0BA3>..<U0BA4>;<U0BA8>..<U0BAA>;<U0BAE>..<U0BB9>;<U0BBE>..<U0BC2>;/
    <U0BC6>..<U0BC8>;<U0BCA>..<U0BCD>;<U0BD0>;<U0BD7>;<U0BE6>..<U0BFA>;/
    <U0C01>..<U0C03>;<U0C05>..<U0C0C>;<U0C0E>..<U0C10>;<U0C12>..<U0C28>;/
    <U0C2A>..<U0C33>;<U0C35>..<U0C39>;<U0C3D>..<U0C44>;<U0C46>..<U0C48>;/
    <U0C4A>..<U0C4D>;<U0C55>..<U0C56>;<U0C58>..<U0C59>;<U0C60>..<U0C63>;/
    <U0C66>..<U0C6F>;<U0C78>..<U0C7F>;/
    <U0C82>..<U0C83>;<U0C85>..<U0C8C>;<U0C8E>..<U0C90>;<U0C92>..<U0CA8>;/
    <U0CAA>..<U0CB3>;<U0CB5>..<U0CB9>;<U0CBC>..<U0CC4>;<U0CC6>..<U0CC8>;/
    <U0CCA>..<U0CCD>;<U0CD5>..<U0CD6>;<U0CDE>;<U0CE0>..<U0CE3>;/
    <U0CE6>..<U0CEF>;<U0CF1>..<U0CF2>;<U0D02>..<U0D03>;<U0D05>..<U0D0C>;/
    <U0D0E>..<U0D10>;<U0D12>..<U0D28>;<U0D2A>..<U0D39>;<U0D3D>..<U0D44>;/
    <U0D46>..<U0D48>;<U0D4A>..<U0D4D>;<U0D57>;<U0D60>..<U0D63>;/
    <U0D66>..<U0D75>;<U0D79>..<U0D7F>;<U0D82>..<U0D83>;<U0D85>..<U0D96>;/
    <U0D9A>..<U0DB1>;/
    <U0DB3>..<U0DBB>;<U0DBD>;<U0DC0>..<U0DC6>;<U0DCA>;<U0DCF>..<U0DD4>;/
    <U0DD6>;<U0DD8>..<U0DDF>;<U0DF2>..<U0DF4>;<U0E01>..<U0E3A>;/
    <U0E3F>..<U0E5B>;<U0E81>..<U0E82>;<U0E84>;<U0E87>..<U0E88>;<U0E8A>;/
    <U0E8D>;<U0E94>..<U0E97>;<U0E99>..<U0E9F>;<U0EA1>..<U0EA3>;<U0EA5>;/
    <U0EA7>;<U0EAA>..<U0EAB>;<U0EAD>..<U0EB9>;<U0EBB>..<U0EBD>;/
    <U0EC0>..<U0EC4>;<U0EC6>;<U0EC8>..<U0ECD>;<U0ED0>..<U0ED9>;/
```

<U0EDC>..<U0EDD>;<U0F00>..<U0F47>;<U0F49>..<U0F6C>;<U0F71>..<U0F8B>;/
<U0F90>..<U0F97>;<U0F99>..<U0FBC>;<U0FBE>..<U0FCC>;<U0FCE>..<U0FD4>;/
<U1000>..<U102A>;<U102B>..<U103F>;<U1040>..<U1099>;<U109E>;<U109F>;/
<U10A0>..<U10C5>;<U10D0>..<U10FC>;/
<U1100>..<U1159>;<U115F>..<U11A2>;<U11A8>..<U11F9>;<U1200>..<U1248>;/
<U124A>..<U124D>;<U1250>..<U1256>;<U1258>;<U125A>..<U125D>;/
<U1260>..<U1288>;<U128A>..<U128D>;<U1290>..<U12B0>;<U12B2>..<U12B5>;/
<U12B8>..<U12BE>;<U12C0>;<U12C2>..<U12C5>;<U12C8>..<U12D6>;/
<U12D8>..<U1310>;<U1312>..<U1315>;<U1318>..<U135A>;<U135F>..<U137C>;/
<U1380>..<U1399>;<U13A0>..<U13F4>;<U1401>..<U1676>;<U1681>..<U169C>;/
<U16A0>..<U16F0>;<U1700>..<U170C>;<U170E>..<U1714>;<U1720>..<U1736>;/
<U1740>..<U1753>;<U1760>..<U176C>;<U176E>..<U1770>;<U1772>..<U1773>;/
<U1780>..<U17DD>;<U17E0>..<U17E9>;<U17F0>..<U17F9>;<U1800>..<U180D>;/
<U1810>..<U1819>;<U1820>..<U1877>;<U1880>..<U18AA>;<U1900>..<U191C>;/
<U1920>..<U192B>;<U1930>..<U193B>;<U1940>;<U1944>..<U196D>;/
<U1970>..<U1974>;<U1980>..<U19A9>;<U19B0>..<U19C9>;<U19D0>..<U19D9>;/
<U19DE>..<U1A1B>;<U1A1E>..<U1A1F>;<U1B00>..<U1B4B>;<U1B50>..<U1B7C>;/
<U1B80>..<U1BAA>;<U1BAE>..<U1BB9>;<U1C00>..<U1C37>;<U1C3B>..<U1C49>;/
<U1C4D>..<U1C7F>;/
<U1D00>..<U1DE6>;<U1DFE>..<U1E9F>;<U1EA0>..<U1EFF>;<U1F00>..<U1F15>;/
<U1F18>..<U1F1D>;<U1F20>..<U1F45>;<U1F48>..<U1F4D>;<U1F50>..<U1F57>;/
<U1F59>;<U1F5B>;<U1F5D>;<U1F5F>..<U1F7D>;<U1F80>..<U1FB4>;/
<U1FB6>..<U1FC4>;<U1FC6>..<U1FD3>;<U1FD6>..<U1FDB>;<U1FDD>..<U1FEF>;/
<U1FF2>..<U1FF4>;<U1FF6>..<U1FFE>;<U2007>;<U200B>..<U2027>;/
<U202A>..<U205E>;<U2060>..<U2064>;<U206A>..<U2071>;<U2074>..<U208E>;/
<U2090>..<U2094>;<U20A0>..<U20B5>;<U20D0>..<U20F0>;<U2100>..<U214F>;/
<U2153>..<U2188>;<U2190>..<U23E7>;<U2400>..<U2426>;<U2440>..<U244A>;/
<U2460>..<U269D>;<U26A0>..<U26C3>;<U2701>..<U2704>;<U2706>..<U2709>;/
<U270C>..<U2727>;<U2729>..<U274B>;<U274D>;<U274F>..<U2752>;<U2756>;/
<U2758>..<U275E>;<U2761>..<U2794>;<U2798>..<U27AF>;<U27B1>..<U27BE>;/
<U27C0>..<U27CA>;<U27CC>;<U27D0>..<U27EF>;<U27F0>..<U2B4C>;/
<U2B50>..<U2B54>;/
<U2C00>..<U2C2E>;<U2C30>..<U2C5E>;<U2C60>..<U2C6F>;<U2C71>..<U2C7D>;/
<U2C80>..<U2CEA>;<U2CF9>..<U2D25>;<U2D30>..<U2D65>;<U2D6F>;/
<U2D80>..<U2D96>;<U2DA0>..<U2DA6>;<U2DA8>..<U2DAE>;<U2DB0>..<U2DB6>;/
<U2DB8>..<U2DBE>;<U2DC0>..<U2DC6>;<U2DC8>..<U2DCE>;<U2DD0>..<U2DD6>;/
<U2DD8>..<U2DDE>;<U2DE0>..<U2E30>;<U2E80>..<U2E99>;/
<U2E9B>..<U2EF3>;<U2F00>..<U2FD5>;<U2FF0>..<U2FFB>;<U3001>..<U303F>;/
<U3041>..<U3096>;<U3099>..<U30FF>;<U3105>..<U312D>;<U3131>..<U318E>;/
<U3190>..<U31B7>;<U31C0>..<U31CF>;<U31F0>..<U321E>;<U3220>..<U3243>;/
<U3250>..<U32FE>;<U3300>..<U4DB5>;<U4DC0>..<U9FBB>;<UA000>..<UA48C>;/
<UA490>..<UA4C6>;<UA500>..<UA62B>;<UA640>..<UA65F>;<UA662>..<UA673>;/
<UA67C>..<UA697>;<UA700>..<UA78C>;<UA7FB>..<UA7FF>;<UA800>..<UA82B>;/
<UA840>..<UA877>;<UA880>..<UA8C4>;<UA8CE>..<UA8D9>;<UA900>..<UA953>;/
<UA95F>;<UAA00>..<UAA36>;<UAA40>..<UAA4D>;<UAA50>..<UAA59>;/
<UAA5C>..<UAA5F>;<UAC00>..<UD7A3>;<UE000>..<UFA2D>;<UFA30>..<UFA6A>;/
<UFA70>..<UFAD9>;<UFB00>..<UFB06>;<UFB13>..<UFB17>;<UFB1D>..<UFB36>;/
<UFB38>..<UFB3C>;<UFB3E>;<UFB40>..<UFB41>;<UFB43>..<UFB44>;/
<UFB46>..<UFBB1>;<UFBD3>..<UFD3F>;<UFD50>..<UFD8F>;<UFD92>..<UFDC7>;/
<UFDF0>..<UFDFD>;<UFE00>..<UFE19>;<UFE20>..<UFE26>;<UFE30>..<UFE52>;/
<UFE54>..<UFE66>;<UFE68>..<UFE6B>;<UFE70>..<UFE74>;<UFE76>..<UFEFC>;/
<UFEFF>;<UFF01>..<UFFBE>;<UFFC2>..<UFFC7>;<UFFCA>..<UFFCF>;/
<UFFD2>..<UFFD7>;<UFFDA>..<UFFDC>;<UFFE0>..<UFFE6>;<UFFE8>..<UFFEE>;/
<UFFF9>..<UFFFD>;<U00010000>..<U0001000B>;<U0001000D>..<U00010026>;/
<U00010028>..<U0001003A>;<U0001003C>..<U0001003D>;/
<U0001003F>..<U0001004D>;<U00010050>..<U0001005D>;/
<U00010080>..<U000100FA>;<U00010100>..<U00010102>;/
<U00010107>..<U00010133>;<U00010137>..<U0001018A>;/
<U00010190>..<U0001019B>;<U000101D0>..<U000101FD>;/
<U00010280>..<U0001029C>;<U000102A0>..<U000102D0>;/
<U00010300>..<U0001031E>;<U00010320>..<U00010323>;/
<U00010330>..<U0001034A>;<U00010380>..<U0001039D>;/
<U0001039F>..<U000103C3>;<U000103C8>..<U000103D5>;/
<U00010400>..<U0001049D>;<U000104A0>..<U000104A9>;/
<U00010800>..<U00010805>;<U00010808>;<U0001080A>..<U00010835>;/
<U00010837>..<U00010838>;<U0001083C>;<U0001083F>;/
<U00010900>..<U00010919>;<U0001091F>;<U00010A00>..<U00010A03>;/
<U00010A05>..<U00010A06>;<U00010A0C>..<U00010A13>;/
<U00010A15>..<U00010A17>;<U00010A19>..<U00010A33>;/

```
    <U00010A38>..<U00010A3A>;<U00010A3F>..<U00010A47>;/
    <U00010A50>..<U00010A58>;<U00012000>..<U0001236E>;/
    <U00012400>..<U00012462>;<U00012470>..<U00012473>;/
    <U0001D000>..<U0001D0F5>;<U0001D100>..<U0001D126>;/
    <U0001D129>..<U0001D1DD>;<U0001D200>..<U0001D245>;/
    <U0001D300>..<U0001D356>;<U0001D360>..<U0001D371>;/
    <U0001D400>..<U0001D454>;<U0001D456>..<U0001D49C>;/
    <U0001D49E>..<U0001D49F>;<U0001D4A2>;<U0001D4A5>..<U0001D4A6>;/
    <U0001D4A9>..<U0001D4AC>;<U0001D4AE>..<U0001D4B9>;<U0001D4BB>;/
    <U0001D4BD>..<U0001D4C3>;<U0001D4C5>..<U0001D505>;/
    <U0001D507>..<U0001D50A>;<U0001D50D>..<U0001D514>;/
    <U0001D516>..<U0001D51C>;<U0001D51E>..<U0001D539>;/
    <U0001D53B>..<U0001D53E>;<U0001D540>..<U0001D544>;<U0001D546>;/
    <U0001D54A>..<U0001D550>;<U0001D552>..<U0001D6A5>;/
    <U0001D6A8>..<U0001D7CB>;<U0001D7CE>..<U0001D7FF>;/
    <U0001F000>..<U0001F02B>;<U0001F030>..<U0001F093>;/
    <U00020000>..<U0002A6D6>;<U0002F800>..<U0002FA1D>;<U000E0001>;/
    <U000E0020>..<U000E007F>;<U000E0100>..<U000E01EF>;/
    <U000F0000>..<U000FFFFD>;<U00100000>..<U0010FFFD>

print /
    <U0020>..<U007E>;<U00A0>..<U0377>;<U037A>..<U037E>;/
    <U0384>..<U038A>;<U038C>;<U038E>..<U03A1>;<U03A3>..<U0486>;/
    <U0488>..<U0523>;<U0531>..<U0556>;<U0559>..<U055F>;/
    <U0561>..<U0587>;<U0589>..<U058A>;<U0591>..<U05C7>;<U05D0>..<U05EA>;/
    <U05F0>..<U05F4>;<U0600>..<U0603>;<U0606>..<U061B>;/
    <U061E>..<U061F>;<U0621>..<U065E>;<U0660>..<U070D>;/
    <U070F>..<U074A>;<U074D>..<U07B1>;<U07C0>..<U07FA>;/
    <U0901>..<U0939>;<U093C>..<U094D>;<U0950>..<U0954>;<U0958>..<U0972>;/
    <U097B>..<U097F>;<U0981>..<U0983>;<U0985>..<U098C>;<U098F>..<U0990>;/
    <U0993>..<U09A8>;<U09AA>..<U09B0>;<U09B2>;<U09B6>..<U09B9>;/
    <U09BC>..<U09C4>;<U09C7>..<U09C8>;<U09CB>..<U09CE>;<U09D7>;/
    <U09DC>..<U09DD>;<U09DF>..<U09E3>;<U09E6>..<U09FA>;<U0A01>..<U0A03>;/
    <U0A05>..<U0A0A>;<U0A0F>..<U0A10>;<U0A13>..<U0A28>;<U0A2A>..<U0A30>;/
    <U0A32>..<U0A33>;<U0A35>..<U0A36>;<U0A38>..<U0A39>;<U0A3C>;/
    <U0A3E>..<U0A42>;<U0A47>..<U0A48>;<U0A4B>..<U0A4D>;<U0A51>;/
    <U0A59>..<U0A5C>;/
    <U0A5E>;<U0A66>..<U0A75>;<U0A81>..<U0A83>;<U0A85>..<U0A8D>;/
    <U0A8F>..<U0A91>;<U0A93>..<U0AA8>;<U0AAA>..<U0AB0>;<U0AB2>..<U0AB3>;/
    <U0AB5>..<U0AB9>;<U0ABC>..<U0AC5>;<U0AC7>..<U0AC9>;<U0ACB>..<U0ACD>;/
    <U0AD0>;<U0AE0>..<U0AE3>;<U0AE6>..<U0AEF>;<U0AF1>;<U0B01>..<U0B03>;/
    <U0B05>..<U0B0C>;<U0B0F>..<U0B10>;<U0B13>..<U0B28>;<U0B2A>..<U0B30>;/
    <U0B32>..<U0B33>;<U0B35>..<U0B39>;<U0B3C>..<U0B44>;<U0B47>..<U0B48>;/
    <U0B4B>..<U0B4D>;<U0B56>..<U0B57>;<U0B5C>..<U0B5D>;<U0B5F>..<U0B63>;/
    <U0B66>..<U0B71>;<U0B82>..<U0B83>;<U0B85>..<U0B8A>;<U0B8E>..<U0B90>;/
    <U0B92>..<U0B95>;<U0B99>..<U0B9A>;<U0B9C>;<U0B9E>..<U0B9F>;/
    <U0BA3>..<U0BA4>;<U0BA8>..<U0BAA>;<U0BAE>..<U0BB9>;<U0BBE>..<U0BC2>;/
    <U0BC6>..<U0BC8>;<U0BCA>..<U0BCD>;<U0BD0>;<U0BD7>;<U0BE6>..<U0BFA>;/
    <U0C01>..<U0C03>;<U0C05>..<U0C0C>;<U0C0E>..<U0C10>;<U0C12>..<U0C28>;/
    <U0C2A>..<U0C33>;<U0C35>..<U0C39>;<U0C3D>..<U0C44>;<U0C46>..<U0C48>;/
    <U0C4A>..<U0C4D>;<U0C55>..<U0C56>;<U0C58>..<U0C59>;<U0C60>..<U0C63>;/
    <U0C66>..<U0C6F>;<U0C78>..<U0C7F>;/
    <U0C82>..<U0C83>;<U0C85>..<U0C8C>;<U0C8E>..<U0C90>;<U0C92>..<U0CA8>;/
    <U0CAA>..<U0CB3>;<U0CB5>..<U0CB9>;<U0CBC>..<U0CC4>;<U0CC6>..<U0CC8>;/
    <U0CCA>..<U0CCD>;<U0CD5>..<U0CD6>;<U0CDE>;<U0CE0>..<U0CE3>;/
    <U0CE6>..<U0CEF>;<U0CF1>..<U0CF2>;<U0D02>..<U0D03>;<U0D05>..<U0D0C>;/
    <U0D0E>..<U0D10>;<U0D12>..<U0D28>;<U0D2A>..<U0D39>;<U0D3D>..<U0D44>;/
    <U0D46>..<U0D48>;<U0D4A>..<U0D4D>;<U0D57>;<U0D60>..<U0D63>;/
    <U0D66>..<U0D75>;<U0D79>..<U0D7F>;<U0D82>..<U0D83>;<U0D85>..<U0D96>;/
    <U0D9A>..<U0DB1>;/
    <U0DB3>..<U0DBB>;<U0DBD>;<U0DC0>..<U0DC6>;<U0DCA>;<U0DCF>..<U0DD4>;/
    <U0DD6>;<U0DD8>..<U0DDF>;<U0DF2>..<U0DF4>;<U0E01>..<U0E3A>;/
    <U0E3F>..<U0E5B>;<U0E81>..<U0E82>;<U0E84>;<U0E87>..<U0E88>;<U0E8A>;/
    <U0E8D>;<U0E94>..<U0E97>;<U0E99>..<U0E9F>;<U0EA1>..<U0EA3>;<U0EA5>;/
    <U0EA7>;<U0EAA>..<U0EAB>;<U0EAD>..<U0EB9>;<U0EBB>..<U0EBD>;/
    <U0EC0>..<U0EC4>;<U0EC6>;<U0EC8>..<U0ECD>;<U0ED0>..<U0ED9>;/
    <U0EDC>..<U0EDD>;<U0F00>..<U0F47>;<U0F49>..<U0F6C>;<U0F71>..<U0F8B>;/
    <U0F90>..<U0F97>;<U0F99>..<U0FBC>;<U0FBE>..<U0FCC>;<U0FCE>..<U0FD4>;/
    <U1000>..<U102A>;<U102B>..<U103F>;<U1040>..<U1099>;<U109E>;<U109F>;/
```

<U10A0>..<U10C5>;<U10D0>..<U10FC>;/
<U1100>..<U1159>;<U115F>..<U11A2>;<U11A8>..<U11F9>;<U1200>..<U1248>;/
<U124A>..<U124D>;<U1250>..<U1256>;<U1258>;<U125A>..<U125D>;/
<U1260>..<U1288>;<U128A>..<U128D>;<U1290>..<U12B0>;<U12B2>..<U12B5>;/
<U12B8>..<U12BE>;<U12C0>;<U12C2>..<U12C5>;<U12C8>..<U12D6>;/
<U12D8>..<U1310>;<U1312>..<U1315>;<U1318>..<U135A>;<U135F>..<U137C>;/
<U1380>..<U1399>;<U13A0>..<U13F4>;<U1401>..<U1676>;<U1680>..<U169C>;/
<U16A0>..<U16F0>;<U1700>..<U170C>;<U170E>..<U1714>;<U1720>..<U1736>;/
<U1740>..<U1753>;<U1760>..<U176C>;<U176E>..<U1770>;<U1772>..<U1773>;/
<U1780>..<U17DD>;<U17E0>..<U17E9>;<U17F0>..<U17F9>;<U1800>..<U180E>;/
<U1810>..<U1819>;<U1820>..<U1877>;<U1880>..<U18AA>;<U1900>..<U191C>;/
<U1920>..<U192B>;<U1930>..<U193B>;<U1940>;<U1944>..<U196D>;/
<U1970>..<U1974>;<U1980>..<U19A9>;<U19B0>..<U19C9>;<U19D0>..<U19D9>;/
<U19DE>..<U1A1B>;<U1A1E>..<U1A1F>;<U1B00>..<U1B4B>;<U1B50>..<U1B7C>;/
<U1B80>..<U1BAA>;<U1BAE>..<U1BB9>;<U1C00>..<U1C37>;<U1C3B>..<U1C49>;/
<U1C4D>..<U1C7F>;/
<U1D00>..<U1DE6>;<U1DFE>..<U1E9F>;<U1EA0>..<U1EFF>;<U1F00>..<U1F15>;/
<U1F18>..<U1F1D>;<U1F20>..<U1F45>;<U1F48>..<U1F4D>;<U1F50>..<U1F57>;/
<U1F59>;<U1F5B>;<U1F5D>;<U1F5F>..<U1F7D>;<U1F80>..<U1FB4>;/
<U1FB6>..<U1FC4>;<U1FC6>..<U1FD3>;<U1FD6>..<U1FDB>;<U1FDD>..<U1FEF>;/
<U1FF2>..<U1FF4>;<U1FF6>..<U1FFE>;<U2000>..<U2027>;<U202A>..<U2064>;/
<U206A>..<U2071>;<U2074>..<U208E>;<U2090>..<U2094>;<U20A0>..<U20B5>;/
<U20D0>..<U20F0>;<U2100>..<U214F>;<U2153>..<U2188>;<U2190>..<U23E7>;/
<U2400>..<U2426>;<U2440>..<U244A>;<U2460>..<U269D>;<U26A0>..<U26C3>;/
<U2701>..<U2704>;<U2706>..<U2709>;<U270C>..<U2727>;<U2729>..<U274B>;/
<U274D>;<U274F>..<U2752>;<U2756>;<U2758>..<U275E>;<U2761>..<U2794>;/
<U2798>..<U27AF>;<U27B1>..<U27BE>;<U27C0>..<U27CA>;<U27CC>;/
<U27D0>..<U27EF>;/
<U27F0>..<U2B4C>;<U2B50>..<U2B54>;<U2C00>..<U2C2E>;<U2C30>..<U2C5E>;/
<U2C60>..<U2C6F>;<U2C71>..<U2C7D>;<U2C80>..<U2CEA>;<U2CF9>..<U2D25>;/
<U2D30>..<U2D65>;<U2D6F>;<U2D80>..<U2D96>;<U2DA0>..<U2DA6>;/
<U2DA8>..<U2DAE>;<U2DB0>..<U2DB6>;<U2DB8>..<U2DBE>;<U2DC0>..<U2DC6>;/
<U2DC8>..<U2DCE>;<U2DD0>..<U2DD6>;<U2DD8>..<U2DDE>;<U2DE0>..<U2E30>;/
<U2E80>..<U2E99>;<U2E9B>..<U2EF3>;<U2F00>..<U2FD5>;/
<U2FF0>..<U2FFB>;<U3000>..<U303F>;<U3041>..<U3096>;<U3099>..<U30FF>;/
<U3105>..<U312D>;<U3131>..<U318E>;<U3190>..<U31B7>;<U31C0>..<U31CF>;/
<U31F0>..<U321E>;<U3220>..<U3243>;<U3250>..<U32FE>;<U3300>..<U4DB5>;/
<U4DC0>..<U9FBB>;<UA000>..<UA48C>;<UA490>..<UA4C6>;<UA500>..<UA62B>;/
<UA640>..<UA65F>;<UA662>..<UA673>;<UA67C>..<UA697>;<UA700>..<UA78C>;/
<UA7FB>..<UA7FF>;<UA800>..<UA82B>;<UA840>..<UA877>;/
<UA880>..<UA8C4>;<UA8CE>..<UA8D9>;<UAC00>..<UD7A3>;/
<UA840>..<UA877>;<UA880>..<UA8C4>;<UA8CE>..<UA8D9>;<UA900>..<UA953>;/
<UA95F>;<UAA00>..<UAA36>;<UAA40>..<UAA4D>;<UAA50>..<UAA59>;/
<UAA5C>..<UAA5F>;/
<UE000>..<UFA2D>;<UFA30>..<UFA6A>;<UFA70>..<UFAD9>;<UFB00>..<UFB06>;/
<UFB13>..<UFB17>;<UFB1D>..<UFB36>;<UFB38>..<UFB3C>;<UFB3E>;/
<UFB40>..<UFB41>;<UFB43>..<UFB44>;<UFB46>..<UFBB1>;<UFBD3>..<UFD3F>;/
<UFD50>..<UFD8F>;<UFD92>..<UFDC7>;<UFDF0>..<UFDFD>;<UFE00>..<UFE19>;/
<UFE20>..<UFE26>;<UFE30>..<UFE52>;<UFE54>..<UFE66>;<UFE68>..<UFE6B>;/
<UFE70>..<UFE74>;<UFE76>..<UFEFC>;<UFEFF>;<UFF01>..<UFFBE>;/
<UFFC2>..<UFFC7>;<UFFCA>..<UFFCF>;<UFFD2>..<UFFD7>;<UFFDA>..<UFFDC>;/
<UFFE0>..<UFFE6>;<UFFE8>..<UFFEE>;<UFFF9>..<UFFFD>;/
<U00010000>..<U0001000B>;<U0001000D>..<U00010026>;/
<U00010028>..<U0001003A>;<U0001003C>..<U0001003D>;/
<U0001003F>..<U0001004D>;<U00010050>..<U0001005D>;/
<U00010080>..<U000100FA>;<U00010100>..<U00010102>;/
<U00010107>..<U00010133>;<U00010137>..<U0001018A>;/
<U00010190>..<U0001019B>;<U000101D0>..<U000101FD>;/
<U00010280>..<U0001029C>;<U000102A0>..<U000102D0>;/
<U00010300>..<U0001031E>;<U00010320>..<U00010323>;/
<U00010330>..<U0001034A>;<U00010380>..<U0001039D>;/
<U0001039F>..<U000103C3>;<U000103C8>..<U000103D5>;/
<U00010400>..<U0001049D>;<U000104A0>..<U000104A9>;/
<U00010800>..<U00010805>;<U00010808>;<U0001080A>..<U00010835>;/
<U00010837>..<U00010838>;<U0001083C>;<U0001083F>;/
<U00010900>..<U00010919>;<U0001091F>;<U00010A00>..<U00010A03>;/
<U00010A05>..<U00010A06>;<U00010A0C>..<U00010A13>;/
<U00010A15>..<U00010A17>;<U00010A19>..<U00010A33>;/
<U00010A38>..<U00010A3A>;<U00010A3F>..<U00010A47>;/

```
   <U00010A50>..<U00010A58>;<U00012000>..<U0001236E>;/
   <U00012400>..<U00012462>;<U00012470>..<U00012473>;/
   <U0001D000>..<U0001D0F5>;<U0001D100>..<U0001D126>;/
   <U0001D129>..<U0001D1DD>;<U0001D200>..<U0001D245>;/
   <U0001D300>..<U0001D356>;<U0001D360>..<U0001D371>;/
   <U0001D400>..<U0001D454>;<U0001D456>..<U0001D49C>;/
   <U0001D49E>..<U0001D49F>;<U0001D4A2>;<U0001D4A5>..<U0001D4A6>;/
   <U0001D4A9>..<U0001D4AC>;<U0001D4AE>..<U0001D4B9>;<U0001D4BB>;/
   <U0001D4BD>..<U0001D4C3>;<U0001D4C5>..<U0001D505>;/
   <U0001D507>..<U0001D50A>;<U0001D50D>..<U0001D514>;/
   <U0001D516>..<U0001D51C>;<U0001D51E>..<U0001D539>;/
   <U0001D53B>..<U0001D53E>;<U0001D540>..<U0001D544>;<U0001D546>;/
   <U0001D54A>..<U0001D550>;<U0001D552>..<U0001D6A5>;/
   <U0001D6A8>..<U0001D7CB>;<U0001D7CE>..<U0001D7FF>;/
   <U0001F000>..<U0001F02B>;<U0001F030>..<U0001F093>;/
   <U00020000>..<U0002A6D6>;<U0002F800>..<U0002FA1D>;<U000E0001>;/
   <U000E0020>..<U000E007F>;<U000E0100>..<U000E01EF>;/
   <U000F0000>..<U000FFFFD>;<U00100000>..<U0010FFFD>

% The "xdigit" class must only contain the BASIC LATIN digits and A-F, a-f,
% says ISO C 99 (sections 7.25.2.1.12 and 6.4.4.1).
xdigit /
   <U0030>..<U0039>;<U0041>..<U0046>;<U0061>..<U0066>

blank /
   <U0009>;<U0020>;<U1680>;<U180E>;<U2000>..<U2006>;<U2008>..<U200A>;/
   <U205F>;<U3000>

toupper /
   (<U0061>,<U0041>);(<U0062>,<U0042>);(<U0063>,<U0043>);(<U0064>,<U0044>);/
   (<U0065>,<U0045>);(<U0066>,<U0046>);(<U0067>,<U0047>);(<U0068>,<U0048>);/
   (<U0069>,<U0049>);(<U006A>,<U004A>);(<U006B>,<U004B>);(<U006C>,<U004C>);/
   (<U006D>,<U004D>);(<U006E>,<U004E>);(<U006F>,<U004F>);(<U0070>,<U0050>);/
   (<U0071>,<U0051>);(<U0072>,<U0052>);(<U0073>,<U0053>);(<U0074>,<U0054>);/
   (<U0075>,<U0055>);(<U0076>,<U0056>);(<U0077>,<U0057>);(<U0078>,<U0058>);/
   (<U0079>,<U0059>);(<U007A>,<U005A>);(<U00B5>,<U039C>);(<U00E0>,<U00C0>);/
   (<U00E1>,<U00C1>);(<U00E2>,<U00C2>);(<U00E3>,<U00C3>);(<U00E4>,<U00C4>);/
   (<U00E5>,<U00C5>);(<U00E6>,<U00C6>);(<U00E7>,<U00C7>);(<U00E8>,<U00C8>);/
   (<U00E9>,<U00C9>);(<U00EA>,<U00CA>);(<U00EB>,<U00CB>);(<U00EC>,<U00CC>);/
   (<U00ED>,<U00CD>);(<U00EE>,<U00CE>);(<U00EF>,<U00CF>);(<U00F0>,<U00D0>);/
   (<U00F1>,<U00D1>);(<U00F2>,<U00D2>);(<U00F3>,<U00D3>);(<U00F4>,<U00D4>);/
   (<U00F5>,<U00D5>);(<U00F6>,<U00D6>);(<U00F8>,<U00D8>);(<U00F9>,<U00D9>);/
   (<U00FA>,<U00DA>);(<U00FB>,<U00DB>);(<U00FC>,<U00DC>);(<U00FD>,<U00DD>);/
   (<U00FE>,<U00DE>);(<U00FF>,<U0178>);(<U0101>,<U0100>);(<U0103>,<U0102>);/
   (<U0105>,<U0104>);(<U0107>,<U0106>);(<U0109>,<U0108>);(<U010B>,<U010A>);/
   (<U010D>,<U010C>);(<U010F>,<U010E>);(<U0111>,<U0110>);(<U0113>,<U0112>);/
   (<U0115>,<U0114>);(<U0117>,<U0116>);(<U0119>,<U0118>);(<U011B>,<U011A>);/
   (<U011D>,<U011C>);(<U011F>,<U011E>);(<U0121>,<U0120>);(<U0123>,<U0122>);/
   (<U0125>,<U0124>);(<U0127>,<U0126>);(<U0129>,<U0128>);(<U012B>,<U012A>);/
   (<U012D>,<U012C>);(<U012F>,<U012E>);(<U0131>,<U0049>);(<U0133>,<U0132>);/
   (<U0135>,<U0134>);(<U0137>,<U0136>);(<U013A>,<U0139>);(<U013C>,<U013B>);/
   (<U013E>,<U013D>);(<U0140>,<U013F>);(<U0142>,<U0141>);(<U0144>,<U0143>);/
   (<U0146>,<U0145>);(<U0148>,<U0147>);(<U014B>,<U014A>);(<U014D>,<U014C>);/
   (<U014F>,<U014E>);(<U0151>,<U0150>);(<U0153>,<U0152>);(<U0155>,<U0154>);/
   (<U0157>,<U0156>);(<U0159>,<U0158>);(<U015B>,<U015A>);(<U015D>,<U015C>);/
   (<U015F>,<U015E>);(<U0161>,<U0160>);(<U0163>,<U0162>);(<U0165>,<U0164>);/
   (<U0167>,<U0166>);(<U0169>,<U0168>);(<U016B>,<U016A>);(<U016D>,<U016C>);/
   (<U016F>,<U016E>);(<U0171>,<U0170>);(<U0173>,<U0172>);(<U0175>,<U0174>);/
   (<U0177>,<U0176>);(<U017A>,<U0179>);(<U017C>,<U017B>);(<U017E>,<U017D>);/
   (<U017F>,<U0053>);(<U0180>,<U0243>);(<U0183>,<U0182>);(<U0185>,<U0184>);/
   (<U0188>,<U0187>);(<U018C>,<U018B>);(<U0192>,<U0191>);(<U0195>,<U01F6>);/
   (<U0199>,<U0198>);(<U019A>,<U023D>);(<U019E>,<U0220>);(<U01A1>,<U01A0>);/
   (<U01A3>,<U01A2>);(<U01A5>,<U01A4>);(<U01A8>,<U01A7>);(<U01AD>,<U01AC>);/
   (<U01B0>,<U01AF>);(<U01B4>,<U01B3>);(<U01B6>,<U01B5>);(<U01B9>,<U01B8>);/
   (<U01BD>,<U01BC>);(<U01BF>,<U01F7>);(<U01C5>,<U01C4>);(<U01C6>,<U01C4>);/
   (<U01C8>,<U01C7>);(<U01C9>,<U01C7>);(<U01CB>,<U01CA>);(<U01CC>,<U01CA>);/
   (<U01CE>,<U01CD>);(<U01D0>,<U01CF>);(<U01D2>,<U01D1>);(<U01D4>,<U01D3>);/
   (<U01D6>,<U01D5>);(<U01D8>,<U01D7>);(<U01DA>,<U01D9>);(<U01DC>,<U01DB>);/
   (<U01DD>,<U018E>);(<U01DF>,<U01DE>);(<U01E1>,<U01E0>);(<U01E3>,<U01E2>);/
```

```
(<U01E5>,<U01E4>);(<U01E7>,<U01E6>);(<U01E9>,<U01E8>);(<U01EB>,<U01EA>);/
(<U01ED>,<U01EC>);(<U01EF>,<U01EE>);(<U01F2>,<U01F1>);(<U01F3>,<U01F1>);/
(<U01F5>,<U01F4>);(<U01F9>,<U01F8>);(<U01FB>,<U01FA>);(<U01FD>,<U01FC>);/
(<U01FF>,<U01FE>);(<U0201>,<U0200>);(<U0203>,<U0202>);(<U0205>,<U0204>);/
(<U0207>,<U0206>);(<U0209>,<U0208>);(<U020B>,<U020A>);(<U020D>,<U020C>);/
(<U020F>,<U020E>);(<U0211>,<U0210>);(<U0213>,<U0212>);(<U0215>,<U0214>);/
(<U0217>,<U0216>);(<U0219>,<U0218>);(<U021B>,<U021A>);(<U021D>,<U021C>);/
(<U021F>,<U021E>);(<U0223>,<U0222>);(<U0225>,<U0224>);(<U0227>,<U0226>);/
(<U0229>,<U0228>);(<U022B>,<U022A>);(<U022D>,<U022C>);(<U022F>,<U022E>);/
(<U0231>,<U0230>);(<U0233>,<U0232>);(<U023C>,<U023B>);(<U0242>,<U0241>);/
(<U0247>,<U0246>);(<U0249>,<U0248>);(<U024B>,<U024A>);(<U024D>,<U024C>);/
(<U024F>,<U024E>);(<U0250>,<U2C6F>);(<U0251>,<U2C6D>);(<U0253>,<U0181>);/
(<U0254>,<U0186>);(<U0256>,<U0189>);/
(<U0257>,<U018A>);(<U0259>,<U018F>);(<U025B>,<U0190>);(<U0260>,<U0193>);/
(<U0263>,<U0194>);(<U0268>,<U0197>);(<U0269>,<U0196>);(<U026B>,<U2C62>);/
(<U026F>,<U019C>);(<U0271>,<U2C6E>);(<U0272>,<U019D>);(<U0275>,<U019F>);/
(<U027D>,<U2C64>);/
(<U0280>,<U01A6>);(<U0283>,<U01A9>);(<U0288>,<U01AE>);(<U0289>,<U0244>);/
(<U028A>,<U01B1>);(<U028B>,<U01B2>);(<U028C>,<U0245>);(<U0292>,<U01B7>);/
(<U0345>,<U0399>);(<U0371>,<U0370>);(<U0373>,<U0372>);(<U0377>,<U0376>);/
(<U037B>,<U03FD>);(<U037C>,<U03FE>);(<U037D>,<U03FF>);/
(<U03AC>,<U0386>);(<U03AD>,<U0388>);(<U03AE>,<U0389>);(<U03AF>,<U038A>);/
(<U03B1>,<U0391>);(<U03B2>,<U0392>);(<U03B3>,<U0393>);(<U03B4>,<U0394>);/
(<U03B5>,<U0395>);(<U03B6>,<U0396>);(<U03B7>,<U0397>);(<U03B8>,<U0398>);/
(<U03B9>,<U0399>);(<U03BA>,<U039A>);(<U03BB>,<U039B>);(<U03BC>,<U039C>);/
(<U03BD>,<U039D>);(<U03BE>,<U039E>);(<U03BF>,<U039F>);(<U03C0>,<U03A0>);/
(<U03C1>,<U03A1>);(<U03C2>,<U03A3>);(<U03C3>,<U03A3>);(<U03C4>,<U03A4>);/
(<U03C5>,<U03A5>);(<U03C6>,<U03A6>);(<U03C7>,<U03A7>);(<U03C8>,<U03A8>);/
(<U03C9>,<U03A9>);(<U03CA>,<U03AA>);(<U03CB>,<U03AB>);(<U03CC>,<U038C>);/
(<U03CD>,<U038E>);(<U03CE>,<U038F>);(<U03D0>,<U0392>);(<U03D1>,<U0398>);/
(<U03D5>,<U03A6>);(<U03D6>,<U03A0>);(<U03D9>,<U03D8>);(<U03DB>,<U03DA>);/
(<U03DD>,<U03DC>);(<U03DF>,<U03DE>);(<U03E1>,<U03E0>);(<U03E3>,<U03E2>);/
(<U03E5>,<U03E4>);(<U03E7>,<U03E6>);(<U03E9>,<U03E8>);(<U03EB>,<U03EA>);/
(<U03ED>,<U03EC>);(<U03EF>,<U03EE>);(<U03F0>,<U039A>);(<U03F1>,<U03A1>);/
(<U03F2>,<U03F9>);(<U03F5>,<U0395>);(<U03F8>,<U03F7>);(<U03FB>,<U03FA>);/
(<U0430>,<U0410>);(<U0431>,<U0411>);(<U0432>,<U0412>);(<U0433>,<U0413>);/
(<U0434>,<U0414>);(<U0435>,<U0415>);(<U0436>,<U0416>);(<U0437>,<U0417>);/
(<U0438>,<U0418>);(<U0439>,<U0419>);(<U043A>,<U041A>);(<U043B>,<U041B>);/
(<U043C>,<U041C>);(<U043D>,<U041D>);(<U043E>,<U041E>);(<U043F>,<U041F>);/
(<U0440>,<U0420>);(<U0441>,<U0421>);(<U0442>,<U0422>);(<U0443>,<U0423>);/
(<U0444>,<U0424>);(<U0445>,<U0425>);(<U0446>,<U0426>);(<U0447>,<U0427>);/
(<U0448>,<U0428>);(<U0449>,<U0429>);(<U044A>,<U042A>);(<U044B>,<U042B>);/
(<U044C>,<U042C>);(<U044D>,<U042D>);(<U044E>,<U042E>);(<U044F>,<U042F>);/
(<U0450>,<U0400>);(<U0451>,<U0401>);(<U0452>,<U0402>);(<U0453>,<U0403>);/
(<U0454>,<U0404>);(<U0455>,<U0405>);(<U0456>,<U0406>);(<U0457>,<U0407>);/
(<U0458>,<U0408>);(<U0459>,<U0409>);(<U045A>,<U040A>);(<U045B>,<U040B>);/
(<U045C>,<U040C>);(<U045D>,<U040D>);(<U045E>,<U040E>);(<U045F>,<U040F>);/
(<U0461>,<U0460>);(<U0463>,<U0462>);(<U0465>,<U0464>);(<U0467>,<U0466>);/
(<U0469>,<U0468>);(<U046B>,<U046A>);(<U046D>,<U046C>);(<U046F>,<U046E>);/
(<U0471>,<U0470>);(<U0473>,<U0472>);(<U0475>,<U0474>);(<U0477>,<U0476>);/
(<U0479>,<U0478>);(<U047B>,<U047A>);(<U047D>,<U047C>);(<U047F>,<U047E>);/
(<U0481>,<U0480>);(<U048B>,<U048A>);(<U048D>,<U048C>);(<U048F>,<U048E>);/
(<U0491>,<U0490>);(<U0493>,<U0492>);(<U0495>,<U0494>);(<U0497>,<U0496>);/
(<U0499>,<U0498>);(<U049B>,<U049A>);(<U049D>,<U049C>);(<U049F>,<U049E>);/
(<U04A1>,<U04A0>);(<U04A3>,<U04A2>);(<U04A5>,<U04A4>);(<U04A7>,<U04A6>);/
(<U04A9>,<U04A8>);(<U04AB>,<U04AA>);(<U04AD>,<U04AC>);(<U04AF>,<U04AE>);/
(<U04B1>,<U04B0>);(<U04B3>,<U04B2>);(<U04B5>,<U04B4>);(<U04B7>,<U04B6>);/
(<U04B9>,<U04B8>);(<U04BB>,<U04BA>);(<U04BD>,<U04BC>);(<U04BF>,<U04BE>);/
(<U04C2>,<U04C1>);(<U04C4>,<U04C3>);(<U04C6>,<U04C5>);(<U04C8>,<U04C7>);/
(<U04CA>,<U04C9>);(<U04CC>,<U04CB>);(<U04CE>,<U04CD>);(<U04CF>,<U04C0>);/
(<U04D1>,<U04D0>);(<U04D3>,<U04D2>);(<U04D5>,<U04D4>);(<U04D7>,<U04D6>);/
(<U04D9>,<U04D8>);(<U04DB>,<U04DA>);(<U04DD>,<U04DC>);(<U04DF>,<U04DE>);/
(<U04E1>,<U04E0>);(<U04E3>,<U04E2>);(<U04E5>,<U04E4>);(<U04E7>,<U04E6>);/
(<U04E9>,<U04E8>);(<U04EB>,<U04EA>);(<U04ED>,<U04EC>);(<U04EF>,<U04EE>);/
(<U04F1>,<U04F0>);(<U04F3>,<U04F2>);(<U04F5>,<U04F4>);(<U04F7>,<U04F6>);/
(<U04F9>,<U04F8>);(<U04FB>,<U04FA>);(<U04FD>,<U04FC>);(<U04FF>,<U04FE>);/
(<U0501>,<U0500>);(<U0503>,<U0502>);(<U0505>,<U0504>);(<U0507>,<U0506>);/
(<U0509>,<U0508>);(<U050B>,<U050A>);(<U050D>,<U050C>);(<U050F>,<U050E>);/
(<U0511>,<U0510>);(<U0513>,<U0512>);(<U0515>,<U0514>);(<U0517>,<U0516>);/
```

```
(<U0519>,<U0518>);(<U051B>,<U051A>);(<U051D>,<U051C>);(<U051F>,<U051E>);/
(<U0521>,<U0520>);(<U0523>,<U0522>);(<U0561>,<U0531>);(<U0562>,<U0532>);/
(<U0563>,<U0533>);(<U0564>,<U0534>);(<U0565>,<U0535>);(<U0566>,<U0536>);/
(<U0567>,<U0537>);(<U0568>,<U0538>);(<U0569>,<U0539>);(<U056A>,<U053A>);/
(<U056B>,<U053B>);(<U056C>,<U053C>);(<U056D>,<U053D>);(<U056E>,<U053E>);/
(<U056F>,<U053F>);(<U0570>,<U0540>);(<U0571>,<U0541>);(<U0572>,<U0542>);/
(<U0573>,<U0543>);(<U0574>,<U0544>);(<U0575>,<U0545>);(<U0576>,<U0546>);/
(<U0577>,<U0547>);(<U0578>,<U0548>);(<U0579>,<U0549>);(<U057A>,<U054A>);/
(<U057B>,<U054B>);(<U057C>,<U054C>);(<U057D>,<U054D>);(<U057E>,<U054E>);/
(<U057F>,<U054F>);(<U0580>,<U0550>);(<U0581>,<U0551>);(<U0582>,<U0552>);/
(<U0583>,<U0553>);(<U0584>,<U0554>);(<U0585>,<U0555>);(<U0586>,<U0556>);/
(<U1D7D>,<U2C63>);(<U1E01>,<U1E00>);(<U1E03>,<U1E02>);(<U1E05>,<U1E04>);/
(<U1E07>,<U1E06>);(<U1E09>,<U1E08>);(<U1E0B>,<U1E0A>);(<U1E0D>,<U1E0C>);/
(<U1E0F>,<U1E0E>);(<U1E11>,<U1E10>);(<U1E13>,<U1E12>);(<U1E15>,<U1E14>);/
(<U1E17>,<U1E16>);(<U1E19>,<U1E18>);(<U1E1B>,<U1E1A>);(<U1E1D>,<U1E1C>);/
(<U1E1F>,<U1E1E>);(<U1E21>,<U1E20>);(<U1E23>,<U1E22>);(<U1E25>,<U1E24>);/
(<U1E27>,<U1E26>);(<U1E29>,<U1E28>);(<U1E2B>,<U1E2A>);(<U1E2D>,<U1E2C>);/
(<U1E2F>,<U1E2E>);(<U1E31>,<U1E30>);(<U1E33>,<U1E32>);(<U1E35>,<U1E34>);/
(<U1E37>,<U1E36>);(<U1E39>,<U1E38>);(<U1E3B>,<U1E3A>);(<U1E3D>,<U1E3C>);/
(<U1E3F>,<U1E3E>);(<U1E41>,<U1E40>);(<U1E43>,<U1E42>);(<U1E45>,<U1E44>);/
(<U1E47>,<U1E46>);(<U1E49>,<U1E48>);(<U1E4B>,<U1E4A>);(<U1E4D>,<U1E4C>);/
(<U1E4F>,<U1E4E>);(<U1E51>,<U1E50>);(<U1E53>,<U1E52>);(<U1E55>,<U1E54>);/
(<U1E57>,<U1E56>);(<U1E59>,<U1E58>);(<U1E5B>,<U1E5A>);(<U1E5D>,<U1E5C>);/
(<U1E5F>,<U1E5E>);(<U1E61>,<U1E60>);(<U1E63>,<U1E62>);(<U1E65>,<U1E64>);/
(<U1E67>,<U1E66>);(<U1E69>,<U1E68>);(<U1E6B>,<U1E6A>);(<U1E6D>,<U1E6C>);/
(<U1E6F>,<U1E6E>);(<U1E71>,<U1E70>);(<U1E73>,<U1E72>);(<U1E75>,<U1E74>);/
(<U1E77>,<U1E76>);(<U1E79>,<U1E78>);(<U1E7B>,<U1E7A>);(<U1E7D>,<U1E7C>);/
(<U1E7F>,<U1E7E>);(<U1E81>,<U1E80>);(<U1E83>,<U1E82>);(<U1E85>,<U1E84>);/
(<U1E87>,<U1E86>);(<U1E89>,<U1E88>);(<U1E8B>,<U1E8A>);(<U1E8D>,<U1E8C>);/
(<U1E8F>,<U1E8E>);(<U1E91>,<U1E90>);(<U1E93>,<U1E92>);(<U1E95>,<U1E94>);/
(<U1E9B>,<U1E60>);(<U1EA1>,<U1EA0>);(<U1EA3>,<U1EA2>);(<U1EA5>,<U1EA4>);/
(<U1EA7>,<U1EA6>);(<U1EA9>,<U1EA8>);(<U1EAB>,<U1EAA>);(<U1EAD>,<U1EAC>);/
(<U1EAF>,<U1EAE>);(<U1EB1>,<U1EB0>);(<U1EB3>,<U1EB2>);(<U1EB5>,<U1EB4>);/
(<U1EB7>,<U1EB6>);(<U1EB9>,<U1EB8>);(<U1EBB>,<U1EBA>);(<U1EBD>,<U1EBC>);/
(<U1EBF>,<U1EBE>);(<U1EC1>,<U1EC0>);(<U1EC3>,<U1EC2>);(<U1EC5>,<U1EC4>);/
(<U1EC7>,<U1EC6>);(<U1EC9>,<U1EC8>);(<U1ECB>,<U1ECA>);(<U1ECD>,<U1ECC>);/
(<U1ECF>,<U1ECE>);(<U1ED1>,<U1ED0>);(<U1ED3>,<U1ED2>);(<U1ED5>,<U1ED4>);/
(<U1ED7>,<U1ED6>);(<U1ED9>,<U1ED8>);(<U1EDB>,<U1EDA>);(<U1EDD>,<U1EDC>);/
(<U1EDF>,<U1EDE>);(<U1EE1>,<U1EE0>);(<U1EE3>,<U1EE2>);(<U1EE5>,<U1EE4>);/
(<U1EE7>,<U1EE6>);(<U1EE9>,<U1EE8>);(<U1EEB>,<U1EEA>);(<U1EED>,<U1EEC>);/
(<U1EEF>,<U1EEE>);(<U1EF1>,<U1EF0>);(<U1EF3>,<U1EF2>);(<U1EF5>,<U1EF4>);/
(<U1EF7>,<U1EF6>);(<U1EF9>,<U1EF8>);(<U1EFB>,<U1EFA>);(<U1EFD>,<U1EFC>);/
(<U1EFF>,<U1EFE>);(<U1F00>,<U1F08>);(<U1F01>,<U1F09>);/
(<U1F02>,<U1F0A>);(<U1F03>,<U1F0B>);(<U1F04>,<U1F0C>);(<U1F05>,<U1F0D>);/
(<U1F06>,<U1F0E>);(<U1F07>,<U1F0F>);(<U1F10>,<U1F18>);(<U1F11>,<U1F19>);/
(<U1F12>,<U1F1A>);(<U1F13>,<U1F1B>);(<U1F14>,<U1F1C>);(<U1F15>,<U1F1D>);/
(<U1F20>,<U1F28>);(<U1F21>,<U1F29>);(<U1F22>,<U1F2A>);(<U1F23>,<U1F2B>);/
(<U1F24>,<U1F2C>);(<U1F25>,<U1F2D>);(<U1F26>,<U1F2E>);(<U1F27>,<U1F2F>);/
(<U1F30>,<U1F38>);(<U1F31>,<U1F39>);(<U1F32>,<U1F3A>);(<U1F33>,<U1F3B>);/
(<U1F34>,<U1F3C>);(<U1F35>,<U1F3D>);(<U1F36>,<U1F3E>);(<U1F37>,<U1F3F>);/
(<U1F40>,<U1F48>);(<U1F41>,<U1F49>);(<U1F42>,<U1F4A>);(<U1F43>,<U1F4B>);/
(<U1F44>,<U1F4C>);(<U1F45>,<U1F4D>);(<U1F51>,<U1F59>);(<U1F53>,<U1F5B>);/
(<U1F55>,<U1F5D>);(<U1F57>,<U1F5F>);(<U1F60>,<U1F68>);(<U1F61>,<U1F69>);/
(<U1F62>,<U1F6A>);(<U1F63>,<U1F6B>);(<U1F64>,<U1F6C>);(<U1F65>,<U1F6D>);/
(<U1F66>,<U1F6E>);(<U1F67>,<U1F6F>);(<U1F70>,<U1FBA>);(<U1F71>,<U1FBB>);/
(<U1F72>,<U1FC8>);(<U1F73>,<U1FC9>);(<U1F74>,<U1FCA>);(<U1F75>,<U1FCB>);/
(<U1F76>,<U1FDA>);(<U1F77>,<U1FDB>);(<U1F78>,<U1FF8>);(<U1F79>,<U1FF9>);/
(<U1F7A>,<U1FEA>);(<U1F7B>,<U1FEB>);(<U1F7C>,<U1FFA>);(<U1F7D>,<U1FFB>);/
(<U1F80>,<U1F88>);(<U1F81>,<U1F89>);(<U1F82>,<U1F8A>);(<U1F83>,<U1F8B>);/
(<U1F84>,<U1F8C>);(<U1F85>,<U1F8D>);(<U1F86>,<U1F8E>);(<U1F87>,<U1F8F>);/
(<U1F90>,<U1F98>);(<U1F91>,<U1F99>);(<U1F92>,<U1F9A>);(<U1F93>,<U1F9B>);/
(<U1F94>,<U1F9C>);(<U1F95>,<U1F9D>);(<U1F96>,<U1F9E>);(<U1F97>,<U1F9F>);/
(<U1FA0>,<U1FA8>);(<U1FA1>,<U1FA9>);(<U1FA2>,<U1FAA>);(<U1FA3>,<U1FAB>);/
(<U1FA4>,<U1FAC>);(<U1FA5>,<U1FAD>);(<U1FA6>,<U1FAE>);(<U1FA7>,<U1FAF>);/
(<U1FB0>,<U1FB8>);(<U1FB1>,<U1FB9>);(<U1FB3>,<U1FBC>);(<U1FBE>,<U0399>);/
(<U1FC3>,<U1FCC>);(<U1FD0>,<U1FD8>);(<U1FD1>,<U1FD9>);(<U1FE0>,<U1FE8>);/
(<U1FE1>,<U1FE9>);(<U1FE5>,<U1FEC>);(<U1FF3>,<U1FFC>);(<U214E>,<U2132>);/
(<U2170>,<U2160>);(<U2171>,<U2161>);(<U2172>,<U2162>);(<U2173>,<U2163>);/
(<U2174>,<U2164>);(<U2175>,<U2165>);(<U2176>,<U2166>);(<U2177>,<U2167>);/
```

(<U2178>,<U2168>);(<U2179>,<U2169>);(<U217A>,<U216A>);(<U217B>,<U216B>);/
(<U217C>,<U216C>);(<U217D>,<U216D>);(<U217E>,<U216E>);(<U217F>,<U216F>);/
(<U2184>,<U2183>);(<U24D0>,<U24B6>);(<U24D1>,<U24B7>);(<U24D2>,<U24B8>);/
(<U24D3>,<U24B9>);(<U24D4>,<U24BA>);(<U24D5>,<U24BB>);(<U24D6>,<U24BC>);/
(<U24D7>,<U24BD>);(<U24D8>,<U24BE>);(<U24D9>,<U24BF>);(<U24DA>,<U24C0>);/
(<U24DB>,<U24C1>);(<U24DC>,<U24C2>);(<U24DD>,<U24C3>);(<U24DE>,<U24C4>);/
(<U24DF>,<U24C5>);(<U24E0>,<U24C6>);(<U24E1>,<U24C7>);(<U24E2>,<U24C8>);/
(<U24E3>,<U24C9>);(<U24E4>,<U24CA>);(<U24E5>,<U24CB>);(<U24E6>,<U24CC>);/
(<U24E7>,<U24CD>);(<U24E8>,<U24CE>);(<U24E9>,<U24CF>);(<U2C30>,<U2C00>);/
(<U2C31>,<U2C01>);(<U2C32>,<U2C02>);(<U2C33>,<U2C03>);(<U2C34>,<U2C04>);/
(<U2C35>,<U2C05>);(<U2C36>,<U2C06>);(<U2C37>,<U2C07>);(<U2C38>,<U2C08>);/
(<U2C39>,<U2C09>);(<U2C3A>,<U2C0A>);(<U2C3B>,<U2C0B>);(<U2C3C>,<U2C0C>);/
(<U2C3D>,<U2C0D>);(<U2C3E>,<U2C0E>);(<U2C3F>,<U2C0F>);(<U2C40>,<U2C10>);/
(<U2C41>,<U2C11>);(<U2C42>,<U2C12>);(<U2C43>,<U2C13>);(<U2C44>,<U2C14>);/
(<U2C45>,<U2C15>);(<U2C46>,<U2C16>);(<U2C47>,<U2C17>);(<U2C48>,<U2C18>);/
(<U2C49>,<U2C19>);(<U2C4A>,<U2C1A>);(<U2C4B>,<U2C1B>);(<U2C4C>,<U2C1C>);/
(<U2C4D>,<U2C1D>);(<U2C4E>,<U2C1E>);(<U2C4F>,<U2C1F>);(<U2C50>,<U2C20>);/
(<U2C51>,<U2C21>);(<U2C52>,<U2C22>);(<U2C53>,<U2C23>);(<U2C54>,<U2C24>);/
(<U2C55>,<U2C25>);(<U2C56>,<U2C26>);(<U2C57>,<U2C27>);(<U2C58>,<U2C28>);/
(<U2C59>,<U2C29>);(<U2C5A>,<U2C2A>);(<U2C5B>,<U2C2B>);(<U2C5C>,<U2C2C>);/
(<U2C5D>,<U2C2D>);(<U2C5E>,<U2C2E>);(<U2C61>,<U2C60>);(<U2C65>,<U023A>);/
(<U2C66>,<U023E>);(<U2C68>,<U2C67>);(<U2C6A>,<U2C69>);(<U2C6C>,<U2C6B>);/
(<U2C73>,<U2C72>);/
(<U2C76>,<U2C75>);(<U2C81>,<U2C80>);(<U2C83>,<U2C82>);(<U2C85>,<U2C84>);/
(<U2C87>,<U2C86>);(<U2C89>,<U2C88>);(<U2C8B>,<U2C8A>);(<U2C8D>,<U2C8C>);/
(<U2C8F>,<U2C8E>);(<U2C91>,<U2C90>);(<U2C93>,<U2C92>);(<U2C95>,<U2C94>);/
(<U2C97>,<U2C96>);(<U2C99>,<U2C98>);(<U2C9B>,<U2C9A>);(<U2C9D>,<U2C9C>);/
(<U2C9F>,<U2C9E>);(<U2CA1>,<U2CA0>);(<U2CA3>,<U2CA2>);(<U2CA5>,<U2CA4>);/
(<U2CA7>,<U2CA6>);(<U2CA9>,<U2CA8>);(<U2CAB>,<U2CAA>);(<U2CAD>,<U2CAC>);/
(<U2CAF>,<U2CAE>);(<U2CB1>,<U2CB0>);(<U2CB3>,<U2CB2>);(<U2CB5>,<U2CB4>);/
(<U2CB7>,<U2CB6>);(<U2CB9>,<U2CB8>);(<U2CBB>,<U2CBA>);(<U2CBD>,<U2CBC>);/
(<U2CBF>,<U2CBE>);(<U2CC1>,<U2CC0>);(<U2CC3>,<U2CC2>);(<U2CC5>,<U2CC4>);/
(<U2CC7>,<U2CC6>);(<U2CC9>,<U2CC8>);(<U2CCB>,<U2CCA>);(<U2CCD>,<U2CCC>);/
(<U2CCF>,<U2CCE>);(<U2CD1>,<U2CD0>);(<U2CD3>,<U2CD2>);(<U2CD5>,<U2CD4>);/
(<U2CD7>,<U2CD6>);(<U2CD9>,<U2CD8>);(<U2CDB>,<U2CDA>);(<U2CDD>,<U2CDC>);/
(<U2CDF>,<U2CDE>);(<U2CE1>,<U2CE0>);(<U2CE3>,<U2CE2>);(<U2D00>,<U10A0>);/
(<U2D01>,<U10A1>);(<U2D02>,<U10A2>);(<U2D03>,<U10A3>);(<U2D04>,<U10A4>);/
(<U2D05>,<U10A5>);(<U2D06>,<U10A6>);(<U2D07>,<U10A7>);(<U2D08>,<U10A8>);/
(<U2D09>,<U10A9>);(<U2D0A>,<U10AA>);(<U2D0B>,<U10AB>);(<U2D0C>,<U10AC>);/
(<U2D0D>,<U10AD>);(<U2D0E>,<U10AE>);(<U2D0F>,<U10AF>);(<U2D10>,<U10B0>);/
(<U2D11>,<U10B1>);(<U2D12>,<U10B2>);(<U2D13>,<U10B3>);(<U2D14>,<U10B4>);/
(<U2D15>,<U10B5>);(<U2D16>,<U10B6>);(<U2D17>,<U10B7>);(<U2D18>,<U10B8>);/
(<U2D19>,<U10B9>);(<U2D1A>,<U10BA>);(<U2D1B>,<U10BB>);(<U2D1C>,<U10BC>);/
(<U2D1D>,<U10BD>);(<U2D1E>,<U10BE>);(<U2D1F>,<U10BF>);(<U2D20>,<U10C0>);/
(<U2D21>,<U10C1>);(<U2D22>,<U10C2>);(<U2D23>,<U10C3>);(<U2D24>,<U10C4>);/
(<U2D25>,<U10C5>);(<UFF41>,<UFF21>);(<UFF42>,<UFF22>);(<UFF43>,<UFF23>);/
(<UFF44>,<UFF24>);(<UFF45>,<UFF25>);(<UFF46>,<UFF26>);(<UFF47>,<UFF27>);/
(<UFF48>,<UFF28>);(<UFF49>,<UFF29>);(<UFF4A>,<UFF2A>);(<UFF4B>,<UFF2B>);/
(<UFF4C>,<UFF2C>);(<UFF4D>,<UFF2D>);(<UFF4E>,<UFF2E>);(<UFF4F>,<UFF2F>);/
(<UFF50>,<UFF30>);(<UFF51>,<UFF31>);(<UFF52>,<UFF32>);(<UFF53>,<UFF33>);/
(<UFF54>,<UFF34>);(<UFF55>,<UFF35>);(<UFF56>,<UFF36>);(<UFF57>,<UFF37>);/
(<UFF58>,<UFF38>);(<UFF59>,<UFF39>);(<UFF5A>,<UFF3A>);/
(<U00010428>,<U00010400>);(<U00010429>,<U00010401>);/
(<U0001042A>,<U00010402>);(<U0001042B>,<U00010403>);/
(<U0001042C>,<U00010404>);(<U0001042D>,<U00010405>);/
(<U0001042E>,<U00010406>);(<U0001042F>,<U00010407>);/
(<U00010430>,<U00010408>);(<U00010431>,<U00010409>);/
(<U00010432>,<U0001040A>);(<U00010433>,<U0001040B>);/
(<U00010434>,<U0001040C>);(<U00010435>,<U0001040D>);/
(<U00010436>,<U0001040E>);(<U00010437>,<U0001040F>);/
(<U00010438>,<U00010410>);(<U00010439>,<U00010411>);/
(<U0001043A>,<U00010412>);(<U0001043B>,<U00010413>);/
(<U0001043C>,<U00010414>);(<U0001043D>,<U00010415>);/
(<U0001043E>,<U00010416>);(<U0001043F>,<U00010417>);/
(<U00010440>,<U00010418>);(<U00010441>,<U00010419>);/
(<U00010442>,<U0001041A>);(<U00010443>,<U0001041B>);/
(<U00010444>,<U0001041C>);(<U00010445>,<U0001041D>);/
(<U00010446>,<U0001041E>);(<U00010447>,<U0001041F>);/
(<U00010448>,<U00010420>);(<U00010449>,<U00010421>);/

```
    (<U0001044A>,<U00010422>);(<U0001044B>,<U00010423>);/
    (<U0001044C>,<U00010424>);(<U0001044D>,<U00010425>);/
    (<U0001044E>,<U00010426>);(<U0001044F>,<U00010427>)

tolower /
    (<U0041>,<U0061>);(<U0042>,<U0062>);(<U0043>,<U0063>);(<U0044>,<U0064>);/
    (<U0045>,<U0065>);(<U0046>,<U0066>);(<U0047>,<U0067>);(<U0048>,<U0068>);/
    (<U0049>,<U0069>);(<U004A>,<U006A>);(<U004B>,<U006B>);(<U004C>,<U006C>);/
    (<U004D>,<U006D>);(<U004E>,<U006E>);(<U004F>,<U006F>);(<U0050>,<U0070>);/
    (<U0051>,<U0071>);(<U0052>,<U0072>);(<U0053>,<U0073>);(<U0054>,<U0074>);/
    (<U0055>,<U0075>);(<U0056>,<U0076>);(<U0057>,<U0077>);(<U0058>,<U0078>);/
    (<U0059>,<U0079>);(<U005A>,<U007A>);(<U00C0>,<U00E0>);(<U00C1>,<U00E1>);/
    (<U00C2>,<U00E2>);(<U00C3>,<U00E3>);(<U00C4>,<U00E4>);(<U00C5>,<U00E5>);/
    (<U00C6>,<U00E6>);(<U00C7>,<U00E7>);(<U00C8>,<U00E8>);(<U00C9>,<U00E9>);/
    (<U00CA>,<U00EA>);(<U00CB>,<U00EB>);(<U00CC>,<U00EC>);(<U00CD>,<U00ED>);/
    (<U00CE>,<U00EE>);(<U00CF>,<U00EF>);(<U00D0>,<U00F0>);(<U00D1>,<U00F1>);/
    (<U00D2>,<U00F2>);(<U00D3>,<U00F3>);(<U00D4>,<U00F4>);(<U00D5>,<U00F5>);/
    (<U00D6>,<U00F6>);(<U00D8>,<U00F8>);(<U00D9>,<U00F9>);(<U00DA>,<U00FA>);/
    (<U00DB>,<U00FB>);(<U00DC>,<U00FC>);(<U00DD>,<U00FD>);(<U00DE>,<U00FE>);/
    (<U0100>,<U0101>);(<U0102>,<U0103>);(<U0104>,<U0105>);(<U0106>,<U0107>);/
    (<U0108>,<U0109>);(<U010A>,<U010B>);(<U010C>,<U010D>);(<U010E>,<U010F>);/
    (<U0110>,<U0111>);(<U0112>,<U0113>);(<U0114>,<U0115>);(<U0116>,<U0117>);/
    (<U0118>,<U0119>);(<U011A>,<U011B>);(<U011C>,<U011D>);(<U011E>,<U011F>);/
    (<U0120>,<U0121>);(<U0122>,<U0123>);(<U0124>,<U0125>);(<U0126>,<U0127>);/
    (<U0128>,<U0129>);(<U012A>,<U012B>);(<U012C>,<U012D>);(<U012E>,<U012F>);/
    (<U0130>,<U0069>);(<U0132>,<U0133>);(<U0134>,<U0135>);(<U0136>,<U0137>);/
    (<U0139>,<U013A>);(<U013B>,<U013C>);(<U013D>,<U013E>);(<U013F>,<U0140>);/
    (<U0141>,<U0142>);(<U0143>,<U0144>);(<U0145>,<U0146>);(<U0147>,<U0148>);/
    (<U014A>,<U014B>);(<U014C>,<U014D>);(<U014E>,<U014F>);(<U0150>,<U0151>);/
    (<U0152>,<U0153>);(<U0154>,<U0155>);(<U0156>,<U0157>);(<U0158>,<U0159>);/
    (<U015A>,<U015B>);(<U015C>,<U015D>);(<U015E>,<U015F>);(<U0160>,<U0161>);/
    (<U0162>,<U0163>);(<U0164>,<U0165>);(<U0166>,<U0167>);(<U0168>,<U0169>);/
    (<U016A>,<U016B>);(<U016C>,<U016D>);(<U016E>,<U016F>);(<U0170>,<U0171>);/
    (<U0172>,<U0173>);(<U0174>,<U0175>);(<U0176>,<U0177>);(<U0178>,<U00FF>);/
    (<U0179>,<U017A>);(<U017B>,<U017C>);(<U017D>,<U017E>);(<U0181>,<U0253>);/
    (<U0182>,<U0183>);(<U0184>,<U0185>);(<U0186>,<U0254>);(<U0187>,<U0188>);/
    (<U0189>,<U0256>);(<U018A>,<U0257>);(<U018B>,<U018C>);(<U018E>,<U01DD>);/
    (<U018F>,<U0259>);(<U0190>,<U025B>);(<U0191>,<U0192>);(<U0193>,<U0260>);/
    (<U0194>,<U0263>);(<U0196>,<U0269>);(<U0197>,<U0268>);(<U0198>,<U0199>);/
    (<U019C>,<U026F>);(<U019D>,<U0272>);(<U019F>,<U0275>);(<U01A0>,<U01A1>);/
    (<U01A2>,<U01A3>);(<U01A4>,<U01A5>);(<U01A6>,<U0280>);(<U01A7>,<U01A8>);/
    (<U01A9>,<U0283>);(<U01AC>,<U01AD>);(<U01AE>,<U0288>);(<U01AF>,<U01B0>);/
    (<U01B1>,<U028A>);(<U01B2>,<U028B>);(<U01B3>,<U01B4>);(<U01B5>,<U01B6>);/
    (<U01B7>,<U0292>);(<U01B8>,<U01B9>);(<U01BC>,<U01BD>);(<U01C4>,<U01C6>);/
    (<U01C5>,<U01C6>);(<U01C7>,<U01C9>);(<U01C8>,<U01C9>);(<U01CA>,<U01CC>);/
    (<U01CB>,<U01CC>);(<U01CD>,<U01CE>);(<U01CF>,<U01D0>);(<U01D1>,<U01D2>);/
    (<U01D3>,<U01D4>);(<U01D5>,<U01D6>);(<U01D7>,<U01D8>);(<U01D9>,<U01DA>);/
    (<U01DB>,<U01DC>);(<U01DE>,<U01DF>);(<U01E0>,<U01E1>);(<U01E2>,<U01E3>);/
    (<U01E4>,<U01E5>);(<U01E6>,<U01E7>);(<U01E8>,<U01E9>);(<U01EA>,<U01EB>);/
    (<U01EC>,<U01ED>);(<U01EE>,<U01EF>);(<U01F1>,<U01F3>);(<U01F2>,<U01F3>);/
    (<U01F4>,<U01F5>);(<U01F6>,<U0195>);(<U01F7>,<U01BF>);(<U01F8>,<U01F9>);/
    (<U01FA>,<U01FB>);(<U01FC>,<U01FD>);(<U01FE>,<U01FF>);(<U0200>,<U0201>);/
    (<U0202>,<U0203>);(<U0204>,<U0205>);(<U0206>,<U0207>);(<U0208>,<U0209>);/
    (<U020A>,<U020B>);(<U020C>,<U020D>);(<U020E>,<U020F>);(<U0210>,<U0211>);/
    (<U0212>,<U0213>);(<U0214>,<U0215>);(<U0216>,<U0217>);(<U0218>,<U0219>);/
    (<U021A>,<U021B>);(<U021C>,<U021D>);(<U021E>,<U021F>);(<U0220>,<U019E>);/
    (<U0222>,<U0223>);(<U0224>,<U0225>);(<U0226>,<U0227>);(<U0228>,<U0229>);/
    (<U022A>,<U022B>);(<U022C>,<U022D>);(<U022E>,<U022F>);(<U0230>,<U0231>);/
    (<U0232>,<U0233>);(<U023A>,<U2C65>);(<U023B>,<U023C>);(<U023D>,<U019A>);/
    (<U023E>,<U2C66>);(<U0241>,<U0242>);(<U0243>,<U0180>);(<U0244>,<U0289>);/
    (<U0245>,<U028C>);(<U0246>,<U0247>);(<U0248>,<U0249>);(<U024A>,<U024B>);/
    (<U024C>,<U024D>);(<U024E>,<U024F>);(<U0370>,<U0371>);(<U0372>,<U0373>);/
    (<U0376>,<U0377>);(<U0386>,<U03AC>);(<U0388>,<U03AD>);/
    (<U0389>,<U03AE>);(<U038A>,<U03AF>);(<U038C>,<U03CC>);(<U038E>,<U03CD>);/
    (<U038F>,<U03CE>);(<U0391>,<U03B1>);(<U0392>,<U03B2>);(<U0393>,<U03B3>);/
    (<U0394>,<U03B4>);(<U0395>,<U03B5>);(<U0396>,<U03B6>);(<U0397>,<U03B7>);/
    (<U0398>,<U03B8>);(<U0399>,<U03B9>);(<U039A>,<U03BA>);(<U039B>,<U03BB>);/
    (<U039C>,<U03BC>);(<U039D>,<U03BD>);(<U039E>,<U03BE>);(<U039F>,<U03BF>);/
    (<U03A0>,<U03C0>);(<U03A1>,<U03C1>);(<U03A3>,<U03C3>);(<U03A4>,<U03C4>);/
```

(<U03A5>,<U03C5>);(<U03A6>,<U03C6>);(<U03A7>,<U03C7>);(<U03A8>,<U03C8>);/
(<U03A9>,<U03C9>);(<U03AA>,<U03CA>);(<U03AB>,<U03CB>);(<U03D8>,<U03D9>);/
(<U03DA>,<U03DB>);(<U03DC>,<U03DD>);(<U03DE>,<U03DF>);(<U03E0>,<U03E1>);/
(<U03E2>,<U03E3>);(<U03E4>,<U03E5>);(<U03E6>,<U03E7>);(<U03E8>,<U03E9>);/
(<U03EA>,<U03EB>);(<U03EC>,<U03ED>);(<U03EE>,<U03EF>);(<U03F4>,<U03B8>);/
(<U03F7>,<U03F8>);(<U03F9>,<U03F2>);(<U03FA>,<U03FB>);(<U03FD>,<U037B>);/
(<U03FE>,<U037C>);(<U03FF>,<U037D>);(<U0400>,<U0450>);(<U0401>,<U0451>);/
(<U0402>,<U0452>);(<U0403>,<U0453>);(<U0404>,<U0454>);(<U0405>,<U0455>);/
(<U0406>,<U0456>);(<U0407>,<U0457>);(<U0408>,<U0458>);(<U0409>,<U0459>);/
(<U040A>,<U045A>);(<U040B>,<U045B>);(<U040C>,<U045C>);(<U040D>,<U045D>);/
(<U040E>,<U045E>);(<U040F>,<U045F>);(<U0410>,<U0430>);(<U0411>,<U0431>);/
(<U0412>,<U0432>);(<U0413>,<U0433>);(<U0414>,<U0434>);(<U0415>,<U0435>);/
(<U0416>,<U0436>);(<U0417>,<U0437>);(<U0418>,<U0438>);(<U0419>,<U0439>);/
(<U041A>,<U043A>);(<U041B>,<U043B>);(<U041C>,<U043C>);(<U041D>,<U043D>);/
(<U041E>,<U043E>);(<U041F>,<U043F>);(<U0420>,<U0440>);(<U0421>,<U0441>);/
(<U0422>,<U0442>);(<U0423>,<U0443>);(<U0424>,<U0444>);(<U0425>,<U0445>);/
(<U0426>,<U0446>);(<U0427>,<U0447>);(<U0428>,<U0448>);(<U0429>,<U0449>);/
(<U042A>,<U044A>);(<U042B>,<U044B>);(<U042C>,<U044C>);(<U042D>,<U044D>);/
(<U042E>,<U044E>);(<U042F>,<U044F>);(<U0460>,<U0461>);(<U0462>,<U0463>);/
(<U0464>,<U0465>);(<U0466>,<U0467>);(<U0468>,<U0469>);(<U046A>,<U046B>);/
(<U046C>,<U046D>);(<U046E>,<U046F>);(<U0470>,<U0471>);(<U0472>,<U0473>);/
(<U0474>,<U0475>);(<U0476>,<U0477>);(<U0478>,<U0479>);(<U047A>,<U047B>);/
(<U047C>,<U047D>);(<U047E>,<U047F>);(<U0480>,<U0481>);(<U048A>,<U048B>);/
(<U048C>,<U048D>);(<U048E>,<U048F>);(<U0490>,<U0491>);(<U0492>,<U0493>);/
(<U0494>,<U0495>);(<U0496>,<U0497>);(<U0498>,<U0499>);(<U049A>,<U049B>);/
(<U049C>,<U049D>);(<U049E>,<U049F>);(<U04A0>,<U04A1>);(<U04A2>,<U04A3>);/
(<U04A4>,<U04A5>);(<U04A6>,<U04A7>);(<U04A8>,<U04A9>);(<U04AA>,<U04AB>);/
(<U04AC>,<U04AD>);(<U04AE>,<U04AF>);(<U04B0>,<U04B1>);(<U04B2>,<U04B3>);/
(<U04B4>,<U04B5>);(<U04B6>,<U04B7>);(<U04B8>,<U04B9>);(<U04BA>,<U04BB>);/
(<U04BC>,<U04BD>);(<U04BE>,<U04BF>);(<U04C0>,<U04CF>);(<U04C1>,<U04C2>);/
(<U04C3>,<U04C4>);(<U04C5>,<U04C6>);(<U04C7>,<U04C8>);(<U04C9>,<U04CA>);/
(<U04CB>,<U04CC>);(<U04CD>,<U04CE>);(<U04D0>,<U04D1>);(<U04D2>,<U04D3>);/
(<U04D4>,<U04D5>);(<U04D6>,<U04D7>);(<U04D8>,<U04D9>);(<U04DA>,<U04DB>);/
(<U04DC>,<U04DD>);(<U04DE>,<U04DF>);(<U04E0>,<U04E1>);(<U04E2>,<U04E3>);/
(<U04E4>,<U04E5>);(<U04E6>,<U04E7>);(<U04E8>,<U04E9>);(<U04EA>,<U04EB>);/
(<U04EC>,<U04ED>);(<U04EE>,<U04EF>);(<U04F0>,<U04F1>);(<U04F2>,<U04F3>);/
(<U04F4>,<U04F5>);(<U04F6>,<U04F7>);(<U04F8>,<U04F9>);(<U04FA>,<U04FB>);/
(<U04FC>,<U04FD>);(<U04FE>,<U04FF>);(<U0500>,<U0501>);(<U0502>,<U0503>);/
(<U0504>,<U0505>);(<U0506>,<U0507>);(<U0508>,<U0509>);(<U050A>,<U050B>);/
(<U050C>,<U050D>);(<U050E>,<U050F>);(<U0510>,<U0511>);(<U0512>,<U0513>);/
(<U0514>,<U0515>);(<U0516>,<U0517>);(<U0518>,<U0519>);(<U051A>,<U051B>);/
(<U051C>,<U051D>);(<U051E>,<U051F>);(<U0520>,<U0521>);(<U0522>,<U0523>);/
(<U0531>,<U0561>);(<U0532>,<U0562>);(<U0533>,<U0563>);(<U0534>,<U0564>);/
(<U0535>,<U0565>);(<U0536>,<U0566>);(<U0537>,<U0567>);(<U0538>,<U0568>);/
(<U0539>,<U0569>);(<U053A>,<U056A>);(<U053B>,<U056B>);(<U053C>,<U056C>);/
(<U053D>,<U056D>);(<U053E>,<U056E>);(<U053F>,<U056F>);(<U0540>,<U0570>);/
(<U0541>,<U0571>);(<U0542>,<U0572>);(<U0543>,<U0573>);(<U0544>,<U0574>);/
(<U0545>,<U0575>);(<U0546>,<U0576>);(<U0547>,<U0577>);(<U0548>,<U0578>);/
(<U0549>,<U0579>);(<U054A>,<U057A>);(<U054B>,<U057B>);(<U054C>,<U057C>);/
(<U054D>,<U057D>);(<U054E>,<U057E>);(<U054F>,<U057F>);(<U0550>,<U0580>);/
(<U0551>,<U0581>);(<U0552>,<U0582>);(<U0553>,<U0583>);(<U0554>,<U0584>);/
(<U0555>,<U0585>);(<U0556>,<U0586>);(<U10A0>,<U2D00>);(<U10A1>,<U2D01>);/
(<U10A2>,<U2D02>);(<U10A3>,<U2D03>);(<U10A4>,<U2D04>);(<U10A5>,<U2D05>);/
(<U10A6>,<U2D06>);(<U10A7>,<U2D07>);(<U10A8>,<U2D08>);(<U10A9>,<U2D09>);/
(<U10AA>,<U2D0A>);(<U10AB>,<U2D0B>);(<U10AC>,<U2D0C>);(<U10AD>,<U2D0D>);/
(<U10AE>,<U2D0E>);(<U10AF>,<U2D0F>);(<U10B0>,<U2D10>);(<U10B1>,<U2D11>);/
(<U10B2>,<U2D12>);(<U10B3>,<U2D13>);(<U10B4>,<U2D14>);(<U10B5>,<U2D15>);/
(<U10B6>,<U2D16>);(<U10B7>,<U2D17>);(<U10B8>,<U2D18>);(<U10B9>,<U2D19>);/
(<U10BA>,<U2D1A>);(<U10BB>,<U2D1B>);(<U10BC>,<U2D1C>);(<U10BD>,<U2D1D>);/
(<U10BE>,<U2D1E>);(<U10BF>,<U2D1F>);(<U10C0>,<U2D20>);(<U10C1>,<U2D21>);/
(<U10C2>,<U2D22>);(<U10C3>,<U2D23>);(<U10C4>,<U2D24>);(<U10C5>,<U2D25>);/
(<U1E00>,<U1E01>);(<U1E02>,<U1E03>);(<U1E04>,<U1E05>);(<U1E06>,<U1E07>);/
(<U1E08>,<U1E09>);(<U1E0A>,<U1E0B>);(<U1E0C>,<U1E0D>);(<U1E0E>,<U1E0F>);/
(<U1E10>,<U1E11>);(<U1E12>,<U1E13>);(<U1E14>,<U1E15>);(<U1E16>,<U1E17>);/
(<U1E18>,<U1E19>);(<U1E1A>,<U1E1B>);(<U1E1C>,<U1E1D>);(<U1E1E>,<U1E1F>);/
(<U1E20>,<U1E21>);(<U1E22>,<U1E23>);(<U1E24>,<U1E25>);(<U1E26>,<U1E27>);/
(<U1E28>,<U1E29>);(<U1E2A>,<U1E2B>);(<U1E2C>,<U1E2D>);(<U1E2E>,<U1E2F>);/
(<U1E30>,<U1E31>);(<U1E32>,<U1E33>);(<U1E34>,<U1E35>);(<U1E36>,<U1E37>);/
(<U1E38>,<U1E39>);(<U1E3A>,<U1E3B>);(<U1E3C>,<U1E3D>);(<U1E3E>,<U1E3F>);/

```
(<U1E40>,<U1E41>);(<U1E42>,<U1E43>);(<U1E44>,<U1E45>);(<U1E46>,<U1E47>);/
(<U1E48>,<U1E49>);(<U1E4A>,<U1E4B>);(<U1E4C>,<U1E4D>);(<U1E4E>,<U1E4F>);/
(<U1E50>,<U1E51>);(<U1E52>,<U1E53>);(<U1E54>,<U1E55>);(<U1E56>,<U1E57>);/
(<U1E58>,<U1E59>);(<U1E5A>,<U1E5B>);(<U1E5C>,<U1E5D>);(<U1E5E>,<U1E5F>);/
(<U1E60>,<U1E61>);(<U1E62>,<U1E63>);(<U1E64>,<U1E65>);(<U1E66>,<U1E67>);/
(<U1E68>,<U1E69>);(<U1E6A>,<U1E6B>);(<U1E6C>,<U1E6D>);(<U1E6E>,<U1E6F>);/
(<U1E70>,<U1E71>);(<U1E72>,<U1E73>);(<U1E74>,<U1E75>);(<U1E76>,<U1E77>);/
(<U1E78>,<U1E79>);(<U1E7A>,<U1E7B>);(<U1E7C>,<U1E7D>);(<U1E7E>,<U1E7F>);/
(<U1E80>,<U1E81>);(<U1E82>,<U1E83>);(<U1E84>,<U1E85>);(<U1E86>,<U1E87>);/
(<U1E88>,<U1E89>);(<U1E8A>,<U1E8B>);(<U1E8C>,<U1E8D>);(<U1E8E>,<U1E8F>);/
(<U1E90>,<U1E91>);(<U1E92>,<U1E93>);(<U1E94>,<U1E95>);(<U1E9E>,<U00DF>);/
(<U1EA0>,<U1EA1>);/
(<U1EA2>,<U1EA3>);(<U1EA4>,<U1EA5>);(<U1EA6>,<U1EA7>);(<U1EA8>,<U1EA9>);/
(<U1EAA>,<U1EAB>);(<U1EAC>,<U1EAD>);(<U1EAE>,<U1EAF>);(<U1EB0>,<U1EB1>);/
(<U1EB2>,<U1EB3>);(<U1EB4>,<U1EB5>);(<U1EB6>,<U1EB7>);(<U1EB8>,<U1EB9>);/
(<U1EBA>,<U1EBB>);(<U1EBC>,<U1EBD>);(<U1EBE>,<U1EBF>);(<U1EC0>,<U1EC1>);/
(<U1EC2>,<U1EC3>);(<U1EC4>,<U1EC5>);(<U1EC6>,<U1EC7>);(<U1EC8>,<U1EC9>);/
(<U1ECA>,<U1ECB>);(<U1ECC>,<U1ECD>);(<U1ECE>,<U1ECF>);(<U1ED0>,<U1ED1>);/
(<U1ED2>,<U1ED3>);(<U1ED4>,<U1ED5>);(<U1ED6>,<U1ED7>);(<U1ED8>,<U1ED9>);/
(<U1EDA>,<U1EDB>);(<U1EDC>,<U1EDD>);(<U1EDE>,<U1EDF>);(<U1EE0>,<U1EE1>);/
(<U1EE2>,<U1EE3>);(<U1EE4>,<U1EE5>);(<U1EE6>,<U1EE7>);(<U1EE8>,<U1EE9>);/
(<U1EEA>,<U1EEB>);(<U1EEC>,<U1EED>);(<U1EEE>,<U1EEF>);(<U1EF0>,<U1EF1>);/
(<U1EF2>,<U1EF3>);(<U1EF4>,<U1EF5>);(<U1EF6>,<U1EF7>);(<U1EF8>,<U1EF9>);/
(<U1EFA>,<U1EFB>);(<U1EFC>,<U1EFD>);(<U1EFE>,<U1EFF>);/
(<U1F08>,<U1F00>);(<U1F09>,<U1F01>);(<U1F0A>,<U1F02>);(<U1F0B>,<U1F03>);/
(<U1F0C>,<U1F04>);(<U1F0D>,<U1F05>);(<U1F0E>,<U1F06>);(<U1F0F>,<U1F07>);/
(<U1F18>,<U1F10>);(<U1F19>,<U1F11>);(<U1F1A>,<U1F12>);(<U1F1B>,<U1F13>);/
(<U1F1C>,<U1F14>);(<U1F1D>,<U1F15>);(<U1F28>,<U1F20>);(<U1F29>,<U1F21>);/
(<U1F2A>,<U1F22>);(<U1F2B>,<U1F23>);(<U1F2C>,<U1F24>);(<U1F2D>,<U1F25>);/
(<U1F2E>,<U1F26>);(<U1F2F>,<U1F27>);(<U1F38>,<U1F30>);(<U1F39>,<U1F31>);/
(<U1F3A>,<U1F32>);(<U1F3B>,<U1F33>);(<U1F3C>,<U1F34>);(<U1F3D>,<U1F35>);/
(<U1F3E>,<U1F36>);(<U1F3F>,<U1F37>);(<U1F48>,<U1F40>);(<U1F49>,<U1F41>);/
(<U1F4A>,<U1F42>);(<U1F4B>,<U1F43>);(<U1F4C>,<U1F44>);(<U1F4D>,<U1F45>);/
(<U1F59>,<U1F51>);(<U1F5B>,<U1F53>);(<U1F5D>,<U1F55>);(<U1F5F>,<U1F57>);/
(<U1F68>,<U1F60>);(<U1F69>,<U1F61>);(<U1F6A>,<U1F62>);(<U1F6B>,<U1F63>);/
(<U1F6C>,<U1F64>);(<U1F6D>,<U1F65>);(<U1F6E>,<U1F66>);(<U1F6F>,<U1F67>);/
(<U1F88>,<U1F80>);(<U1F89>,<U1F81>);(<U1F8A>,<U1F82>);(<U1F8B>,<U1F83>);/
(<U1F8C>,<U1F84>);(<U1F8D>,<U1F85>);(<U1F8E>,<U1F86>);(<U1F8F>,<U1F87>);/
(<U1F98>,<U1F90>);(<U1F99>,<U1F91>);(<U1F9A>,<U1F92>);(<U1F9B>,<U1F93>);/
(<U1F9C>,<U1F94>);(<U1F9D>,<U1F95>);(<U1F9E>,<U1F96>);(<U1F9F>,<U1F97>);/
(<U1FA8>,<U1FA0>);(<U1FA9>,<U1FA1>);(<U1FAA>,<U1FA2>);(<U1FAB>,<U1FA3>);/
(<U1FAC>,<U1FA4>);(<U1FAD>,<U1FA5>);(<U1FAE>,<U1FA6>);(<U1FAF>,<U1FA7>);/
(<U1FB8>,<U1FB0>);(<U1FB9>,<U1FB1>);(<U1FBA>,<U1F70>);(<U1FBB>,<U1F71>);/
(<U1FBC>,<U1FB3>);(<U1FC8>,<U1F72>);(<U1FC9>,<U1F73>);(<U1FCA>,<U1F74>);/
(<U1FCB>,<U1F75>);(<U1FCC>,<U1FC3>);(<U1FD8>,<U1FD0>);(<U1FD9>,<U1FD1>);/
(<U1FDA>,<U1F76>);(<U1FDB>,<U1F77>);(<U1FE8>,<U1FE0>);(<U1FE9>,<U1FE1>);/
(<U1FEA>,<U1F7A>);(<U1FEB>,<U1F7B>);(<U1FEC>,<U1FE5>);(<U1FF8>,<U1F78>);/
(<U1FF9>,<U1F79>);(<U1FFA>,<U1F7C>);(<U1FFB>,<U1F7D>);(<U1FFC>,<U1FF3>);/
(<U2126>,<U03C9>);(<U212A>,<U006B>);(<U212B>,<U00E5>);(<U2132>,<U214E>);/
(<U2160>,<U2170>);(<U2161>,<U2171>);(<U2162>,<U2172>);(<U2163>,<U2173>);/
(<U2164>,<U2174>);(<U2165>,<U2175>);(<U2166>,<U2176>);(<U2167>,<U2177>);/
(<U2168>,<U2178>);(<U2169>,<U2179>);(<U216A>,<U217A>);(<U216B>,<U217B>);/
(<U216C>,<U217C>);(<U216D>,<U217D>);(<U216E>,<U217E>);(<U216F>,<U217F>);/
(<U2183>,<U2184>);(<U24B6>,<U24D0>);(<U24B7>,<U24D1>);(<U24B8>,<U24D2>);/
(<U24B9>,<U24D3>);(<U24BA>,<U24D4>);(<U24BB>,<U24D5>);(<U24BC>,<U24D6>);/
(<U24BD>,<U24D7>);(<U24BE>,<U24D8>);(<U24BF>,<U24D9>);(<U24C0>,<U24DA>);/
(<U24C1>,<U24DB>);(<U24C2>,<U24DC>);(<U24C3>,<U24DD>);(<U24C4>,<U24DE>);/
(<U24C5>,<U24DF>);(<U24C6>,<U24E0>);(<U24C7>,<U24E1>);(<U24C8>,<U24E2>);/
(<U24C9>,<U24E3>);(<U24CA>,<U24E4>);(<U24CB>,<U24E5>);(<U24CC>,<U24E6>);/
(<U24CD>,<U24E7>);(<U24CE>,<U24E8>);(<U24CF>,<U24E9>);(<U2C00>,<U2C30>);/
(<U2C01>,<U2C31>);(<U2C02>,<U2C32>);(<U2C03>,<U2C33>);(<U2C04>,<U2C34>);/
(<U2C05>,<U2C35>);(<U2C06>,<U2C36>);(<U2C07>,<U2C37>);(<U2C08>,<U2C38>);/
(<U2C09>,<U2C39>);(<U2C0A>,<U2C3A>);(<U2C0B>,<U2C3B>);(<U2C0C>,<U2C3C>);/
(<U2C0D>,<U2C3D>);(<U2C0E>,<U2C3E>);(<U2C0F>,<U2C3F>);(<U2C10>,<U2C40>);/
(<U2C11>,<U2C41>);(<U2C12>,<U2C42>);(<U2C13>,<U2C43>);(<U2C14>,<U2C44>);/
(<U2C15>,<U2C45>);(<U2C16>,<U2C46>);(<U2C17>,<U2C47>);(<U2C18>,<U2C48>);/
(<U2C19>,<U2C49>);(<U2C1A>,<U2C4A>);(<U2C1B>,<U2C4B>);(<U2C1C>,<U2C4C>);/
(<U2C1D>,<U2C4D>);(<U2C1E>,<U2C4E>);(<U2C1F>,<U2C4F>);(<U2C20>,<U2C50>);/
(<U2C21>,<U2C51>);(<U2C22>,<U2C52>);(<U2C23>,<U2C53>);(<U2C24>,<U2C54>);/
```

```
    (<U2C25>,<U2C55>);(<U2C26>,<U2C56>);(<U2C27>,<U2C57>);(<U2C28>,<U2C58>);/
    (<U2C29>,<U2C59>);(<U2C2A>,<U2C5A>);(<U2C2B>,<U2C5B>);(<U2C2C>,<U2C5C>);/
    (<U2C2D>,<U2C5D>);(<U2C2E>,<U2C5E>);(<U2C60>,<U2C61>);(<U2C62>,<U026B>);/
    (<U2C63>,<U1D7D>);(<U2C64>,<U027D>);(<U2C67>,<U2C68>);(<U2C69>,<U2C6A>);/
    (<U2C6B>,<U2C6C>);(<U2C6D>,<U0251>);(<U2C6E>,<U0271>);(<U2C6F>,<U0250>);/
    (<U2C72>,<U2C73>);(<U2C75>,<U2C76>);(<U2C80>,<U2C81>);(<U2C82>,<U2C83>);/
    (<U2C84>,<U2C85>);(<U2C86>,<U2C87>);(<U2C88>,<U2C89>);(<U2C8A>,<U2C8B>);/
    (<U2C8C>,<U2C8D>);(<U2C8E>,<U2C8F>);(<U2C90>,<U2C91>);(<U2C92>,<U2C93>);/
    (<U2C94>,<U2C95>);(<U2C96>,<U2C97>);(<U2C98>,<U2C99>);(<U2C9A>,<U2C9B>);/
    (<U2C9C>,<U2C9D>);(<U2C9E>,<U2C9F>);(<U2CA0>,<U2CA1>);(<U2CA2>,<U2CA3>);/
    (<U2CA4>,<U2CA5>);(<U2CA6>,<U2CA7>);(<U2CA8>,<U2CA9>);(<U2CAA>,<U2CAB>);/
    (<U2CAC>,<U2CAD>);(<U2CAE>,<U2CAF>);(<U2CB0>,<U2CB1>);(<U2CB2>,<U2CB3>);/
    (<U2CB4>,<U2CB5>);(<U2CB6>,<U2CB7>);(<U2CB8>,<U2CB9>);(<U2CBA>,<U2CBB>);/
    (<U2CBC>,<U2CBD>);(<U2CBE>,<U2CBF>);(<U2CC0>,<U2CC1>);(<U2CC2>,<U2CC3>);/
    (<U2CC4>,<U2CC5>);(<U2CC6>,<U2CC7>);(<U2CC8>,<U2CC9>);(<U2CCA>,<U2CCB>);/
    (<U2CCC>,<U2CCD>);(<U2CCE>,<U2CCF>);(<U2CD0>,<U2CD1>);(<U2CD2>,<U2CD3>);/
    (<U2CD4>,<U2CD5>);(<U2CD6>,<U2CD7>);(<U2CD8>,<U2CD9>);(<U2CDA>,<U2CDB>);/
    (<U2CDC>,<U2CDD>);(<U2CDE>,<U2CDF>);(<U2CE0>,<U2CE1>);(<U2CE2>,<U2CE3>);/
    (<UFF21>,<UFF41>);(<UFF22>,<UFF42>);(<UFF23>,<UFF43>);(<UFF24>,<UFF44>);/
    (<UFF25>,<UFF45>);(<UFF26>,<UFF46>);(<UFF27>,<UFF47>);(<UFF28>,<UFF48>);/
    (<UFF29>,<UFF49>);(<UFF2A>,<UFF4A>);(<UFF2B>,<UFF4B>);(<UFF2C>,<UFF4C>);/
    (<UFF2D>,<UFF4D>);(<UFF2E>,<UFF4E>);(<UFF2F>,<UFF4F>);(<UFF30>,<UFF50>);/
    (<UFF31>,<UFF51>);(<UFF32>,<UFF52>);(<UFF33>,<UFF53>);(<UFF34>,<UFF54>);/
    (<UFF35>,<UFF55>);(<UFF36>,<UFF56>);(<UFF37>,<UFF57>);(<UFF38>,<UFF58>);/
    (<UFF39>,<UFF59>);(<UFF3A>,<UFF5A>);(<U00010400>,<U00010428>);/
    (<U00010401>,<U00010429>);(<U00010402>,<U0001042A>);/
    (<U00010403>,<U0001042B>);(<U00010404>,<U0001042C>);/
    (<U00010405>,<U0001042D>);(<U00010406>,<U0001042E>);/
    (<U00010407>,<U0001042F>);(<U00010408>,<U00010430>);/
    (<U00010409>,<U00010431>);(<U0001040A>,<U00010432>);/
    (<U0001040B>,<U00010433>);(<U0001040C>,<U00010434>);/
    (<U0001040D>,<U00010435>);(<U0001040E>,<U00010436>);/
    (<U0001040F>,<U00010437>);(<U00010410>,<U00010438>);/
    (<U00010411>,<U00010439>);(<U00010412>,<U0001043A>);/
    (<U00010413>,<U0001043B>);(<U00010414>,<U0001043C>);/
    (<U00010415>,<U0001043D>);(<U00010416>,<U0001043E>);/
    (<U00010417>,<U0001043F>);(<U00010418>,<U00010440>);/
    (<U00010419>,<U00010441>);(<U0001041A>,<U00010442>);/
    (<U0001041B>,<U00010443>);(<U0001041C>,<U00010444>);/
    (<U0001041D>,<U00010445>);(<U0001041E>,<U00010446>);/
    (<U0001041F>,<U00010447>);(<U00010420>,<U00010448>);/
    (<U00010421>,<U00010449>);(<U00010422>,<U0001044A>);/
    (<U00010423>,<U0001044B>);(<U00010424>,<U0001044C>);/
    (<U00010425>,<U0001044D>);(<U00010426>,<U0001044E>);/
    (<U00010427>,<U0001044F>)

map "totitle"; /
    (<U0061>,<U0041>);(<U0062>,<U0042>);(<U0063>,<U0043>);(<U0064>,<U0044>);/
    (<U0065>,<U0045>);(<U0066>,<U0046>);(<U0067>,<U0047>);(<U0068>,<U0048>);/
    (<U0069>,<U0049>);(<U006A>,<U004A>);(<U006B>,<U004B>);(<U006C>,<U004C>);/
    (<U006D>,<U004D>);(<U006E>,<U004E>);(<U006F>,<U004F>);(<U0070>,<U0050>);/
    (<U0071>,<U0051>);(<U0072>,<U0052>);(<U0073>,<U0053>);(<U0074>,<U0054>);/
    (<U0075>,<U0055>);(<U0076>,<U0056>);(<U0077>,<U0057>);(<U0078>,<U0058>);/
    (<U0079>,<U0059>);(<U007A>,<U005A>);(<U00B5>,<U039C>);(<U00E0>,<U00C0>);/
    (<U00E1>,<U00C1>);(<U00E2>,<U00C2>);(<U00E3>,<U00C3>);(<U00E4>,<U00C4>);/
    (<U00E5>,<U00C5>);(<U00E6>,<U00C6>);(<U00E7>,<U00C7>);(<U00E8>,<U00C8>);/
    (<U00E9>,<U00C9>);(<U00EA>,<U00CA>);(<U00EB>,<U00CB>);(<U00EC>,<U00CC>);/
    (<U00ED>,<U00CD>);(<U00EE>,<U00CE>);(<U00EF>,<U00CF>);(<U00F0>,<U00D0>);/
    (<U00F1>,<U00D1>);(<U00F2>,<U00D2>);(<U00F3>,<U00D3>);(<U00F4>,<U00D4>);/
    (<U00F5>,<U00D5>);(<U00F6>,<U00D6>);(<U00F8>,<U00D8>);(<U00F9>,<U00D9>);/
    (<U00FA>,<U00DA>);(<U00FB>,<U00DB>);(<U00FC>,<U00DC>);(<U00FD>,<U00DD>);/
    (<U00FE>,<U00DE>);(<U00FF>,<U0178>);(<U0101>,<U0100>);(<U0103>,<U0102>);/
    (<U0105>,<U0104>);(<U0107>,<U0106>);(<U0109>,<U0108>);(<U010B>,<U010A>);/
    (<U010D>,<U010C>);(<U010F>,<U010E>);(<U0111>,<U0110>);(<U0113>,<U0112>);/
    (<U0115>,<U0114>);(<U0117>,<U0116>);(<U0119>,<U0118>);(<U011B>,<U011A>);/
    (<U011D>,<U011C>);(<U011F>,<U011E>);(<U0121>,<U0120>);(<U0123>,<U0122>);/
    (<U0125>,<U0124>);(<U0127>,<U0126>);(<U0129>,<U0128>);(<U012B>,<U012A>);/
    (<U012D>,<U012C>);(<U012F>,<U012E>);(<U0131>,<U0049>);(<U0133>,<U0132>);/
    (<U0135>,<U0134>);(<U0137>,<U0136>);(<U013A>,<U0139>);(<U013C>,<U013B>);/
```

(<U013E>,<U013D>);(<U0140>,<U013F>);(<U0142>,<U0141>);(<U0144>,<U0143>);/
(<U0146>,<U0145>);(<U0148>,<U0147>);(<U014B>,<U014A>);(<U014D>,<U014C>);/
(<U014F>,<U014E>);(<U0151>,<U0150>);(<U0153>,<U0152>);(<U0155>,<U0154>);/
(<U0157>,<U0156>);(<U0159>,<U0158>);(<U015B>,<U015A>);(<U015D>,<U015C>);/
(<U015F>,<U015E>);(<U0161>,<U0160>);(<U0163>,<U0162>);(<U0165>,<U0164>);/
(<U0167>,<U0166>);(<U0169>,<U0168>);(<U016B>,<U016A>);(<U016D>,<U016C>);/
(<U016F>,<U016E>);(<U0171>,<U0170>);(<U0173>,<U0172>);(<U0175>,<U0174>);/
(<U0177>,<U0176>);(<U017A>,<U0179>);(<U017C>,<U017B>);(<U017E>,<U017D>);/
(<U017F>,<U0053>);(<U0180>,<U0243>);(<U0183>,<U0182>);(<U0185>,<U0184>);/
(<U0188>,<U0187>);(<U018C>,<U018B>);(<U0192>,<U0191>);(<U0195>,<U01F6>);/
(<U0199>,<U0198>);(<U019A>,<U023D>);(<U019E>,<U0220>);(<U01A1>,<U01A0>);/
(<U01A3>,<U01A2>);(<U01A5>,<U01A4>);(<U01A8>,<U01A7>);(<U01AD>,<U01AC>);/
(<U01B0>,<U01AF>);(<U01B4>,<U01B3>);(<U01B6>,<U01B5>);(<U01B9>,<U01B8>);/
(<U01BD>,<U01BC>);(<U01BF>,<U01F7>);(<U01C4>,<U01C5>);(<U01C6>,<U01C5>);/
(<U01C7>,<U01C8>);(<U01C9>,<U01C8>);(<U01CA>,<U01CB>);(<U01CC>,<U01CB>);/
(<U01CE>,<U01CD>);(<U01D0>,<U01CF>);(<U01D2>,<U01D1>);(<U01D4>,<U01D3>);/
(<U01D6>,<U01D5>);(<U01D8>,<U01D7>);(<U01DA>,<U01D9>);(<U01DC>,<U01DB>);/
(<U01DD>,<U018E>);(<U01DF>,<U01DE>);(<U01E1>,<U01E0>);(<U01E3>,<U01E2>);/
(<U01E5>,<U01E4>);(<U01E7>,<U01E6>);(<U01E9>,<U01E8>);(<U01EB>,<U01EA>);/
(<U01ED>,<U01EC>);(<U01EF>,<U01EE>);(<U01F1>,<U01F2>);(<U01F3>,<U01F2>);/
(<U01F5>,<U01F4>);(<U01F9>,<U01F8>);(<U01FB>,<U01FA>);(<U01FD>,<U01FC>);/
(<U01FF>,<U01FE>);(<U0201>,<U0200>);(<U0203>,<U0202>);(<U0205>,<U0204>);/
(<U0207>,<U0206>);(<U0209>,<U0208>);(<U020B>,<U020A>);(<U020D>,<U020C>);/
(<U020F>,<U020E>);(<U0211>,<U0210>);(<U0213>,<U0212>);(<U0215>,<U0214>);/
(<U0217>,<U0216>);(<U0219>,<U0218>);(<U021B>,<U021A>);(<U021D>,<U021C>);/
(<U021F>,<U021E>);(<U0223>,<U0222>);(<U0225>,<U0224>);(<U0227>,<U0226>);/
(<U0229>,<U0228>);(<U022B>,<U022A>);(<U022D>,<U022C>);(<U022F>,<U022E>);/
(<U0231>,<U0230>);(<U0233>,<U0232>);(<U023C>,<U023B>);(<U0242>,<U0241>);/
(<U0247>,<U0246>);(<U0249>,<U0248>);(<U024B>,<U024A>);(<U024D>,<U024C>);/
(<U024F>,<U024E>);(<U0253>,<U0181>);(<U0254>,<U0186>);(<U0256>,<U0189>);/
(<U0257>,<U018A>);(<U0259>,<U018F>);(<U025B>,<U0190>);(<U0260>,<U0193>);/
(<U0263>,<U0194>);(<U0268>,<U0197>);(<U0269>,<U0196>);(<U026B>,<U2C62>);/
(<U026F>,<U019C>);(<U0272>,<U019D>);(<U0275>,<U019F>);(<U027D>,<U2C64>);/
(<U0280>,<U01A6>);(<U0283>,<U01A9>);(<U0288>,<U01AE>);(<U0289>,<U0244>);/
(<U028A>,<U01B1>);(<U028B>,<U01B2>);(<U028C>,<U0245>);(<U0292>,<U01B7>);/
(<U0345>,<U0399>);(<U037B>,<U03FD>);(<U037C>,<U03FE>);(<U037D>,<U03FF>);/
(<U03AC>,<U0386>);(<U03AD>,<U0388>);(<U03AE>,<U0389>);(<U03AF>,<U038A>);/
(<U03B1>,<U0391>);(<U03B2>,<U0392>);(<U03B3>,<U0393>);(<U03B4>,<U0394>);/
(<U03B5>,<U0395>);(<U03B6>,<U0396>);(<U03B7>,<U0397>);(<U03B8>,<U0398>);/
(<U03B9>,<U0399>);(<U03BA>,<U039A>);(<U03BB>,<U039B>);(<U03BC>,<U039C>);/
(<U03BD>,<U039D>);(<U03BE>,<U039E>);(<U03BF>,<U039F>);(<U03C0>,<U03A0>);/
(<U03C1>,<U03A1>);(<U03C2>,<U03A3>);(<U03C3>,<U03A3>);(<U03C4>,<U03A4>);/
(<U03C5>,<U03A5>);(<U03C6>,<U03A6>);(<U03C7>,<U03A7>);(<U03C8>,<U03A8>);/
(<U03C9>,<U03A9>);(<U03CA>,<U03AA>);(<U03CB>,<U03AB>);(<U03CC>,<U038C>);/
(<U03CD>,<U038E>);(<U03CE>,<U038F>);(<U03D0>,<U0392>);(<U03D1>,<U0398>);/
(<U03D5>,<U03A6>);(<U03D6>,<U03A0>);(<U03D9>,<U03D8>);(<U03DB>,<U03DA>);/
(<U03DD>,<U03DC>);(<U03DF>,<U03DE>);(<U03E1>,<U03E0>);(<U03E3>,<U03E2>);/
(<U03E5>,<U03E4>);(<U03E7>,<U03E6>);(<U03E9>,<U03E8>);(<U03EB>,<U03EA>);/
(<U03ED>,<U03EC>);(<U03EF>,<U03EE>);(<U03F0>,<U039A>);(<U03F1>,<U03A1>);/
(<U03F2>,<U03F9>);(<U03F5>,<U0395>);(<U03F8>,<U03F7>);(<U03FB>,<U03FA>);/
(<U0430>,<U0410>);(<U0431>,<U0411>);(<U0432>,<U0412>);(<U0433>,<U0413>);/
(<U0434>,<U0414>);(<U0435>,<U0415>);(<U0436>,<U0416>);(<U0437>,<U0417>);/
(<U0438>,<U0418>);(<U0439>,<U0419>);(<U043A>,<U041A>);(<U043B>,<U041B>);/
(<U043C>,<U041C>);(<U043D>,<U041D>);(<U043E>,<U041E>);(<U043F>,<U041F>);/
(<U0440>,<U0420>);(<U0441>,<U0421>);(<U0442>,<U0422>);(<U0443>,<U0423>);/
(<U0444>,<U0424>);(<U0445>,<U0425>);(<U0446>,<U0426>);(<U0447>,<U0427>);/
(<U0448>,<U0428>);(<U0449>,<U0429>);(<U044A>,<U042A>);(<U044B>,<U042B>);/
(<U044C>,<U042C>);(<U044D>,<U042D>);(<U044E>,<U042E>);(<U044F>,<U042F>);/
(<U0450>,<U0400>);(<U0451>,<U0401>);(<U0452>,<U0402>);(<U0453>,<U0403>);/
(<U0454>,<U0404>);(<U0455>,<U0405>);(<U0456>,<U0406>);(<U0457>,<U0407>);/
(<U0458>,<U0408>);(<U0459>,<U0409>);(<U045A>,<U040A>);(<U045B>,<U040B>);/
(<U045C>,<U040C>);(<U045D>,<U040D>);(<U045E>,<U040E>);(<U045F>,<U040F>);/
(<U0461>,<U0460>);(<U0463>,<U0462>);(<U0465>,<U0464>);(<U0467>,<U0466>);/
(<U0469>,<U0468>);(<U046B>,<U046A>);(<U046D>,<U046C>);(<U046F>,<U046E>);/
(<U0471>,<U0470>);(<U0473>,<U0472>);(<U0475>,<U0474>);(<U0477>,<U0476>);/
(<U0479>,<U0478>);(<U047B>,<U047A>);(<U047D>,<U047C>);(<U047F>,<U047E>);/
(<U0481>,<U0480>);(<U048B>,<U048A>);(<U048D>,<U048C>);(<U048F>,<U048E>);/
(<U0491>,<U0490>);(<U0493>,<U0492>);(<U0495>,<U0494>);(<U0497>,<U0496>);/
(<U0499>,<U0498>);(<U049B>,<U049A>);(<U049D>,<U049C>);(<U049F>,<U049E>);/

```
(<U04A1>,<U04A0>);(<U04A3>,<U04A2>);(<U04A5>,<U04A4>);(<U04A7>,<U04A6>);/
(<U04A9>,<U04A8>);(<U04AB>,<U04AA>);(<U04AD>,<U04AC>);(<U04AF>,<U04AE>);/
(<U04B1>,<U04B0>);(<U04B3>,<U04B2>);(<U04B5>,<U04B4>);(<U04B7>,<U04B6>);/
(<U04B9>,<U04B8>);(<U04BB>,<U04BA>);(<U04BD>,<U04BC>);(<U04BF>,<U04BE>);/
(<U04C2>,<U04C1>);(<U04C4>,<U04C3>);(<U04C6>,<U04C5>);(<U04C8>,<U04C7>);/
(<U04CA>,<U04C9>);(<U04CC>,<U04CB>);(<U04CE>,<U04CD>);(<U04CF>,<U04C0>);/
(<U04D1>,<U04D0>);(<U04D3>,<U04D2>);(<U04D5>,<U04D4>);(<U04D7>,<U04D6>);/
(<U04D9>,<U04D8>);(<U04DB>,<U04DA>);(<U04DD>,<U04DC>);(<U04DF>,<U04DE>);/
(<U04E1>,<U04E0>);(<U04E3>,<U04E2>);(<U04E5>,<U04E4>);(<U04E7>,<U04E6>);/
(<U04E9>,<U04E8>);(<U04EB>,<U04EA>);(<U04ED>,<U04EC>);(<U04EF>,<U04EE>);/
(<U04F1>,<U04F0>);(<U04F3>,<U04F2>);(<U04F5>,<U04F4>);(<U04F7>,<U04F6>);/
(<U04F9>,<U04F8>);(<U04FB>,<U04FA>);(<U04FD>,<U04FC>);(<U04FF>,<U04FE>);/
(<U0501>,<U0500>);(<U0503>,<U0502>);(<U0505>,<U0504>);(<U0507>,<U0506>);/
(<U0509>,<U0508>);(<U050B>,<U050A>);(<U050D>,<U050C>);(<U050F>,<U050E>);/
(<U0511>,<U0510>);(<U0513>,<U0512>);(<U0515>,<U0514>);(<U0517>,<U0516>);/
(<U0519>,<U0518>);(<U051B>,<U051A>);(<U051D>,<U051C>);(<U051F>,<U051E>);/
(<U0521>,<U0520>);(<U0523>,<U0522>);(<U0561>,<U0531>);(<U0562>,<U0532>);/
(<U0563>,<U0533>);(<U0564>,<U0534>);(<U0565>,<U0535>);(<U0566>,<U0536>);/
(<U0567>,<U0537>);(<U0568>,<U0538>);(<U0569>,<U0539>);(<U056A>,<U053A>);/
(<U056B>,<U053B>);(<U056C>,<U053C>);(<U056D>,<U053D>);(<U056E>,<U053E>);/
(<U056F>,<U053F>);(<U0570>,<U0540>);(<U0571>,<U0541>);(<U0572>,<U0542>);/
(<U0573>,<U0543>);(<U0574>,<U0544>);(<U0575>,<U0545>);(<U0576>,<U0546>);/
(<U0577>,<U0547>);(<U0578>,<U0548>);(<U0579>,<U0549>);(<U057A>,<U054A>);/
(<U057B>,<U054B>);(<U057C>,<U054C>);(<U057D>,<U054D>);(<U057E>,<U054E>);/
(<U057F>,<U054F>);(<U0580>,<U0550>);(<U0581>,<U0551>);(<U0582>,<U0552>);/
(<U0583>,<U0553>);(<U0584>,<U0554>);(<U0585>,<U0555>);(<U0586>,<U0556>);/
(<U1D7D>,<U2C63>);(<U1E01>,<U1E00>);(<U1E03>,<U1E02>);(<U1E05>,<U1E04>);/
(<U1E07>,<U1E06>);(<U1E09>,<U1E08>);(<U1E0B>,<U1E0A>);(<U1E0D>,<U1E0C>);/
(<U1E0F>,<U1E0E>);(<U1E11>,<U1E10>);(<U1E13>,<U1E12>);(<U1E15>,<U1E14>);/
(<U1E17>,<U1E16>);(<U1E19>,<U1E18>);(<U1E1B>,<U1E1A>);(<U1E1D>,<U1E1C>);/
(<U1E1F>,<U1E1E>);(<U1E21>,<U1E20>);(<U1E23>,<U1E22>);(<U1E25>,<U1E24>);/
(<U1E27>,<U1E26>);(<U1E29>,<U1E28>);(<U1E2B>,<U1E2A>);(<U1E2D>,<U1E2C>);/
(<U1E2F>,<U1E2E>);(<U1E31>,<U1E30>);(<U1E33>,<U1E32>);(<U1E35>,<U1E34>);/
(<U1E37>,<U1E36>);(<U1E39>,<U1E38>);(<U1E3B>,<U1E3A>);(<U1E3D>,<U1E3C>);/
(<U1E3F>,<U1E3E>);(<U1E41>,<U1E40>);(<U1E43>,<U1E42>);(<U1E45>,<U1E44>);/
(<U1E47>,<U1E46>);(<U1E49>,<U1E48>);(<U1E4B>,<U1E4A>);(<U1E4D>,<U1E4C>);/
(<U1E4F>,<U1E4E>);(<U1E51>,<U1E50>);(<U1E53>,<U1E52>);(<U1E55>,<U1E54>);/
(<U1E57>,<U1E56>);(<U1E59>,<U1E58>);(<U1E5B>,<U1E5A>);(<U1E5D>,<U1E5C>);/
(<U1E5F>,<U1E5E>);(<U1E61>,<U1E60>);(<U1E63>,<U1E62>);(<U1E65>,<U1E64>);/
(<U1E67>,<U1E66>);(<U1E69>,<U1E68>);(<U1E6B>,<U1E6A>);(<U1E6D>,<U1E6C>);/
(<U1E6F>,<U1E6E>);(<U1E71>,<U1E70>);(<U1E73>,<U1E72>);(<U1E75>,<U1E74>);/
(<U1E77>,<U1E76>);(<U1E79>,<U1E78>);(<U1E7B>,<U1E7A>);(<U1E7D>,<U1E7C>);/
(<U1E7F>,<U1E7E>);(<U1E81>,<U1E80>);(<U1E83>,<U1E82>);(<U1E85>,<U1E84>);/
(<U1E87>,<U1E86>);(<U1E89>,<U1E88>);(<U1E8B>,<U1E8A>);(<U1E8D>,<U1E8C>);/
(<U1E8F>,<U1E8E>);(<U1E91>,<U1E90>);(<U1E93>,<U1E92>);(<U1E95>,<U1E94>);/
(<U1E9B>,<U1E60>);(<U1EA1>,<U1EA0>);(<U1EA3>,<U1EA2>);(<U1EA5>,<U1EA4>);/
(<U1EA7>,<U1EA6>);(<U1EA9>,<U1EA8>);(<U1EAB>,<U1EAA>);(<U1EAD>,<U1EAC>);/
(<U1EAF>,<U1EAE>);(<U1EB1>,<U1EB0>);(<U1EB3>,<U1EB2>);(<U1EB5>,<U1EB4>);/
(<U1EB7>,<U1EB6>);(<U1EB9>,<U1EB8>);(<U1EBB>,<U1EBA>);(<U1EBD>,<U1EBC>);/
(<U1EBF>,<U1EBE>);(<U1EC1>,<U1EC0>);(<U1EC3>,<U1EC2>);(<U1EC5>,<U1EC4>);/
(<U1EC7>,<U1EC6>);(<U1EC9>,<U1EC8>);(<U1ECB>,<U1ECA>);(<U1ECD>,<U1ECC>);/
(<U1ECF>,<U1ECE>);(<U1ED1>,<U1ED0>);(<U1ED3>,<U1ED2>);(<U1ED5>,<U1ED4>);/
(<U1ED7>,<U1ED6>);(<U1ED9>,<U1ED8>);(<U1EDB>,<U1EDA>);(<U1EDD>,<U1EDC>);/
(<U1EDF>,<U1EDE>);(<U1EE1>,<U1EE0>);(<U1EE3>,<U1EE2>);(<U1EE5>,<U1EE4>);/
(<U1EE7>,<U1EE6>);(<U1EE9>,<U1EE8>);(<U1EEB>,<U1EEA>);(<U1EED>,<U1EEC>);/
(<U1EEF>,<U1EEE>);(<U1EF1>,<U1EF0>);(<U1EF3>,<U1EF2>);(<U1EF5>,<U1EF4>);/
(<U1EF7>,<U1EF6>);(<U1EF9>,<U1EF8>);(<U1F00>,<U1F08>);(<U1F01>,<U1F09>);/
(<U1F02>,<U1F0A>);(<U1F03>,<U1F0B>);(<U1F04>,<U1F0C>);(<U1F05>,<U1F0D>);/
(<U1F06>,<U1F0E>);(<U1F07>,<U1F0F>);(<U1F10>,<U1F18>);(<U1F11>,<U1F19>);/
(<U1F12>,<U1F1A>);(<U1F13>,<U1F1B>);(<U1F14>,<U1F1C>);(<U1F15>,<U1F1D>);/
(<U1F20>,<U1F28>);(<U1F21>,<U1F29>);(<U1F22>,<U1F2A>);(<U1F23>,<U1F2B>);/
(<U1F24>,<U1F2C>);(<U1F25>,<U1F2D>);(<U1F26>,<U1F2E>);(<U1F27>,<U1F2F>);/
(<U1F30>,<U1F38>);(<U1F31>,<U1F39>);(<U1F32>,<U1F3A>);(<U1F33>,<U1F3B>);/
(<U1F34>,<U1F3C>);(<U1F35>,<U1F3D>);(<U1F36>,<U1F3E>);(<U1F37>,<U1F3F>);/
(<U1F40>,<U1F48>);(<U1F41>,<U1F49>);(<U1F42>,<U1F4A>);(<U1F43>,<U1F4B>);/
(<U1F44>,<U1F4C>);(<U1F45>,<U1F4D>);(<U1F51>,<U1F59>);(<U1F53>,<U1F5B>);/
(<U1F55>,<U1F5D>);(<U1F57>,<U1F5F>);(<U1F60>,<U1F68>);(<U1F61>,<U1F69>);/
(<U1F62>,<U1F6A>);(<U1F63>,<U1F6B>);(<U1F64>,<U1F6C>);(<U1F65>,<U1F6D>);/
(<U1F66>,<U1F6E>);(<U1F67>,<U1F6F>);(<U1F70>,<U1FBA>);(<U1F71>,<U1FBB>);/
```

```
(<U1F72>,<U1FC8>);(<U1F73>,<U1FC9>);(<U1F74>,<U1FCA>);(<U1F75>,<U1FCB>);/
(<U1F76>,<U1FDA>);(<U1F77>,<U1FDB>);(<U1F78>,<U1FF8>);(<U1F79>,<U1FF9>);/
(<U1F7A>,<U1FEA>);(<U1F7B>,<U1FEB>);(<U1F7C>,<U1FFA>);(<U1F7D>,<U1FFB>);/
(<U1F80>,<U1F88>);(<U1F81>,<U1F89>);(<U1F82>,<U1F8A>);(<U1F83>,<U1F8B>);/
(<U1F84>,<U1F8C>);(<U1F85>,<U1F8D>);(<U1F86>,<U1F8E>);(<U1F87>,<U1F8F>);/
(<U1F90>,<U1F98>);(<U1F91>,<U1F99>);(<U1F92>,<U1F9A>);(<U1F93>,<U1F9B>);/
(<U1F94>,<U1F9C>);(<U1F95>,<U1F9D>);(<U1F96>,<U1F9E>);(<U1F97>,<U1F9F>);/
(<U1FA0>,<U1FA8>);(<U1FA1>,<U1FA9>);(<U1FA2>,<U1FAA>);(<U1FA3>,<U1FAB>);/
(<U1FA4>,<U1FAC>);(<U1FA5>,<U1FAD>);(<U1FA6>,<U1FAE>);(<U1FA7>,<U1FAF>);/
(<U1FB0>,<U1FB8>);(<U1FB1>,<U1FB9>);(<U1FB3>,<U1FBC>);(<U1FBE>,<U0399>);/
(<U1FC3>,<U1FCC>);(<U1FD0>,<U1FD8>);(<U1FD1>,<U1FD9>);(<U1FE0>,<U1FE8>);/
(<U1FE1>,<U1FE9>);(<U1FE5>,<U1FEC>);(<U1FF3>,<U1FFC>);(<U214E>,<U2132>);/
(<U2170>,<U2160>);(<U2171>,<U2161>);(<U2172>,<U2162>);(<U2173>,<U2163>);/
(<U2174>,<U2164>);(<U2175>,<U2165>);(<U2176>,<U2166>);(<U2177>,<U2167>);/
(<U2178>,<U2168>);(<U2179>,<U2169>);(<U217A>,<U216A>);(<U217B>,<U216B>);/
(<U217C>,<U216C>);(<U217D>,<U216D>);(<U217E>,<U216E>);(<U217F>,<U216F>);/
(<U2184>,<U2183>);(<U24D0>,<U24B6>);(<U24D1>,<U24B7>);(<U24D2>,<U24B8>);/
(<U24D3>,<U24B9>);(<U24D4>,<U24BA>);(<U24D5>,<U24BB>);(<U24D6>,<U24BC>);/
(<U24D7>,<U24BD>);(<U24D8>,<U24BE>);(<U24D9>,<U24BF>);(<U24DA>,<U24C0>);/
(<U24DB>,<U24C1>);(<U24DC>,<U24C2>);(<U24DD>,<U24C3>);(<U24DE>,<U24C4>);/
(<U24DF>,<U24C5>);(<U24E0>,<U24C6>);(<U24E1>,<U24C7>);(<U24E2>,<U24C8>);/
(<U24E3>,<U24C9>);(<U24E4>,<U24CA>);(<U24E5>,<U24CB>);(<U24E6>,<U24CC>);/
(<U24E7>,<U24CD>);(<U24E8>,<U24CE>);(<U24E9>,<U24CF>);(<U2C30>,<U2C00>);/
(<U2C31>,<U2C01>);(<U2C32>,<U2C02>);(<U2C33>,<U2C03>);(<U2C34>,<U2C04>);/
(<U2C35>,<U2C05>);(<U2C36>,<U2C06>);(<U2C37>,<U2C07>);(<U2C38>,<U2C08>);/
(<U2C39>,<U2C09>);(<U2C3A>,<U2C0A>);(<U2C3B>,<U2C0B>);(<U2C3C>,<U2C0C>);/
(<U2C3D>,<U2C0D>);(<U2C3E>,<U2C0E>);(<U2C3F>,<U2C0F>);(<U2C40>,<U2C10>);/
(<U2C41>,<U2C11>);(<U2C42>,<U2C12>);(<U2C43>,<U2C13>);(<U2C44>,<U2C14>);/
(<U2C45>,<U2C15>);(<U2C46>,<U2C16>);(<U2C47>,<U2C17>);(<U2C48>,<U2C18>);/
(<U2C49>,<U2C19>);(<U2C4A>,<U2C1A>);(<U2C4B>,<U2C1B>);(<U2C4C>,<U2C1C>);/
(<U2C4D>,<U2C1D>);(<U2C4E>,<U2C1E>);(<U2C4F>,<U2C1F>);(<U2C50>,<U2C20>);/
(<U2C51>,<U2C21>);(<U2C52>,<U2C22>);(<U2C53>,<U2C23>);(<U2C54>,<U2C24>);/
(<U2C55>,<U2C25>);(<U2C56>,<U2C26>);(<U2C57>,<U2C27>);(<U2C58>,<U2C28>);/
(<U2C59>,<U2C29>);(<U2C5A>,<U2C2A>);(<U2C5B>,<U2C2B>);(<U2C5C>,<U2C2C>);/
(<U2C5D>,<U2C2D>);(<U2C5E>,<U2C2E>);(<U2C61>,<U2C60>);(<U2C65>,<U023A>);/
(<U2C66>,<U023E>);(<U2C68>,<U2C67>);(<U2C6A>,<U2C69>);(<U2C6C>,<U2C6B>);/
(<U2C76>,<U2C75>);(<U2C81>,<U2C80>);(<U2C83>,<U2C82>);(<U2C85>,<U2C84>);/
(<U2C87>,<U2C86>);(<U2C89>,<U2C88>);(<U2C8B>,<U2C8A>);(<U2C8D>,<U2C8C>);/
(<U2C8F>,<U2C8E>);(<U2C91>,<U2C90>);(<U2C93>,<U2C92>);(<U2C95>,<U2C94>);/
(<U2C97>,<U2C96>);(<U2C99>,<U2C98>);(<U2C9B>,<U2C9A>);(<U2C9D>,<U2C9C>);/
(<U2C9F>,<U2C9E>);(<U2CA1>,<U2CA0>);(<U2CA3>,<U2CA2>);(<U2CA5>,<U2CA4>);/
(<U2CA7>,<U2CA6>);(<U2CA9>,<U2CA8>);(<U2CAB>,<U2CAA>);(<U2CAD>,<U2CAC>);/
(<U2CAF>,<U2CAE>);(<U2CB1>,<U2CB0>);(<U2CB3>,<U2CB2>);(<U2CB5>,<U2CB4>);/
(<U2CB7>,<U2CB6>);(<U2CB9>,<U2CB8>);(<U2CBB>,<U2CBA>);(<U2CBD>,<U2CBC>);/
(<U2CBF>,<U2CBE>);(<U2CC1>,<U2CC0>);(<U2CC3>,<U2CC2>);(<U2CC5>,<U2CC4>);/
(<U2CC7>,<U2CC6>);(<U2CC9>,<U2CC8>);(<U2CCB>,<U2CCA>);(<U2CCD>,<U2CCC>);/
(<U2CCF>,<U2CCE>);(<U2CD1>,<U2CD0>);(<U2CD3>,<U2CD2>);(<U2CD5>,<U2CD4>);/
(<U2CD7>,<U2CD6>);(<U2CD9>,<U2CD8>);(<U2CDB>,<U2CDA>);(<U2CDD>,<U2CDC>);/
(<U2CDF>,<U2CDE>);(<U2CE1>,<U2CE0>);(<U2CE3>,<U2CE2>);(<U2D00>,<U10A0>);/
(<U2D01>,<U10A1>);(<U2D02>,<U10A2>);(<U2D03>,<U10A3>);(<U2D04>,<U10A4>);/
(<U2D05>,<U10A5>);(<U2D06>,<U10A6>);(<U2D07>,<U10A7>);(<U2D08>,<U10A8>);/
(<U2D09>,<U10A9>);(<U2D0A>,<U10AA>);(<U2D0B>,<U10AB>);(<U2D0C>,<U10AC>);/
(<U2D0D>,<U10AD>);(<U2D0E>,<U10AE>);(<U2D0F>,<U10AF>);(<U2D10>,<U10B0>);/
(<U2D11>,<U10B1>);(<U2D12>,<U10B2>);(<U2D13>,<U10B3>);(<U2D14>,<U10B4>);/
(<U2D15>,<U10B5>);(<U2D16>,<U10B6>);(<U2D17>,<U10B7>);(<U2D18>,<U10B8>);/
(<U2D19>,<U10B9>);(<U2D1A>,<U10BA>);(<U2D1B>,<U10BB>);(<U2D1C>,<U10BC>);/
(<U2D1D>,<U10BD>);(<U2D1E>,<U10BE>);(<U2D1F>,<U10BF>);(<U2D20>,<U10C0>);/
(<U2D21>,<U10C1>);(<U2D22>,<U10C2>);(<U2D23>,<U10C3>);(<U2D24>,<U10C4>);/
(<U2D25>,<U10C5>);(<UFF41>,<UFF21>);(<UFF42>,<UFF22>);(<UFF43>,<UFF23>);/
(<UFF44>,<UFF24>);(<UFF45>,<UFF25>);(<UFF46>,<UFF26>);(<UFF47>,<UFF27>);/
(<UFF48>,<UFF28>);(<UFF49>,<UFF29>);(<UFF4A>,<UFF2A>);(<UFF4B>,<UFF2B>);/
(<UFF4C>,<UFF2C>);(<UFF4D>,<UFF2D>);(<UFF4E>,<UFF2E>);(<UFF4F>,<UFF2F>);/
(<UFF50>,<UFF30>);(<UFF51>,<UFF31>);(<UFF52>,<UFF32>);(<UFF53>,<UFF33>);/
(<UFF54>,<UFF34>);(<UFF55>,<UFF35>);(<UFF56>,<UFF36>);(<UFF57>,<UFF37>);/
(<UFF58>,<UFF38>);(<UFF59>,<UFF39>);(<UFF5A>,<UFF3A>);/
(<U00010428>,<U00010400>);(<U00010429>,<U00010401>);/
(<U0001042A>,<U00010402>);(<U0001042B>,<U00010403>);/
(<U0001042C>,<U00010404>);(<U0001042D>,<U00010405>);/
(<U0001042E>,<U00010406>);(<U0001042F>,<U00010407>);/
```

```
   (<U00010430>,<U00010408>);(<U00010431>,<U00010409>);/
   (<U00010432>,<U0001040A>);(<U00010433>,<U0001040B>);/
   (<U00010434>,<U0001040C>);(<U00010435>,<U0001040D>);/
   (<U00010436>,<U0001040E>);(<U00010437>,<U0001040F>);/
   (<U00010438>,<U00010410>);(<U00010439>,<U00010411>);/
   (<U0001043A>,<U00010412>);(<U0001043B>,<U00010413>);/
   (<U0001043C>,<U00010414>);(<U0001043D>,<U00010415>);/
   (<U0001043E>,<U00010416>);(<U0001043F>,<U00010417>);/
   (<U00010440>,<U00010418>);(<U00010441>,<U00010419>);/
   (<U00010442>,<U0001041A>);(<U00010443>,<U0001041B>);/
   (<U00010444>,<U0001041C>);(<U00010445>,<U0001041D>);/
   (<U00010446>,<U0001041E>);(<U00010447>,<U0001041F>);/
   (<U00010448>,<U00010420>);(<U00010449>,<U00010421>);/
   (<U0001044A>,<U00010422>);(<U0001044B>,<U00010423>);/
   (<U0001044C>,<U00010424>);(<U0001044D>,<U00010425>);/
   (<U0001044E>,<U00010426>);(<U0001044F>,<U00010427>)


class "combining"; /
   <U0300>..<U036F>;<U0483>..<U0486>;<U0488>..<U0489>;<U0591>..<U05BD>;/
   <U05BF>;<U05C1>..<U05C2>;<U05C4>..<U05C5>;<U05C7>;<U0610>..<U061A>;/
   <U064B>..<U065E>;<U0670>;<U06D6>..<U06DC>;<U06DE>..<U06E4>;/
   <U06E7>..<U06E8>;<U06EA>..<U06ED>;<U0711>;<U0730>..<U074A>;/
   <U07A6>..<U07B0>;<U07EB>..<U07F3>;<U0901>..<U0903>;<U093C>;/
   <U093E>..<U094D>;<U0951>..<U0954>;<U0962>..<U0963>;<U0981>..<U0983>;/
   <U09BC>;<U09BE>..<U09C4>;<U09C7>..<U09C8>;<U09CB>..<U09CD>;<U09D7>;/
   <U09E2>..<U09E3>;<U0A01>..<U0A03>;<U0A3C>;<U0A3E>..<U0A42>;/
   <U0A47>..<U0A48>;<U0A4B>..<U0A4D>;<U0A51>;<U0A70>..<U0A71>;/
   <U0A75>;<U0A81>..<U0A83>;/
   <U0ABC>;<U0ABE>..<U0AC5>;<U0AC7>..<U0AC9>;<U0ACB>..<U0ACD>;/
   <U0AE2>..<U0AE3>;<U0B01>..<U0B03>;<U0B3C>;<U0B3E>..<U0B44>;/
   <U0B47>..<U0B48>;<U0B4B>..<U0B4D>;<U0B56>..<U0B57>;<U0B82>;/
   <U0BBE>..<U0BC2>;<U0BC6>..<U0BC8>;<U0BCA>..<U0BCD>;<U0BD0>;<U0BD7>;/
   <U0C01>..<U0C03>;<U0C3E>..<U0C44>;<U0C46>..<U0C48>;<U0C4A>..<U0C4D>;/
   <U0C55>..<U0C56>;<U0C62>..<U0C63>;<U0C82>..<U0C83>;<U0CBC>;/
   <U0CBE>..<U0CC4>;/
   <U0CC6>..<U0CC8>;<U0CCA>..<U0CCD>;<U0CD5>..<U0CD6>;<U0CE2>..<U0CE3>;/
   <U0D02>..<U0D03>;<U0D3E>..<U0D44>;<U0D46>..<U0D48>;<U0D4A>..<U0D4D>;/
   <U0D57>;<U0D62>..<U0D63>;<U0D82>..<U0D83>;<U0DCA>;<U0DCF>..<U0DD4>;/
   <U0DD6>;<U0DD8>..<U0DDF>;<U0DF2>..<U0DF3>;<U0E31>;<U0E34>..<U0E3A>;/
   <U0E47>..<U0E4E>;<U0EB1>;<U0EB4>..<U0EB9>;<U0EBB>..<U0EBC>;/
   <U0EC8>..<U0ECD>;<U0F18>..<U0F19>;<U0F35>;<U0F37>;<U0F39>;/
   <U0F3E>..<U0F3F>;<U0F71>..<U0F84>;<U0F86>..<U0F87>;<U0F90>..<U0F97>;/
   <U0F99>..<U0FBC>;<U0FC6>;<U102B>..<U103F>;/
   <U1056>..<U1059>;<U105E>..<U1060>;<U1062>..<U1064>;<U1067>..<U106D>;/
   <U1071>..<U1074>;<U1082>..<U108D>;<U108F>;/
   <U135F>;<U1712>..<U1714>;<U1732>..<U1734>;/
   <U1752>..<U1753>;<U1772>..<U1773>;<U17B6>..<U17D3>;<U17DD>;/
   <U180B>..<U180D>;<U18A9>;<U1920>..<U192B>;<U1930>..<U193B>;/
   <U19B0>..<U19C0>;<U19C8>..<U19C9>;<U1A17>..<U1A1B>;<U1B00>..<U1B04>;/
   <U1B34>..<U1B44>;<U1B6B>..<U1B73>;<U1DC0>..<U1DE6>;<U1DFE>..<U1DFF>;/
   <U20D0>..<U20F0>;<U2DE0>..<U2DFF>;<U302A>..<U302F>;<U3099>..<U309A>;/
   <UA66F>..<UA672>;<UA67C>;<UA67D>;<UA802>;<UA806>;/
   <UA80B>;<UA823>..<UA827>;<UFB1E>;<UFE00>..<UFE0F>;<UFE20>..<UFE26>;/
   <U00010A01>..<U00010A03>;<U00010A05>..<U00010A06>;/
   <U00010A0C>..<U00010A0F>;<U00010A38>..<U00010A3A>;<U00010A3F>;/
   <U0001D165>..<U0001D169>;<U0001D16D>..<U0001D172>;/
   <U0001D17B>..<U0001D182>;<U0001D185>..<U0001D18B>;/
   <U0001D1AA>..<U0001D1AD>;<U0001D242>..<U0001D244>;/
   <U000E0100>..<U000E01EF>


class "combining_level3"; /
   <U0334>..<U0338>;<U034F>;<U0488>..<U0489>;<U05B0>..<U05BD>;<U05BF>;/
   <U05C1>..<U05C2>;<U05C7>;<U064B>..<U0652>;<U0670>;<U06DE>;<U0711>;/
   <U07A6>..<U07B0>;<U0901>..<U0903>;<U093C>;<U093E>..<U094D>;/
   <U0962>..<U0963>;<U0981>..<U0983>;<U09BC>;<U09BE>..<U09C4>;/
```

```
   <U09C7>..<U09C8>;<U09CB>..<U09CD>;<U09D7>;<U09E2>..<U09E3>;/
   <U0A01>..<U0A03>;<U0A3C>;<U0A3E>..<U0A42>;<U0A47>..<U0A48>;/
   <U0A4B>..<U0A4D>;<U0A51>;<U0A70>..<U0A71>;<U0375>;<U0A81>..<U0A83>;/
   <U0ABC>;/
   <U0ABE>..<U0AC5>;<U0AC7>..<U0AC9>;<U0ACB>..<U0ACD>;<U0AE2>..<U0AE3>;/
   <U0B01>..<U0B03>;<U0B3C>;<U0B3E>..<U0B44>;<U0B47>..<U0B48>;/
   <U0B4B>..<U0B4D>;<U0B56>..<U0B57>;<U0B82>;<U0BBE>..<U0BC2>;/
   <U0BC6>..<U0BC8>;<U0BCA>..<U0BCD>;<U0BD0>;<U0BD7>;<U0C01>..<U0C03>;/
   <U0C3E>..<U0C44>;<U0C46>..<U0C48>;<U0C4A>..<U0C4D>;<U0C55>..<U0C56>;/
   <U0C62>..<U0C63>;/
   <U0C82>..<U0C83>;<U0CBC>;<U0CBE>..<U0CC4>;<U0CC6>..<U0CC8>;/
   <U0CCA>..<U0CCD>;<U0CD5>..<U0CD6>;<U0CE2>..<U0CE3>;<U0D02>..<U0D03>;/
   <U0D3E>..<U0D44>;<U0D46>..<U0D48>;<U0D4A>..<U0D4D>;<U0D57>;/
   <U0D62>..<U0D63>;/
   <U0D82>..<U0D83>;<U0DCA>;<U0DCF>..<U0DD4>;<U0DD6>;<U0DD8>..<U0DDF>;/
   <U0DF2>..<U0DF3>;<U0E31>;<U0E34>..<U0E3A>;<U0E47>..<U0E4E>;<U0EB1>;/
   <U0EB4>..<U0EB9>;<U0EBB>..<U0EBC>;<U0EC8>..<U0ECD>;<U0F3E>..<U0F3F>;/
   <U0F71>..<U0F81>;<U0F84>;<U0F90>..<U0F97>;<U0F99>..<U0FBC>;/
   <U102B>..<U103F>;<U1056>..<U1059>;<U105E>..<U1060>;<U1062>..<U1064>;/
   <U1067>..<U106D>;/
   <U1071>..<U1074>;<U1082>..<U108D>;<U108F>;<U1712>..<U1714>;/
   <U1732>..<U1734>;<U1752>..<U1753>;<U1772>..<U1773>;<U17B6>..<U17D3>;/
   <U180B>..<U180D>;<U1920>..<U192B>;<U1930>..<U1938>;<U19B0>..<U19C0>;/
   <U19C8>..<U19C9>;<U1A19>..<U1A1B>;<U1B00>..<U1B04>;<U1B34>..<U1B44>;/
   <U20D2>..<U20D3>;<U20D8>..<U20DA>;<U20DD>..<U20E0>;<U20E2>..<U20E6>;/
   <U20EA>..<U20EB>;<U3099>..<U309A>;<UA802>;<UA806>;<UA80B>;/
   <UA823>..<UA827>;<UFB1E>;<UFE00>..<UFE0F>;<U00010A01>..<U00010A03>;/
   <U00010A05>..<U00010A06>;<U00010A0C>;<U00010A0E>;<U00010A39>;<U00010A3F>;/
   <U0001D167>..<U0001D169>;<U000E0100>..<U000E01EF>

END LC_CTYPE
```

5.5 LC_COLLATE

5.5.1 General

A collation sequence definition defines the relative order between collating elements (characters and multicharacter collating elements) in the FDCC-set. This order is expressed in terms of collation values; i.e., by assigning each element one or more collation values (also known as collation weights). This does not imply that applications assign such values, but that ordering of strings using the resultant collation definition in the FDCC-set behaves as if such assignment is done and used in the collation process. The collation sequence definition is used by regular expressions, pattern matching. When no weights are specified the collation sequence definition also is used for sorting, else the weighting defines the sorting. The following capabilities are provided.

(1) Multicharacter collating elements. Specification of multicharacter collating elements (i.e., sequences of two or more characters to be collated as an entity).

(2) User-defined ordering of collating elements. Each collating element is assigned a collation value defining its order in the character (or basic) collation sequence. This ordering is used by regular expressions and pattern matching and, unless collation weights are explicitly specified, also as the collation weight to be used in sorting.

(3) Multiple weights and equivalence classes. Collating elements can be assigned one or more (up to the limit (COLL_WEIGHTS_MAX)) collating weights for use in sorting. The first weight is hereafter referred to as the primary weight.

(4) One-to-many mapping. A single character is mapped into a string of collating elements.

(5) Many-to-many substitution. A string of one or more characters is substituted by another string (or an empty string, i.e., the character or characters are ignored for collation purposes).

(6) Equivalence class definition. Two or more collating elements have the same collation value (primary weight).

(7) Ordering by weights. When two strings are compared to determine their relative order, the two strings are first broken up into a series of collating elements, and each successive pair of elements are compared according to the relative primary weights for the elements. If equal, and more than one weight has been assigned, then the pairs of collating elements are recompared according to the relative subsequent weights, until either a pair of collating elements compare unequal or the weights are exhausted.

(8) Easy reordering of characters. ISO/IEC 14651 has a template for collation specification that with just a few modifications can be culturally correct for a specific culture. Here the "reorder-after" keyword gives a convenient way to modify a FDCC-set template.

(9) Easy reordering of sections. The template in ISO/IEC 14651 gives an ordering of the sections that may not be culturally acceptable in certain cultures. The keyword "reorder-section-after" gives a convenient way to modify the order of sections in a FDCC-set template.

The following keywords are recognized in a collation sequence definition. Some of them are described in detail in the following subclauses. The keywords are mandatory unless otherwise noted.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. The FDCC-set is copied in source form.

coll_weight_max Define as a decimal number the number of collation levels that an interpreting system needs to support for this FDCC-set, this value is elsewhere referred to as the COLL_WEIGHT_MAX limit (e.g. in the "order_start" statement). An interpreting system caters for up to 7 collating levels.

section-symbol Define a section symbol representing a set of collation order statements. The section is defined with the "order_start" keyword until the next "order_start" or "order_end" keyword. This keyword is optional.

collating-element Define a collating-element symbol representing a multicharacter collating element. This keyword is optional.

collating-symbol Define one or more collating symbols for use in collation order statements. This keyword is optional.

symbol-equivalence Define a collating-symbol to be equivalent to another defined collating-symbol.

order_start Define collation rules. This statement is followed by one or more collation order statements, assigning character collation values and collation weights to collating elements.

order_end Specify the end of the collation-order statements.

section Specify a section of collation order statements, and optionally a subrepertoire thereof.

reorder-after	Redefine collating rules. Specify after which collating element the redefinition of collation order takes order. This statement is followed by one or more collation order statements, reassigning character collation values and collation weights to collating elements.
reorder-end	Specify the end of the "reorder-after" collating order statements.
reorder-section-after	Redefine the order of sections. This statement is followed by one or more section symbols, reassigning character collation values and collation weights to collating elements.
reorder-section-end	Specify the end of the "reorder-section" section order statements.

5.5.2 Collation statements

The "order_start", "reorder-after" and "section" keywords are followed by collating statements. The syntax for the collating statements is:

"%s %s;%s;...;%s\n",<collating-identifier>,<weight>,<weight>,...

Each <collating-identifier> consists of either a character (in any of the forms defined in subclause 5.4.1), a <collating-element>, a <collating-symbol>, an ellipsis, or the special symbol "UNDEFINED". The weights for each of the collation elements determines the character collation sequence - such that each collation statement does not need to be in collation order, and weights could be rearranged via for example the "reorder-after" keyword. No character has any specific predetermined placement in the collation sequence. The order in which collating elements are specified determines the character collation sequence, such that each collating element compares less than the elements following it.

A <collating-element> is used to specify multicharacter collating elements and indicates that the character sequence specified via the <collating-element> is to be collated as a unit and in the relative order specified by its place in the list of collating statements.

A <collating-symbol> is used to define a position in the relative order for use in weights.

The absolute ellipsis symbol ("...") specifies that a sequence of characters collate according to their encoded character values. It is interpreted as indicating that all characters with a coded character set value higher than the value of the character in the preceding line, and lower than the coded character set value for the character in the following line, in the current coded character set, are placed in the character collation order between the previous and the following character in ascending order according to their coded character set values. An initial ellipsis is interpreted as if the preceding line specified the <NUL> character, and a trailing ellipsis as if the following line specified the highest coded character set value in the current coded character set. An ellipsis is treated as invalid if the preceding or following lines do not specify characters in the current coded character set. The use of the ellipsis symbol ties the definition to a specific coded character set and may preclude the definition from being portable between applications and is depreciated. Symbolic ellipses may be used as the ellipses symbol, but generating symbolic character names, and thus have a better chance of portability between applications.

The symbolic ellipses (".." or "....") specifies a sequence of collating statements. It is interpreted as indicating that all characters with symbolic names higher than the symbolic name of the character in the preceding line, and lower in the sequence of symbolic names for the character in the following line, is placed in the character collation order between the previous and the following character in ascending order.

The symbol "UNDEFINED" is interpreted as including all coded character set values not specified explicitly or via the ellipsis or one of the symbolic ellipses symbols. Such characters are inserted in the character collation order at the point indicated by the symbol, and in ascending order according to their coded character set values. If no "UNDEFINED" symbol is specified, and the current coded character set contains characters not specified in this clause, the utility issues a warning message and place such characters at the end of the character collation order.

The optional operands for each collation-element are used to define the primary, secondary, or subsequent weights for the collating element. The first operand specifies the relative primary weight, the second the relative secondary weight, and so on. Two or more collation-elements can be assigned the same weight; they belong to the same equivalence class if they have the same primary weight. Collation behaves as if, for each weight level, "IGNORE"d elements are removed. Then each successive pair of elements is compared according to the relative weights for the elements. If the two strings compare equal, the process is repeated for the next weight level, up to the limit "COLL_WEIGHTS_MAX" of the associated FDCC-set.

Weights are expressed as characters (in any of the forms specified here), <collating-symbol>s, <collating-element>s, an ellipsis, or the special symbol "IGNORE". A single character, a <collating-symbol>, or a <collating-element> represent the relative order in the character collating sequence of the character or symbol, rather than the character or characters themselves.

One-to-many mapping is indicated by specifying two or more concatenated characters or symbolic names. Thus, if the character <ss> is given the string <s><s> as a weight, comparisons are performed as if all occurrences of the character <ss> are replaced by <s><s>. If it is desirable to define <ss> and <s><s> as an equivalence class, then a collating-element shall be defined for the string "ss", as in the example below.

All characters specified via an ellipsis are by default assigned unique weights, equal to the relative order of characters. Characters specified via an explicit or implicit "UNDEFINED" special symbol are by default assigned the same primary weight (i.e., belong to the same equivalence class). An ellipsis symbol as a weight is interpreted to mean that each character in the sequence has unique weights, equal to the relative order of their character in the character collation sequence. Secondary and subsequent weights have unique values. The use of the ellipsis as a weight is treated as an error if the collating element is neither an ellipsis nor the special symbol "UNDEFINED".

The special keyword "IGNORE" as a weight indicates that when strings are compared using the weights at the level where "IGNORE" is specified, the collating element is ignored; i.e., as if the string did not contain the collating element. In regular expressions and pattern matching, all characters that are "IGNORE"d in their primary weight form an equivalence class.

A <comment_character> occurring where the delimiter ";" may occur, terminates the collating statement.

An empty operand is interpreted as the collating-element itself.

For example, the collation statement:

```
<a>  <a>;<a>
```

is equal to:

```
<a>
```

An ellipsis (absolute or symbolic) can be used as an operand if the collating-element was an ellipsis and is interpreted as the value of each character defined by the ellipsis.

EXAMPLE

```
collating-element <ch> from "<c><h>"
collating-element <Ch> from "<C><h>"
order_start     forward;backward
UNDEFINED       IGNORE;IGNORE
<LOW>
<space>         <LOW>;<space>
...             <LOW>;
<a>             <a>;<a>
<a'>            <a>;<a'>
<A>             <a>;<A>
<A'>            <a>;<A'>
<ch>            <ch>;<ch>
<Ch>            <ch>;<Ch>
<s>             <s>;<s>
<ss>            "<s><s>";"<ss><ss>"
order_end
```

This example is interpreted as follows.

(1) The UNDEFINED means that all characters not specified in this definition (explicitly or via the ellipsis) is ignored.

(2) <LOW> defines the first collating weight, and thus the lowest weight in this example.

(3) All characters between <space> and <a> have the same primary equivalence class <LOW> and individual secondary weights based on their ordinal encoded values. (The use of absolute ellipses is depreciated but used here to illustrate generic use of ellipses. Symbolic ellipses should be used instead).

(4) All characters based on the upper or lowercase character "a" belong to the same primary equivalence class.

(5) The multicharacter collating element <c><h> is represented by the collating symbol <ch> and belongs to the same primary equivalence class as the multicharacter collating element <C><h>.

(6) The <ss> collating element has two weights on the primary level, and it is in the same primary equivalence class as two consecutive <s>-es; on the secondary level the collating element has two weights of the equivalence class <ss>.

5.5.3 "copy" keyword

This keyword specifies the name of an existing FDCC-set to be used as the source for the definition of this category. The syntax is:

"copy %s\n", <FDCC-set-name>

The <FDCC-set-name> consists of one or more characters (in any of the forms defined in 5.4.1). The FDCC-set is copied in source form.

5.5.4 "coll_weight_max" keyword

This keyword defines as a decimal number the number of collation levels that an interpreting system needs to support. An interpreting system caters for up to 7 collating levels. The syntax is:

"coll_weight_max %d\n", <value>

5.5.5 "section-symbol" keyword

This keyword is used to define symbols for use in section related statements; such as the "order_start", and "reorder-section-after" keywords and section-reordering statements. The syntax is:

"section-symbol %s\n", <section-symbol>

The <section-symbol> is a symbolic name, enclosed between angle brackets (< and >), and does not duplicate any symbolic name in the current charmap (if any), or any other symbolic name defined in this collation definition. A <section-symbol> defined via this keyword is only defined within the LC_COLLATE category.

EXAMPLE

```
section-symbol <LATIN>
section-symbol <ARABIC>
```

5.5.6 "collating-element" keyword

In addition to the collating elements in the character set, the collating-element keyword is used to define multicharacter collating elements. The syntax is:

"collating-element %s from %s\n",<collating-symbol>,<string>

The <collating-symbol> operand is a symbolic name, enclosed between angle brackets (< and >), and does not duplicate any symbolic name in the current charmap or repertoiremap file (if any), or any other symbolic name defined in this collation definition. The string operand is a string of two or more characters that collates as an entity. A <collating-element> defined via this keyword is only defined within the LC_COLLATE category.

Example with ISO/IEC 10646:

collating-element <ch> from "<c><h>"
collating-element <e-acute> from "<e><combining-acute>"
collating-element <aa> from "<a><a>"

NOTE The problem of comparing a fully composed character of ISO/IEC 10646 with a decomposed representation of the same text is sometimes handled by the two strings comparing equal up to level 3 (the case level) of ISO/IEC 14651, but distinguishing the two at the 4th level.

5.5.7 "collating-symbol" keyword

This keyword is used to define symbols for use in collation sequence statements; e.g. between the order_start and the order_end keywords. The syntax is:

"collating-symbol %s;%s;...%s\n", <collating-symbol>, <collating-symbol> ...

The <collating-symbol> is a symbolic name, enclosed between angle brackets (< and >), and does not duplicate any symbolic name in the current charmap (if any), or any other symbolic name defined in this collation definition. A <collating-symbol> defined via this keyword is only defined within the LC_COLLATE category. More than one <collating-symbol> can be defined with one "collating-symbol" keyword, and symbolic ellipses can be used.

EXAMPLE

collating-symbol <CAPITAL>
collating-symbol <HIGH>

5.5.8 "symbol-equivalence" keyword

This keyword is used to define symbols for use in collation sequence statements; and assign the same weight as another defined symbol. The syntax is:

"symbol-equivalence %s %s\n", <collating-symbol-1>, <collating-symbol-2>

The <collating-symbol-1> and <collating-symbol-2> are symbolic names, enclosed between angle brackets (< and >). <collating-symbol-1> does not duplicate any symbolic name in the current charmap (if any), or any other symbolic name defined in this collation definition. <collating-symbol-2> is defined elsewhere in the LC_COLLATE category as a collating-symbol. The use of <collating-symbol-2> is equivalent to using the <collating-symbol-1> in the LC_COLLATE category. A <collating-symbol-1> defined via this keyword is only defined within the LC_COLLATE category.

EXAMPLE

collating-symbol <CAP>
symbol-equivalence <CAPITAL> <CAP>

5.5.9 "order_start" keyword

The "order_start" keyword precedes collation order entries and also defines the number of weights for this collation sequence definition, the collation section name and other collation rules.

The syntax of the "order_start" keyword has two forms:

"order_start %s;%s;...;%s\n", <sort-rule>, <sort-rule> ...

and

"order_start %s;%s;...;%s\n", <section-symbol>, <sort-rules>, <sort-rules> ...

The operands to the order_start keyword are optional. If present, the operands define rules to be applied when strings are compared. The first operand can be a <section-symbol> surrounded by "<" and ">" and the set of collating statements following the "order_start" keyword until the "order_end" keyword are identified with this <section-symbol> or another "order_start" keyword is encountered. The remaining number of operands define how many weights each element is assigned; if no operands are present, one forward operand is assumed. If present, the first operand defines rules to be applied when comparing strings using the first (primary) weight; the second when comparing strings using the second weight, and so on. Operands are separated by semicolons (;). Each operand consists of one or more collation directives, separated by commas (,). If the number or operands exceeds the (COLL_WEIGHTS_MAX) limit, a utility parsing the FDCC-set description issues a warning message. The following directives are supported.

forward Specifies that the direction of scanning a part of a string at a given point in a string is done towards the logical end of the whole string for this weight level.

backward Specifies that the direction of scanning a part of a string at a given point in a string is done towards the logical beginning of the whole string for this weight level.

position Specifies that comparison operations for the weight level will consider the relative position of non-"IGNORE"d elements in the strings. The string containing a non-"IGNORE"d element after the fewest IGNOREd collating

elements from the start of the compare collates first. If both strings contain a non-"IGNORE"d character in the same relative position, the collating values assigned to the elements determine the ordering. In case of equality, subsequent non-IGNOREd characters are considered in the same manner.

The directives "forward" and "backward" are mutually exclusive at a given level. The directives "backward" and "position" are mutually exclusive at a given level.

EXAMPLES

order_start forward;backward
order_start <CYRILLIC>;forward;forward

If no operands are specified, a single forward operand is assumed.

5.5.10 "order_end" keyword

The collating order entries are terminated with an "order_end" keyword.

5.5.11 "reorder-after" keyword

5.5.11.1 General

The "reorder-after" keyword is used to specify a modification to a copied collation specification of an existing FDCC-set. There can be more than one "reorder-after" statement in a collating specification. The syntax is:

"reorder-after %s\n",<collating-symbol>

The <collating-symbol> operand is a symbolic name, enclosed between angle brackets, and is present in the source FDCC-set copied via the "copy" keyword.

The "reorder-after" statement is followed by one or more collation statements as described in the "collating order" (subclause 5.5.2), with the exception that the ellipsis symbol (...) is not used.

Each collation statement reassigns character collation values and collation weights to collating elements existing in the copied collation specification, by removing the collating statement from the copied specification, and inserting the collating element in the collating sequence with the new collation weights after the preceding collating element of the "reorder-after" specification, the first collating element in the collation sequence being the <collating-symbol> specified in the "reorder-after" statement.

A "reorder-after" specification is terminated by another "reorder-after" specification or the "reorder-end" statement.

5.5.11.2 Example of "reorder-after"

```
reorder-after <y8>
<U:>        <Y>;<U:>;<CAPITAL>
<u:>        <Y>;<U:>;<SMALL>
reorder-after <z8>
<AE>        <AE>;<NONE>;<CAPITAL>
<ae>        <AE>;<NONE>;<SMALL>
<A:>        <AE>;<DIAERESIS>;<CAPITAL>
```

```
<a:>          <AE>;<DIAERESIS>;<SMALL>
<O/>          <O/>;<NONE>;<CAPITAL>
<o/>          <O/>;<NONE>;<SMALL>
<AA>          <AA>;<NONE>;<CAPITAL>
<aa>          <AA>;<NONE>;<SMALL>
reorder-end
```

The example is interpreted as follows (using the "i18nrep" repertoiremap):

1. The collating element <U:> is removed from the copied collating sequence and inserted after <y8> in the collating sequence with the new weights. The collating element <u:> is removed from the copied collating sequence and inserted in the resulting collation sequence after <U:> with the new weights. <y8> is used to indicate the position of the last y letter.

2. The second "reorder-after" statement terminates the first list of reordering collation identifier entries, and initiates a second list, rearranging the order and weights for the <AE>, <ae>, <A:>, <a:>, <O/>, and <o/> collating elements after the <z8> collating symbol in the copied specification. <z8> is used to indicate the position of the last z letter.

3. The "reorder-end" statement terminates the second list of reordering entries.

4. Thus for the original sequence

   ... (U u Ü ü) V v W w X x Y y Z z

   this example reordering gives

   ... U u V v W w X x (Y y Ü ü) Z z (Æ æ Ä ä) Ø ø Å å

   where the parenthesis indicate ordering with the same weight on the first level for multiple upper/lowercase pairs.

5.5.12 "reorder-end" keyword

The "reorder-end" keyword specifies the end of a list of collating statements, initiated by the "reorder-after" keyword.

5.5.13 "section" keyword

The "section" keyword is used to define a section of the table. A section consists of a set of collation elements with their associated collation weights. A section can be moved as a whole via the "reorder-section-after" keyword.

Each "section" keyword has the syntax:

"section %s %s;...;%s\n", <section-symbol>, <collation-symbol>, ...

The <section-symbol> is a symbolic name, enclosed between angle brackets "<" and ">", and it defines the name of the section in question. It may have been defined in a "section-symbol" statement.

The <collation-symbol> is a symbolic name, enclosed between angle brackets "<" and ">", and it references a collating element previously specified, with associated weights. More than one <collating-symbol> can be referenced in one "section" statement, and symbolic ellipses can be used. The <collation-symbol>s identified via this list are removed from other parts of the collation specification. The list of <collation-symbol>s is optional.

A section consists of the collating elements identified on the "section" keyword line and with relative order and weights as specified earlier, plus the collation elements defined via the optionally following collating statements as described in 5.5.2. The section is terminated by another keyword line.

5.5.14 "reorder-section-after" keyword

5.5.14.1 General

The "reorder-section-after" keyword is used to specify a modification to a copied collation specification of an existing FDCC-set. The "reorder-section-after" statement is followed by one or more statements consisting of section reordering statements.

Each "reorder-section-after" keyword has either the syntax:

"reorder-section-after %s\n", <collation-symbol>

or:

"reorder-section-after %s %s", <section-symbol>, <collation-symbol>

The <collation-symbol> is a symbolic name, enclosed between angle brackets "<" and ">", and it references a collating element previously specified.

The <section-symbol> is a symbolic name, enclosed between angle brackets "<" and ">", and it refers to the name of the section in question, previously defined in a "section-symbol" or "section" keyword, and with contents allocated via a "order_start" or "section" keyword.

If there is no <section-symbol> given with the keyword, the keyword is followed by a number of section reordering statements, terminated by a "reorder-section-end" keyword.

The collating elements and associated weights of the section given with the keyword line, or the sections given on the following lines, are removed from the current sorting table, possibly reassigned sorting rules according to the section reordering statements, and inserted in the sorting table after the <collating-symbol>.

5.5.14.2 section reordering statements

The section reordering statements rearranges the set of collating entries and changes sorting rules for the set of collating entries identified by a section symbol in a preceding "order_start" statement. Each section reorder statement has the syntax:

"%s %s;...%s\n", <section-symbol>, <sort-rule>, <sort-rule> ...

The <section-symbol> identifies the set of collating entries. The <section-symbol> is defined via a "section-symbol" or the "section" keyword, and values identified by the <section-symbol> is assigned via the "order_start" or "section" keywords.

The <sort-rule>s are as described for the "order_start" keyword. Specified <sort-rule>s replace the specification of the ordering given on the first "order_start" statement, for the section identified by the <section-symbol>. The <sort-rule>s are optional, and <sort-rule>s not to be changed from the first "order_start" specification is given by empty specifications on the "section" statement.

NOTE The <sort-rule> capability is an extension over ISO/IEC 14651 functionality.

The order of the section reordering statements rearranges the assignment of collation entries for the sets of collation entries identified by the <section-symbols> to the order that the <section-symbols> occur after the "reorder-section-after" statement.

The section reordering statements are terminated by a "reorder-section-end" statement.

5.5.14.3 Example of section reordering

```
copy "i18n"
section <DEVANAGARI> <U0905>..<U0939>;<U093D>..<U0950>
reorder-section-after <DEVANAGARI> <U3361>
```

This example is interpreted as follows: The LC_COLLATE category of the "i18n" FDCC-set is copied. Then a definition of the section <DEVANAGARI> is done, and the collating elements of this section is removed from the table and inserted in the same relative order and with the same weights after the collating element <U3361>, which is the last of the digits. In this way the <DEVANAGARI> section is reordered to be sorted before all other letters.

5.5.15 "reorder-section-end" keyword

The "reorder-section-end" keyword specifies the end of a list of section symbols, initiated by the "reorder-section-after" keyword.

5.5.16 "i18n" LC_COLLATE category

The "i18n" LC_COLLATE category is defined as the following, which includes the tailorable template in ISO/IEC 14651.

```
LC_COLLATE
 % This is the ISO/IEC 30112 i18n fdcc-set definition for
 % the LC_COLLATE category.
 %
 % equivalences
 symbol-equivalence <NONE>              <BASE>
 symbol-equivalence <CAPITAL>           <CAP>
 symbol-equivalence <SMALL>             <MIN>
 symbol-equivalence <CAPITAL-SMALL>     <COMPATCAP>
 symbol-equivalence <SMALL-CAPITAL>     <COMPAT>
 symbol-equivalence <MACRON>            <MACRO>
 symbol-equivalence <STROKE>            <OBLIK>
 symbol-equivalence <ACUTE>             <AIGUT>
 symbol-equivalence <CIRCUMFLEX>        <CIRCF>
 symbol-equivalence <RING>              <CRCLE>
 symbol-equivalence <DIAERESIS>         <TREMA>
 symbol-equivalence <DOT>               <POINT>
 symbol-equivalence <CEDILLA>           <CEDIL>
 symbol-equivalence <OGONEK>            <OGONK>
 symbol-equivalence <HOOK>              <CROOK>
 symbol-equivalence <HORN>              <HORNU>
 symbol-equivalence <DOT-BELOW>         <POINS>

 % Copy the template from ISO/IEC 14651
 copy "ISO14651_2006_TABLE1_en.txt"
 reorder-after <SFFFF>
 order_start forward;forward;forward;forward,position
 reorder-end
 END LC_COLLATE
```

5.6 LC_MONETARY

The LC_MONETARY category defines the rules and symbols that are used to format monetary numeric information. The operands are strings. For some keywords, the strings can contain only integers. More than one set of monetary values can be provided, and for each set a period of validity and conversion rate can be given. Keywords that are not provided, string values set to the empty string "", or integer keywords set to -1, are used to indicate that the value is unspecified, and then no default is implied. The following keywords are defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

valid_from One or more strings separated by semicolons, representing a Gregorian date in the form "YYYYMMDD" according to ISO 8601, specifying the beginning date (inclusive from the beginning of day local time) of the validity of a currency. The position of the string in the list corresponds to the position of operands in other keywords in the LC_MONETARY category. The currencies should be ordered in terms of validity dates, and for each validity period with the currency that the amounts are stored in first. If not specified, it is taken to be an implementation-defined beginning of time. This keyword is optional.

valid_to One or more strings, separated by semicolons, each representing a Gregorian date in the form "YYYYMMDD" according to ISO 8601, that specify the last date (inclusive to the end of day local time) of the validity of a currency. If not specified, it is taken to be an implementation-defined end of time. This keyword is optional.

conversion_rate one or more pairs of integers separated by a <semicolon> specifying the fixed conversion rate between the current currency and the first currency that is valid, determined by a date provided by the application. If the currency is not the first valid currency for the period in question, the first integer is for multiplying the first valid currency, and the second for dividing this result to get the amount in the current currency. The currency to be the current currency is selected by the application from the date applicable; and whether domestic or international formatting is used is also determined by the application. Each pair of integers are separated by a <slash>. The default value is "1/100". This keyword is optional.

NOTE The two integers are used instead of a floating point value, to be able to cater for legal requirements on Euro conversion where a multiplication and division is prescribed, instead of just one floating point multiplication.

currency_symbol One or more strings separated by semicolons that are used as the local currency symbol.

NOTE The symbols normally identify different currencies.

mon_decimal_point The operand is one or more strings separated by semicolons containing the symbol that is used as the decimal delimiter in monetary formatted quantities. In contexts where other standards limit the "mon_decimal_point" to a single byte, the result of specifying a multibyte operand is unspecified. The keyword is specified, unless the "copy" keyword is used.

mon_thousands_sep The operand is one or more strings separated by semicolons containing the symbol that is used as a separator for groups of digits to the left of the decimal delimiter in formatted monetary quantities. In contexts where other standards limit the "mon_thousands_sep" to a single byte, the result of specifying a multibyte operand is unspecified. The keyword is specified, unless the "copy" keyword is used.

mon_grouping Define the size of each group of digits in formatted monetary quantities. The operand is a sequence of integers separated by semicolons. Each integer specifies the number of digits in each group, with the initial integer defining the size of the group immediately preceding the decimal delimiter, and the following integers defining the preceding groups. If the last integer is not -1, then the size of the previous group (if any) is repeatedly used for the remainder of the digits. If the last integer is -1, then no further grouping is performed. The keyword is specified, unless the "copy" keyword is used.

positive_sign A string that is used to indicate a non-negative-valued formatted monetary quantity. The keyword is specified, unless the "copy" keyword is used.

negative_sign A string that is used to indicate a negative-valued formatted monetary quantity. The keyword is specified, unless the "copy" keyword is used.

frac_digits One or more integers separated by semicolons, representing the number of fractional digits (those to the right of the decimal delimiter) to be written in a formatted monetary quantity using "currency_symbol". The keyword is specified, unless the "copy" keyword is used.

p_cs_precedes One or more integers separated by semicolons, set to 1 if the "currency_symbol" precedes the value for a non-negative formatted monetary quantity, and set to 0 if the symbol succeeds the value. The keyword is specified, unless the "copy" keyword is used.

p_sep_by_space One or more integers separated by semicolons, set to 0 if no space separates the "currency_symbol" from the value for a non-negative formatted monetary quantity, set to 1 if a space separates the symbol from the value, and set to 2 if a space separates the symbol and the sign string, if adjacent. The keyword is specified, unless the "copy" keyword is used.

n_cs_precedes One or more integers separated by semicolons, set to 1 if the "currency_symbol" precedes the value for a negative formatted monetary quantity, and set to 0 if the symbol succeeds the value. The keyword is specified, unless the "copy" keyword is used.

n_sep_by_space One or more integers separated by semicolons, set to 0 if no space separates the "currency_symbol" from the value for a negative formatted monetary quantity, set to 1 if a space separates the symbol from the value, and set to 2 if a space separates the symbol and the sign string, if adjacent. The keyword is specified, unless the "copy" keyword is used.

p_sign_posn One or more integers separated by semicolons, set to a value indicating the positioning of the "positive_sign" for a non-negative formatted monetary quantity using the "currency_symbol". The following integer values are defined.

0	Parentheses enclose the quantity and the "currency_symbol".
1	The sign string precedes the quantity and the "currency_symbol".
2	The sign string succeeds the quantity and the "currency_symbol".
3	The sign string immediately precedes the "currency_symbol".
4	The sign string immediately succeeds the "currency_symbol".
	The keyword is specified, unless the "copy" keyword is used.
n_sign_posn	One or more integers separated by semicolons, set to a value indicating the positioning of the "negative_sign" for a negative formatted monetary quantity using the "currency_symbol". The following integer values are defined.
0	Parentheses enclose the quantity and the "currency_symbol".
1	The sign string precedes the quantity and the "currency_symbol".
2	The sign string succeeds the quantity and the "currency_symbol".
3	The sign string immediately precedes the "currency_symbol".
4	The sign string immediately succeeds the "currency_symbol".
	The keyword is specified, unless the "copy" keyword is used.
int_curr_symbol	One or more strings separated by semicolons that are used as the international currency symbols. Each operand is a four-character string, with the first three characters containing the alphabetic international currency symbol in accordance with those specified in ISO 4217. The fourth character is the character used to separate the international currency symbol from the monetary quantity. The keyword is specified, unless the "copy" keyword is used.
int_frac_digits	One or more integers separated by semicolons, representing the number of fractional digits (those to the right of the decimal delimiter) to be written in a formatted monetary quantity using "int_curr_symbol". The keyword is specified, unless the "copy" keyword is used.
int_p_cs_precedes	One or more integers separated by semicolons; set to 1 if the "int_curr_symbol" precedes the value for a nonnegative formatted monetary quantity and set to 0 if the symbol succeeds the value. If not specified, the value of "p_cs_precedes" is taken.
int_p_sep_by_space	One or more integers separated by semicolons; set to 0 if no space separates the "int_curr_symbol" from the value for a nonnegative formatted monetary quantity, set to 1 if a space separates the symbol from the value, and set to 2 if a space separates the symbol and the sign string, if adjacent. If not specified, the value of "p_sep_by_space" is taken.
int_n_cs_precedes	One or more integers separated by semicolons; set to 1 if the "int_curr_symbol" precedes the value for a negative formatted monetary

quantity and set to 0 if the symbol succeeds the value. If not specified, the value of "n_cs_precedes" is taken.

int_n_sep_by_space One or more integers separated by semicolons; set to 0 if no space separates the "int_curr_symbol" from the value for a negative formatted monetary quantity, set to 1 if a space separates the symbol from the value, and set to 2 if a space separates the symbol and the sign string, if adjacent. If not specified, the value of "n_sep_by_space" is taken.

int_p_sign_posn One or more integers separated by semicolons, set to a value indicating the positioning of the "positive_sign" for a nonnegative formatted monetary quantity using the "int_curr_symbol". The following integer values are defined.

0 Parentheses enclose the quantity and the "int_curr_symbol".

1 The sign string precedes the quantity and the "int_curr_symbol".

2 The sign string succeeds the quantity and the "int_curr_symbol".

3 The sign string immediately precedes the "int_curr_symbol".

4 The sign string immediately succeeds the "int_curr_symbol".

If no "int_p_sign_posn" is present the value of the "p_sign_posn" is taken.

int_n_sign_posn One or more integers separated by semicolons, set to a value indicating the positioning of the "negative_sign" for a negative formatted monetary quantity using the "int_curr_symbol". The following integer values are defined.

0 Parentheses enclose the quantity and the "int_curr_symbol".

1 The sign string precedes the quantity and the "int_curr_symbol".

2 The sign string succeeds the quantity and the "int_curr_symbol".

3 The sign string immediately precedes the "int_curr_symbol".

4 The sign string immediately succeeds the "int_curr_symbol".

If no "int_n_sign_posn" is present the value of the "n_sign_posn" is taken.

The "i18n" FDCC-set is defined as follows for the LC_MONETARY category.

```
LC_MONETARY
% This is the ISO/IEC 30112 i18n fdcc-set definition for
% the LC_MONETARY category.
%
int_curr_symbol     ""
currency_symbol     ""
mon_decimal_point   "<U002C>"
mon_thousands_sep   ""
mon_grouping        -1
positive_sign       ""
negative_sign       "<U002E>"
int_frac_digits     -1
```

```
frac_digits          -1
p_cs_precedes        -1
p_sep_by_space       -1
n_cs_precedes        -1
n_sep_by_space       -1
p_sign_posn          -1
n_sign_posn          -1
%
END LC_MONETARY
```

5.7 LC_NUMERIC

The LC_NUMERIC category defines the rules and symbols that are used to format nonmonetary numeric information. The operands are strings. For some keywords, the strings only can contain integers. Keywords that are not provided, string values set to the empty string (""), or integer keywords set to -1, are used to indicate that the value is unspecified. The following keywords are defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

decimal_point The operand is a string containing the symbol that is used as the decimal delimiter in numeric, nonmonetary formatted quantities. This keyword cannot be omitted and cannot be set to the empty string. In contexts where other standards limit the decimal point to a single byte, the result of specifying a multibyte operand is unspecified.

thousands_sep The operand is a string containing the symbol that is used as a separator for groups of digits to the left of the decimal delimiter in numeric, nonmonetary formatted monetary quantities. In contexts where other standards limit the "thousands_sep" to a single byte, the result of specifying a multibyte operand is unspecified.

grouping Define the size of each group of digits in formatted non-monetary quantities. The operand is a sequence of integers separated by semicolons. Each integer specifies the number of digits in each group, with the initial integer defining the size of the group immediately preceding the decimal delimiter, and the following integers defining the preceding groups. If the last integer is not -1, then the size of the previous group (if any) is repeatedly used for the remainder of the digits. If the last integer is -1, then no further grouping is performed.

The "i18n" FDCC-set is for the LC_NUMERIC category.

```
LC_NUMERIC
% This is the ISO/IEC 30112 i18n fdcc-set definition for
% the LC_NUMERIC category.
%
decimal_point    "<U002C>"
thousands_sep    ""
grouping         -1
%
END LC_NUMERIC
```

5.8 LC_TIME

5.8.1 General

The LC_TIME category defines the rules and symbols that are used to format date and time information.

NOTE ISO 8601 allows different formats for dates, one form is YYYY-MM-DD, another is YYYYMMDD. Each clause in this document notes which specific format of ISO 8601 is used within it.

The following keywords are defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

abday Define the abbreviated weekday names for calendar systems with weeks of constant length, to be referenced by the %a field descriptor. The length of the week and a Gregorian date for the first weekday is defined by the "week" keyword. The operand consists of semicolon-separated strings. The first string is the abbreviated name of the day corresponding to the first day of the week (default Sunday), the second the abbreviated name of the day corresponding to the second day of the week (default Monday), and so on.

day Define the full weekday names for calendar systems with weeks of constant length, to be referenced by the %A field descriptor. The length of the week and a Gregorian date for the first weekday is defined by the "week" keyword. The operand consists of semicolon-separated strings. The first string is the full name of the day corresponding to the first day of the week (default Sunday), the second the full name of the day corresponding to the second day of the week (default Monday), and so on.

week Is used to define the number of days in a week, and which weekday is the first weekday (the first weekday has the value 1), and which week is to be considered the first in a year. The first operand is an integer specifying the number of days in the week. The second operand is an integer specifying the Gregorian date in the format YYYYMMDD, and it specifies a day that is a first weekday (all other first weekdays may then be calculated by adding or subtracting a whole multiplum of the number of days in the week as specified with the first operand). The third operand is an integer specifying the weekday number to be contained in the first week of the year. The third operand can also be understood as the number of days required in a week for it to be considered the first week of the year. If the keyword is not specified the values are taken as 7, 19971130 (a Sunday), and 7 (Saturday), respectively. ISO 8601 conforming applications should use the values 7, 19971201 (a Monday), and 4 (Thursday), respectively. This keyword is optional.

abmon Define the abbreviated month names, to be referenced by the %b field descriptor. The operand consists of twelve or thirteen semicolon-separated strings. The first string is the abbreviated name of the first month of the year (January), the second the abbreviated name of the second month, and so on.

mon Define the full month names, to be referenced by the %B field descriptor. The operand consists of twelve or thirteen semicolon-separated strings. The first string is the full name of the first month of the year (January), the second the full name of the second month, and so on.

d_t_fmt Define the appropriate date and time representation, to be referenced by the %c field descriptor. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined in Table 3.

d_fmt Define the appropriate date representation, to be referenced by the %x field descriptor. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined in Table 3.

t_fmt Define the appropriate time representation, to be referenced by the %X field descriptor. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined in Table 3.

am_pm Define the appropriate representation of the ante meridiem and post meridiem strings, to be referenced by the %p field descriptor. The operand consists of two strings, separated by a semicolon. The first string represents the antemeridiem designation, the last string the postmeridiem designation. The keyword is optional. If unspecified, the %p field descriptor refers to the empty string.

t_fmt_ampm Define the appropriate time representation in the 12-hour clock format with "am_pm", to be referenced by the %r field descriptor. The operand consists of a string and can contain any combination of characters and field descriptors. If the string is empty, the 12-hour format is not supported in the FDCC-set.

The following keywords are all optional.

era Define how years are counted and displayed for each era in a locale. The operand shall consist of semicolon-separated strings. Each string shall be an era description segment with the format:

direction:offset:start_date:end_date:era_name:era_format

according to the definitions below. There can be as many era description segments as are necessary to describe the different eras.

NOTE The start of an era might not be the earliest point in the era – it could be AD 1 and increases with earlier time.

direction Either a '+' or a '-' character. The '+' character shall indicate that years closer to the start_date have lower numbers than those closer to the end_date. The '-' character shall indicate that years closer to the start_date have higher numbers than those closer to the end_date.

offset The number of the year closest to the start_date in the era, corresponding to the %Ey conversion specification.

start_date A date in the format YYYYMMDD, where YYYY, MM, and DD are the year, month, and day numbers respectively according to ISO 8601 of the start of the era. Years prior to AD 1 shall be represented as negative numbers.

end_date The ending date of the era, in the same format as the start_date, or one of the two special values "-*" or "+*". The value "-*" shall indicate that the ending date is the beginning of time. The value "+*" shall indicate that the ending date is the end of time.

era_name A string representing the name of the era, corresponding to the %EC conversion specification.

era_format A string for formatting the year in the era, corresponding to the %EY conversion specification.

era_year Define the format of the year in alternate Era format, corresponding to the %EY field descriptor.

era_d_t_fmt Define the format of the date and time in alternate Era notation, corresponding to the %Ec field descriptor.

era_d_fmt Define the format of the date in alternate era notation, corresponding to the %Ex field descriptor.

era_t_fmt Define the format of the time in alternate era notation, corresponding to the %EX field descriptor.

alt_digits Define alternate symbols for digits, corresponding to the %O field descriptor modifier. The operand consists of semicolon-separated strings. The first string is the alternate symbol corresponding with zero, the second string the symbol corresponding with one, and so on. Up to 100 alternate symbol strings can be specified. The %O modifier indicates that the string corresponding to the value specified via the field descriptor is used instead of the value.

first_weekday Define the first day to be displayed, for example in a calendar display utility. The operand is an integer specifying the day number (1 = first) according to the information specified with the "day" keyword. The keyword may be omitted, and then the value 1 is taken, corresponding to Sunday for a week beginning Sunday, or to Monday for a week beginning Monday.

first_workday Define the first workday as an integer according to the day numbering specified with the "week" keyword.

cal_direction Define the direction of the display of dates, for example in a calendar display utility. The operand is an integer, and the following values are defined.

1 left-right from top

2 top-down from left

3 right-left from top

The keyword may be omitted, and then the value 1 is taken.

timezone Define one or more timezones, each defined by a string, and the strings separated by a <semicolon>. In the following the characters <, >, [and] are used as metacharacters. Only characters with a visible glyph from the portable character set can be used, except in the <std> and <dst> fields. The syntax of a string is:

<std><offset><dst>[<offset>][,<rule>[,<rule>...]];

where

<std> and <dst> indicates no less than three, nor more than 10 characters that are the designation for the standard <std>, or daylight savings time or summertime <dst> zone. Only <std> is required; if <dst> is missing, then daylight savings time or summertime does not apply in this category. Upper- and lowercase letters are explicitly allowed. Any characters except a leading colon <:> or digits, the comma <,>, the minus <->, the plus <+>, and the null character are permitted to appear in these fields, but their meaning is unspecified;

<offset> Indicates the value one must add to the local time to arrive at the coordinated universal time. The <offset> has the form:

hh[:mm[:ss]]

The minutes (mm) and seconds (ss) are optional. The hour (hh) is required and can be a single digit. The <offset> following <std> is required. If no <offset> follows <dst>, summertime is assumed to be one hour ahead of standard time. One or more digits can be used; the value is always interpreted as a decimal number. The hour is between zero and 24, and the minutes (and seconds) – if present – is between zero and 59. If preceded by a "-", the time zone is east of the prime meridian; otherwise it is west of (which can be indicated by an optional preceding "+").

<rule> A specification for daylight savings time changes that indicates when to change to and back from summertime. The <rule> has the form:

<date>[/<time>/<year>],<date>[/<time>/<year>]

where the first <date> describes when the change from standard time to summertime occurs, and the second <date> describes when the change back happens. Each <time> field describes when, in current local time, the change to the other time is made. The first <year> field defines the beginning of the validity of this rule, and the second <year> field defines the end of the validity of the rule. A number of rules can be given.

The format of <date> is one of the following:

J<n> The Julian day <n> (1 <= n <= 365) Leap years are not counted. That is, in all years – including leap years – February 28 is day 59 and March 1 is day 60. It is impossible to explicitly refer to the occasional February 29.

<n> The zero-based Julian day (0 <= n <= 365). Leap years are counted and it is possible to refer to February 29.

M<m>.<n>.<d>

the <d>th day (0 <= d <= 7) of week <n> of month <m> (1 <= n <= 5, 1 <= m <= 12, where week 5 means "the last <d> day in month <m>" which can occur in either the fourth or fifth week). Week 1 is the first week in which the <d>th day occurs. Day zero and day seven is Sunday.

The <time> has the same format as <offset> except that no leading sign ("-" or "+") is allowed. The default, if <time> is not given, is "02:00:00".

The <year> has the format YYYY.

NOTE This way of specifying the timezone is compatible with the format for the environment variable TZ described in ISO/IEC/IEEE 9945.

5.8.2 Date field descriptors

The LC_TIME category defines the interpretation of a number of field descriptors (see Table 3). The field descriptors are also available in the definitions with the following LC_TIME keywords: "d_t_fmt", "d_fmt", "t_fmt", "t_fmt_ampm", "era", "era_d_t_fmt", "era_d_fmt", and "era_t_fmt". A field descriptor may not be used with the LC_TIME keywords defining it.

Table 3 — Field descriptors for the date field

%a	FDCC-set's abbreviated weekday name.
%A	FDCC-set's full weekday name.
%b	FDCC-set's abbreviated month name.
%B	FDCC-set's full month name.
%c	FDCC-set's appropriate date and time representation.
%C	Century (a year divided by 100 and truncated to integer) as decimal number (00-99).
%d	Day of the month as a decimal number (01-31).
%D	Date in the format mm/dd/yy.
%e	Day of the month as a decimal number (1-31 in at two-digit field with leading <space> fill).
%F	The date in the format YYYY-MM-DD (An ISO 8601 format).
%g	Week-based year within century, as a decimal number (00-99).
%G	Week-based year with century, as a decimal number (for example 1997).
%h	A synonym for %b.
%H	Hour (24-hour clock), as a decimal number (00-23).
%I	Hour (12-hour clock), as a decimal number (01-12).
%j	Day of the year, as a decimal number (001-366).
%m	Month, as a decimal number (01-13).
%M	Minute, as a decimal number (00-59).
%n	A <newline> character.
%p	FDCC-set's equivalent of either AM or PM.

%r	12-hour clock time (01-12), using the AM/PM notation.
%R	24-hour clock time, in the format "%H:%M".
%S	Seconds, as a decimal number (00-61).
%t	A <tab> character.
%T	24-hour clock time, in the format HH:MM:SS.
%u	Weekday, as a decimal number (1(Monday)-7).
%U	Week number of the year (Sunday as the first day of the week) as a decimal number (00-53). All days in a new year preceding the first Sunday are considered to be in week 0.
%v	Week number of the year, as a decimal number with two digits including a possible leading zero, according to "week" keyword.
%V	Week of the year (Monday as the first day of the week), as a decimal number (01-53). The method for determining the week number is as specified by ISO 8601.
%w	Weekday, as a decimal number (0(Sunday)-6).
%W	Week number of the year (Monday as the first day of the week), as a decimal number (00-53). All days in a new year preceding the first Monday are considered to be in week 0.
%x	FDCC-set's appropriate date representation.
%X	FDCC-set's appropriate time representation.
%y	Year within century (00-99).
%Y	Year with century, as a decimal number.
%z	The offset from UTC in the ISO 8601 format "-0430" (meaning 4 hours 30 minutes behind UTC, west of Greenwich), or by no characters if no time zone is determinable.
%Z	Time-zone name, or no characters if no time zone is determinable.
%%	A <percent-sign> character.

NOTE %g, %G and %V give values according to the ISO 8601 week-based year. In this system, weeks begin on a Monday and week 1 of the year is the week that includes 4 January, which is also the week that includes the first Thursday of the year and is also the first week that contains at least four days in the year. If the first Monday of the year is the 2nd, 3rd or 4th, the preceding days are part of the last week of the preceding year; thus, for Saturday 2 January 1999, %G is replaced by 1998 and %V is replaced by 53. If the 29th, 30th or 31st December is a Monday, it and any following days are part of week 1 of the following year. Thus, for Tuesday 30 December 1997, %G is replaced by 1998 and %V is replaced by 1.

5.8.3 Modified field descriptors

Some field descriptors can be modified by the E and O modifier characters to indicate a different format or specification as specified in the LC_TIME FDCC-set description. If the corresponding keyword (see "era", "era_year", "era_d_t_fmt", "era_d_fmt", "era_t_fmt" and "alt_digits") is not specified for the current FDCC-set, the unmodified field descriptor value is used.

%Ec	FDCC-set's alternate date and time representation.
%EC	The name of the base year (period) in the FDCC-set's alternate representation.

%Ex	FDCC-set's alternate date representation.
%EX	FDCC-set's alternate time representation.
%Ey	Offset from %EC (year only) in the FDCC-set's alternate representation.
%EY	Full alternate year representation.
%Od	Day of month using the FDCC-set's alternate numeric symbols.
%Oe	Day of month using the FDCC-set's alternate numeric symbols.
%Of	Weekday as a decimal number according to alt_day (1 is first day).
%OH	Hour (24-hour clock) using the FDCC-set's alternate numeric symbols.
%OI	Hour (12-hour clock) using the FDCC-set's alternate numeric symbols.
%Om	Month using the FDCC-set's alternate numeric symbols.
%OM	Minutes using the FDCC-set's alternate numeric symbols.
%OS	Seconds using the FDCC-set's alternate numeric symbols.
%Ou	Weekday as a number in the alternate representation of the FDCC-set (Monday=1).
%OU	Week number of the year (Sunday as the first day of the week) using the FDCC-set's alternate numeric symbols.
%OV	Week number of the year (Monday as the first day of the week, ISO 8601 rules) using the alternate numeric symbols of the FDCC-set.
%Ow	Weekday as number in the FDCC-set's alternate representation (Sunday=0).
%OW	Week number of the year (Monday as the first day of the week) using the FDCC-set's alternate numeric symbols.
%Oy	Year (offset from %C) in alternate representation.

5.8.4 "i18n" LC_TIME category

The "i18n" LC_TIME category is (following ISO 8601).

```
LC_TIME
 % This is the ISO/IEC 30112 "i18n" definition for
 % the LC_TIME category.
 %
 % Weekday and week numbering according to ISO 8601
 abday   "<U0031>";"<U0032>";"<U0033>";"<U0034>";/
         "<U0035>";"<U0036>";"<U0037>"
 day     "<U0031>";"<U0032>";"<U0033>";"<U0034>";/
         "<U0035>";"<U0036>";"<U0037>"
 week    7;19971201;4
 abmon   "<U0030><U0031>";"<U0030><U0032>";"<U0030><U0033>";/
         "<U0030><U0034>";"<U0030><U0035>";"<U0030><U0036>";/
         "<U0030><U0037>";"<U0030><U0038>";"<U0030><U0039>";/
         "<U0031><U0030>";"<U0031><U0031>";"<U0031><U0032>"
 mon     "<U0030><U0031>";"<U0030><U0032>";"<U0030><U0033>";/
         "<U0030><U0034>";"<U0030><U0035>";"<U0030><U0036>";/
         "<U0030><U0037>";"<U0030><U0038>";"<U0030><U0039>";/
         "<U0031><U0030>";"<U0031><U0031>";"<U0031><U0032>"
 am_pm   "";""
 % Date formats following ISO 8601
 % Appropriate date and time representation (%c)
```

```
%       "%F %T"
d_t_fmt "<U0025><U0046><U0020><U0025><U0054>"
%
% Appropriate date representation (%x)    "%F"
d_fmt   "<U0025><U0046>"
%
% Appropriate time representation (%X)    "%T"
t_fmt   "<U0025><U0054>"
t_fmt_ampm ""
%
END LC_TIME
```

5.9 LC_MESSAGES

The LC_MESSAGES category defines the format and values for affirmative an negative responses. The operands are strings or extended regular expressions to specify which response strings that should be considered matches; see ISO/IEC/IEEE 9945 for a definition of extended regular expressions. The following keywords are defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

yesexpr The operand consists of an extended regular expression that describes the acceptable affirmative response to a question expecting an affirmative or negative response.

noexpr The operand consists of an extended regular expression that describes the acceptable negative response to a question expecting an affirmative or negative response.

yesstr The operand consists of a string that describes the affirmative response to a question.

nostr The operand consists of a string that describes the negative response to a question.

The "i18n" LC_MESSAGES category is:

```
LC_MESSAGES
% This is the ISO/IEC 30112 "i18n" definition for
% the LC_MESSAGES category.
%
yesexpr "<U005B><U002B><U0031><U005D>"
noexpr  "<U005B><U002D><U0030><U005D>"
END LC_MESSAGES
```

NOTE This uses regular expression syntax with brackets ([]) to, for example, specify that both <+> and <1> are allowed as an affirmative answer.

5.10 LC_XLITERATE

5.10.1 General

The LC_XLITERATE category defines formats to transform strings, by transforming substrings in the source to substrings in the target string. The target is the culture of the FDCC-set in question. The capabilities can be used for simple transliteration or fallback based on substring substitution, while more advanced transliteration schemes, for example based on pattern matching, sound equivalences, or

using a database, is either cumbersome to specify, or not addressed. The transliteration may for example be from the Cyrillic script to the Latin script.

NOTE Transliteration is for backwards compatibility reasons also possible with the LC_CTYPE category, see subclause 5.4.3.

Transliteration of an incoming character string to a character string in a FDCC-set can be specified with the following transliteration keywords and transliteration statements.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

include The name of the FDCC-set in text form to transliterate from, and the repertoiremap for the FDCC-set to be used for the definition of the transliteration statements. Other transliteration statements can follow to replace specification of the copied FDCC-set. This keyword is optional.

default_missing defines a string of one or more characters to be put in the output string if no transliteration statement can be applied to an input <transliteration-source>. This keyword is optional.

translit_ignore defines a set of characters, separated by semicolons, that are to be ignored in the incoming character string, that is, each of the occurrences of such characters is treated as the empty string. The characters can use the notations defined in subclause 5.4.1 for lists of characters. This keyword is optional.

redefine This keyword introduces a list of transliteration statements where each of the <transliteration_source> strings have been defined previously in the specification, and the new transliteration statements then replaces the old transliteration statements for the <transliteration_source> strings specified. This keyword is optional.

5.10.2 Transliteration statements

The syntax for a transliteration statement is:

"%s %s;%s;...;%s\n",<transliteration_source>,<transliteration_string>,...

Each <transliteration_source> consists of one or more characters (in any of the forms defined in subclause 5.2.2). The <transliteration_source> that is the longest in terms of number of characters that match the input string is the one selected for transliteration.

If a transliteration statement contains more than one <transliteration_string>, the order that each <transliteration_string> occurs in the transliteration statement defines the precedence order for choosing a particular <transliteration_string> to substitute for the <transliteration_source>. When a process makes use of a transliteration statement to transliterate text, and that transliteration statement contains more than one <transliteration_string>, that process chooses the first <transliteration_string>, in the defined precedence order, that satisfies the requirements of the transliteration.

NOTE The exact definition of the concept of satisfying the requirements of the transliteration is outside the context of this document. If, for example, a transliteration involves a change in the coded character set of a string, a <transliteration_string> must be chosen, all of whose elements are members of that coded character set. In order to determine this, it would be expected that a repertoire describing which characters are to be present in the resulting transformed string be available to the transliteration API. Also, a transliteration can involve

requirements such as that string length not change under transliteration. Such requirements can also affect the choice among alternative <transliteration_string> values.

If more than one transliteration statement is given for a given <transliteration_source> this is an error, and duplicate transliteration statements are ignored. Tailoring of transliteration statements can be done via the "redefine" keyword.

5.10.3 "include" keyword

The "include" keyword specifies a set of transliteration statements in text form to be included in the applied transliteration. The syntax of the "include" statement is:

"include %s;%s\n", <FDCC-set>, <repertoiremap>

<FDCC-set> is a string identifying the FDCC-set to be included from.

<repertoiremap> is a string identifying the repertoiremap used in the FDCC-set being included and is used to map character specifications from the specified FDCC-set into the current FDCC-set.

5.10.4 Example of use of transliteration

```
LC_XLITERATE
include "de_DE";"de_repmap"
default_missing <?>
translit_ignore <U3200>..<UFAFF>
<ae>        <a:>;<e*>;"<a><e>";"<e>"
<s>         <s*>;<s=>
"<K><O>"    <KO>
END LC_XLITERATE
```

The "LC_XLITERATE" statement introduces the transliteration category.

The "include" keyword specifies that the FDCC-set "de_DE" is copied and that the repertoiremap "de_repmap" is used to define the symbolic character names in the FDCC-set "de_DE".

The "default_missing" keyword introduces the character sequence "<?>" as the string to transform into for input characters that cannot be transformed into other strings, because no transliteration statement is applicable to the character.

The "translit_ignore" keyword specifies that a set of ideographic characters, Hangul, east Asian symbols and the private use area etc. (the range <U3200>..<UFAFF>) is ignored for the transliteration.

The next 3 lines are transliteration statements.

The first transliteration statement defines a number of transliterations for the LATIN LETTER AE, including into LATIN LETTER A WITH DIAERESIS, GREEK LETTER EPSILON, the two Latin letters A and E, and finally the LATIN LETTER E.

The second transliteration statement defines transliteration of the LATIN LETTER S into GREEK LETTER SIGMA, and CYRILLIC LETTER ES.

The third transliteration statement transliterates the two Latin letters K and O into the Japanese Hiragana character KO.

The transliteration category is terminated via the "END LC_XLITERATE" statement in the above example.

There is no "i18n" entry for the LC_XLITERATE category.

5.11 LC_NAME

The LC_NAME category defines formats to be used in addressing a person, e.g. in a postal address or in a letter. The following keywords are defined.

copy	Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.
name_fmt	Define the appropriate representation of a person's name and title. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined below.
name_gen	The operand is a string defining a salutation valid for all persons.
name_miss	The operand is a string defining a salutation valid for unmarried females.
name_mr	The operand is a string defining a salutation valid for males.
name_mrs	The operand is a string defining a salutation valid for married females.
name_ms	The operand is a string defining a salutation valid for all females.

NOTE There are a number of variations for addressing a person among the cultures. Middle names are not used in many countries and even the family name is not used in some countries. In other countries there is extensive use of one or more middle names and corresponding initials. The specification below can be regarded as a starting point for this problem.

The LC_NAME category defines the interpretation of a number of field descriptors. The field descriptors are also available in the definitions with the following LC_NAME keywords: "name_fmt".

Field descriptors for the "name_fmt" keyword.

%f	Family names.
%F	Family names in uppercase.
%g	First given name.
%G	First given initial.
%l	First given name with Latin letters. In some cultures, e.g. in Taiwan, Province of China it is customary to also have a first name written with Latin letters, although the rest of the name is written in another script.
%o	Other shorter name, eg. "Bill".
%m	Additional given names.
%M	Initials for additional given names.
%p	Profession.
%s	Salutation, such as "Doctor"

%S	Abbreviated salutation, such as "Mr." or "Dr."
%d	Salutation, using the FDCC-sets conventions, with 1 for the name_gen, 2 for name_mr, 3 for name_mrs, 4 for name_miss, 5 for name_ms.
%t	If the preceding field descriptor resulted in an empty string, then the empty string, else a <space>.

Each field descriptor can have an <R> after the <%> to specify that the information is taken from a Romanized version string of the entity. An initial is any string, normally consisting of one letter and a punctuation mark; the Dutch "IJ" is an example of a two-character initial.

The "i18n" LC_NAME category is:

```
LC_NAME
 % This is the ISO/IEC 30112 "i18n" definition for
 % the LC_NAME category.
 name_fmt    "<U0025><U0070><U0025><U0074><U0025><U0067><U0025><U0074>/
 <U0025><U006D><U0025><U0074><U0025><U0066>"
 % This corresponds to "%p%t%g%m%t%f" which is
 % Profession Primary Additionals Family
 END LC_NAME
```

5.12 LC_ADDRESS

The LC_ADDRESS category defines formats to be used in specifying a location like a person's home or office, for use in a postal address or in a letter, and other items related to geography, including natural language. All keywords are strings and can contain non-digits, and all keywords are optional. The following keywords are recognized.

copy	Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.
postal_fmt	Define the appropriate representation of a postal address such as street and city. The proper formatting of a person's name and title is done with the "name_fmt" keyword of the LC_NAME category. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined below.
country_name	The operand is a string with the name of the country in the language of the FDCC-set.
country_post	The operand is a string with the abbreviation of the country, used for postal addresses, for example by the CEPT-MAILCODE codes designating countries in Europe. Other abbreviation systems are also allowed, and there is no specific way to identify which abbreviation system is being used.
country_isbn	The operand is a string with one or more numbers separated by a semicolon that represent the ISBN numbers allocated to the country.
lang_name	The operand is a string with the name of the language in the language of the FDCC-set.

lang_ab2	The operand is a string with the two-letter abbreviation of the language, according to ISO 639.
lang_ab3_term	The operand is a string with the three-letter abbreviation of the language for terminology use, according to ISO 639-2.
lang_ab3_lib	The operand is a string with the three-letter abbreviation of the language for library use, according to ISO 639-2. If not specified, the value of the "lang_ab3_term" keyword is taken.

NOTE The "lang_ab3_term" and "lang_ab3_lib" keywords will in most cases contain the same value, but they can differ, e.g. the values for the German language is "deu" and "ger" respectively.

The LC_ADDRESS category defines the interpretation of a number of field descriptors. The field descriptors are also available in the definitions with the following LC_ADDRESS keywords: "postal_fmt".

Field descriptors for the "postal_fmt" keyword.

%n	Person's name, possibly constructed with the LC_NAME "name_fmt" keyword.
%a	Care of person, or organization.
%f	Firm name.
%d	Department name.
%b	Building name.
%s	Street or block (eg. Japanese) name.
%h	House number or designation.
%N	Insert an <end-of-line> if the previous descriptor's value was not an empty string; otherwise ignore.
%t	Insert a <space> if the previous descriptor's value was not an empty string; otherwise ignore.
%r	Room number, door designation.
%e	Floor number.
%C	Country designation, from the <country_post> keyword.
%l	Local township within town or city
%z	Zip number, postal code.
%T	Town, city.
%S	State, province, or prefecture.
%c	Country, as taken from data record.

Each field descriptor can have an <R> after the <%> to specify that the information is taken from a Romanized version string of the entity.

NOTE There are a number of variations for specifying a location among the cultures. Some of the information, like the middle names, or even the family name, is not used in some cultures. The specification here can be regarded as a starting point for this problem.

EXAMPLES

A specification for the USA could be:

"%n%N%a%N%d%N%f%N%b%N%h %s%N%e %r%N%l%N%C-%z %T%, %S %z%N%c%N"

Giving:

Person's name

c/o address

Department

Firm

Building

Number street

Floor room

Local town

City, state Zip

Country

An example for South Korea could be:

"%S %T %l %s %h %N%f %d%N%b %e %r%N%n %a%N%z"

Giving:

State city town street number

Firm department

Building floor room

Person's name c/o address

Zip

The "i18n" LC_ADDRESS category is:

```
LC_ADDRESS
 % This is the ISO/IEC 30112 "i18n" definition for
 % the LC_ADDRESS category.
 %
 postal_fmt    "<U0025><U006E><U0025><U004E>/
 <U0025><U0061><U0025><U004E><U0025><U0066><U0025><U004E>/
 <U0025><U0064><U0025><U004E><U0025><U0062><U0025><U004E><U0025><U0073>/
 <U0020><U0025><U0068><U0020><U0025><U0065><U0020><U0025><U0072>/
 <U0025><U004E><U0025><U006C><U0025><U004E><U0025><U0043><U002D>/
 <U0025><U007A><U0020><U0025><U0054><U0025><U004E>/
 <U0025><U0053><U0025><U004E><U0025><U0063><U0025><U004E>"
 %
 % "%n%N%a%N%f%N%d%N%b%N%s %h %e %r%N%l%N%C-%z %T%N%S%N%c%N"  resulting in
```

```
%  Person's_Name
%  C/o_person_or_org
%  Firm
%  Department
%  Building_name
%  Street_or_block number floor room
%  Local_township
%  Country-Zip City
%  State_or_province
%  Country
%
END LC_ADDRESS
```

5.13 LC_TELEPHONE

The LC_TELEPHONE category defines formats to be used with telephone services. All keywords are optional. The strings are not restricted in what characters they can contain. The following keywords are defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword is specified.

tel_int_fmt Define the appropriate representation of a telephone number for international use. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined below.

tel_dom_fmt Define the appropriate representation of a telephone number for domestic use. The operand consists of a string and can contain any combination of characters and field descriptors. In addition, the string can contain field descriptors defined below.

int_select The operand is a string with the digits used to call international telephone numbers.

int_prefix The operand is a string with the prefix used from other countries to call the area.

The LC_TELEPHONE category defines the interpretation of a number of field descriptors. The field descriptors are also available in the definitions with the following LC_TELEPHONE keywords: "tel_int_fmt" and "tel_dom_fmt".

%a area code without nationwide prefix (prefix is often <0>).

%A area code including nationwide prefix (prefix is often <0>).

%l local number (within area code).

%e extension (to local number)

%c country code

%C alternate carrier service code used for dialling abroad

%t Insert a <space> if the previous descriptor's value was not an empty string; otherwise ignore.

The "i18n" LC_TELEPHONE category is:

```
LC_TELEPHONE
 % This is the ISO/IEC 30112 "i18n" definition for
 % the LC_TELEPHONE category.
 %
 tel_int_fmt     "<U002B><U0025><U0063><U0020><U0025><U0061><U0025><U0074>/
 <U0025><U006C>"
 % "+%c %a%t%l" which is
 %  +country area local
 END LC_TELEPHONE
```

5.14 LC_PAPER

The LC_PAPER category defines the paper size. The following keywords shall be defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword shall be specified.

height Shall be used to specify the height of the paper. The operand is an integer and the value is the height measured in millimetres.

width Shall be used to specify the width of the paper. The operand is an integer and the value is the width measured in millimetres.

NOTE If the height is greater than the width, it is called to be in portrait position, else it is called to be in landscape position.

The "i18n" LC_PAPER category is:

```
LC_PAPER
% This is the ISO/IEC 30112 "i18n" definition for
% the LC_PAPER category.
%
height   297
width    210
END LC_PAPER
```

5.15 LC_MEASUREMENT

The LC_MEASUREMENT category defines which measurement system in use. All keywords are optional. The following keywords shall be defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword shall be specified.

measurement Shall be used to define the measurement system in use. The operand is an integer. The following values are defined.

1 ISO 1000

2 U.S.A. measurement

3 other

The "i18n" LC_MEASUREMENT category is:

```
LC_MEASUREMENT
% This is the ISO/IEC 30112 "i18n" definition for
% the LC_MEASUREMENT category.
%
measurement    1
END LC_MEASUREMENT
```

5.16 LC_KEYBOARD

The LC_KEYBOARD category defines the possible keyboards. The following keywords shall be defined.

copy Specify the name of an existing FDCC-set to be used as the source for the definition of this category. If this keyword is specified, no other keyword shall be specified.

keyboards Shall be used to specify possible keyboards to be used with this FDCC-set, the first being the one chosen if none is explicitly chosen. The operand is one or more stings separated by semicolons, each string identifying a keyboard in an implementation defined way.

The "i18n" LC_KEYBOARD category is:

```
LC_PAPER
% This is the ISO/IEC 30112 "i18n" definition for
% the LC_KEYBOARD category.
%
keyboards   “iso/iec-9995”
END LC_KEYBOARD
```

6 CHARMAP

6.1 General

A character set description can exist for each coded character set supported by the implementation. This file is referred to elsewhere in this document as a charmap.

A conforming charmap to be used with a FDCC-set supports the portable character set specified in Table 1.

Conforming charmaps specify certain character and character set attributes, as defined in subclause 6.2.

6.2 Character set description text

The character set description text (charmap) describes the mapping between symbolic character names and actual encoding of a coded character set. It is used to bind the symbolic character names in a FDCC-set to an actual encoding, so an application can process data in this encoding.

The following declarationmay precede the character definitions. Each consist of the symbol shown in the following list, starting in column 1, including the surrounding brackets, followed by one of more "blank"s, followed by the value to be assigned to the symbol. If any of the declarations are included, they are specified in the order shown in the following list.

<code_set_name> The name of the coded character set for which the character set description text is defined. The characters of the name are taken from the set of characters with visible glyphs defined in Table 1.

<mb_cur_max> The maximum number of bytes in a multibyte character. This defaults to 1.

<mb_cur_min> An unsigned positive integer value that defines the minimum number of bytes in a character for the encoded character set. The value is less or equal to "mb_cur_max". If not specified, the minimum number is equal to "mb_cur_max".

<escape_char> The escape character used to indicate that the characters following is interpreted in a special way, as defined later in this subclause. This defaults to backslash (\). The character slash (/) is used in all the following text and examples, unless otherwise noted.

<comment_char> The character that when placed in column 1 of a charmap line, is used to indicate that the line is ignored. The default character is the number sign (#). The character percent-sign (%) is used in all the following text and examples, unless otherwise noted.

<repertoiremap> The name of the repertoiremap used to define the symbolic character names in the charmap. The characters of the name are taken from the set of characters with visible glyphs defined in Table 1.

<escseq2022> Defines the escape sequences for ISO 2022 shifting for the coded character set defined by the charmap. The semicolon-separated operands are all strings with characters taken from the set of characters with visible glyphs defined in Table 1. The first operand defines the g-set or c-set to be defined, and the following values are defined: c0, c1, g0, g1, g2, g3. The second operand defines what range of characters in the charmap is affected, and the values defined are: c0, c1, g0, g1. The third operand is the escape sequence that is defined.

<addset> The name of the charmap to be added to the current coded character set, and to be selected by the escape sequences defined by <escseq2022> of the added charmap.

<include> Include the encoding of another charmap in the current charmap. The semicolon-separated operands are all strings with characters taken from the set of characters with visible glyphs defined in Table 1. The first operand defines the g-set or c-set to be defined in the current charmap, and the following values are defined: c0, c1, g0, g1, g2, g3. The second operand defines a range of characters in the referenced charmap, and the values defined are: c0, c1, g0, g1. The third operand is the name of the charmap to be included. The coded character sets are defined initially for the encoding, and therefore do not need escape sequences for identification. If two g0 sets are defined, the second is switched to using the SHIFT OUT control character, while the first is shifted to using the SHIFT IN control character.

The character set mapping definitions are all the lines immediately following an identifier line containing the string "CHARMAP" starting in column 1 and preceding a trailer line containing the string "END CHARMAP" starting in column 1. Empty lines and lines containing a <comment_char> in the first column are ignored. Each non-comment line of the character set mapping definition (i.e., between the "CHARMAP" and "END CHARMAP" lines of the text) is in one of the following syntaxes.

"%s %s %s\n", <symbolic-name>,<encoding>,<comments>

"%s...%s %s %s\n", <symbolic-name>,<symbolic-name>,<encoding>,<comments>

"%s....%s %s %s\n", <symbolic-name>,<symbolic-name>,<encoding>,<comments>

"%s..%s %s %s\n", <symbolic-name>,<symbolic-name>,<encoding>,<comments>

In the first syntax, the line of the character set mapping definition starts with the symbolic name, immediately preceded by a <less-than> character and immediately followed by a <greater-than> character. Symbolic names only contain characters from the set shown with a visible glyph in Table 1.

The same symbolic name can occur several times, with different values. The first value is the one used when generating an encoding, while the other values are accepted in decoding. Symbolic names can be included to identify values that can overlap with each other or with the values of the symbolic names shown in Table 1. It is possible to specify symbolic names for which no encoding exists in the encoded character set, by not specifying a value.

In the second and third syntax (symbolic decimal ellipsis), the line in the character set mapping defines a range of one or more symbolic names. The difference between the second and the third syntax is the number of dots in the ellipsis: the second has 3 dots, the third has 4 dots. In these forms the symbolic names consist of zero or more non-numeric characters from the set shown with visible glyphs in Table 1, followed by an integer formed by one or more decimal digits. The characters preceding the integer are identical in the two symbolic names, and the integer formed by the digits in the second symbolic name are identical to or greater than the integer formed by the digits in the first name. This is interpreted as a series of symbolic names formed from the common part and each of the integers in decimal format between the first and the second integer, inclusive, and with a length of the symbolic names generated that is equal to the length of the first (and also the second) symbolic name. As an example, <j0101>....<j0104> is interpreted as the symbolic names <j0101>, <j0102>, <j0103>, and <j0104>, in that order.

NOTE The rationale to allow both a 3-dot and a 4-dot symbol for symbolic decimal ellipses is that in ISO/IEC/IEEE 9945 the decimal symbolic ellipses was defined by a 3-dot symbol for charmaps, while the 3-dot symbol was an absolute ellipses for POSIX locales, and this document specifies a 4-dot symbol for the decimal symbolic ellipses. The 3-dot symbolic decimal ellipses in charmaps is deprecated.

In the fourth syntax (symbolic hexadecimal ellipsis, with two dots), the line in the character set mapping defines a range of one or more symbolic names. In this form the symbolic names consist of zero or more non-numeric characters from the set shown with visible glyphs in Table 1, followed by an integer formed by one or more hexadecimal digits, using uppercase letters only for the range "A" to "F". The characters preceding the hexadecimal integer are identical in the two symbolic names, and the integer formed by the hexadecimal digits in the second symbolic name is identical to or greater than the integer formed by the hexadecimal digits in the first name. This is interpreted as a series of symbolic names formed from the common part and each of the integers in hexadecimal format using uppercase letters only between the first and the second integer, inclusive, and with a length of the symbolic names generated that is equal to the length of the first (and also the second) symbolic name. As an example, <U010E>..<U0111> is interpreted as the symbolic names <U010E>, <U010F>, <U0110>, and <U0111>, in that order.

The encoding part is expressed as one (for single-byte values) or more concatenated decimal, octal or hexadecimal constants (hexadecimal constants are recommended). Decimal constants are represented by two or three decimal digits, preceded by the escape character and the lowercase letter "d"; for example, /d05, /d97, or /d143. Hexadecimal constants are represented by two hexadecimal digits, preceded by the escape character and the lowercase letter "x"; for example, /x05, /x61, or /x8f. Octal constants are represented by two or three octal digits, preceded by the escape character; for example, /05, /141, or /217. In a charmap, each constant should represent an 8-bit byte for portability reasons. Applications supporting other byte sizes can allow constants to represent values larger than those that

can be represented in 8-bit bytes, and to allow additional digits in constants. When constants are concatenated for multibyte character values, they can be of different types, and interpreted in byte order from the first to the last with the least significant byte of the multibyte character specified by the last byte. The manner in which these constants are represented in the character stored in the system is application defined. Omitting bytes from a multibyte character produces undefined results.

In lines defining ranges of symbolic names, the encoded value is the value for the first symbolic name in the range (the symbolic name preceding the ellipsis). Subsequent symbolic names defined by the range have encoding values in increasing order. For example, the line:

<j0101>....<j0104> /d129/d254

is interpreted as:

<j0101> /d129/d254

<j0102> /d129/d255

<j0103> /d130/d000

<j0104> /d130/d001

The comments parameter is optional.

Example of using ISO 2022 techniques:

The following example defines two coded character sets, a 7-bit and a 14-bit. They are then merged into one encoding. It is an example on how encodings used in eastern Asia could be specified.

The 7-bit charmap:

```
<escape_char> /

<comment_char> %

% The 7-bit charmap defines both control and graphic characters
<code_set_name>   "eastern7bit"
<escseq2022>          "c0";"c0","/x21/x40"
<escseq2022>          "g0";"g0","/x28/x48"
<escseq2022>          "g1";"g0","/x29/x48"
<escseq2022>          "g2";"g0","/x2A/x48"
<escseq2022>          "g3";"g0","/x2B/x48"

CHARMAP
<tab>             /x08
<newline>         /x0D
<a>               /x61
% more character encodings to be defined here
END CHARMAP
```

The 14-bit charmap:

```
<escape_char> /
<comment_char> %
<code_set_name>    "eastern14bit"
<mb_cur_max>       2
<esqseq2022>       "g0";"g0";"/x24/x40"
<esqseq2022>       "g1";"g0";"/x24/x29/x40"
```

```
<esqseq2022>      "g2";"g0";"/x24/x2A/x40"
<esqseq2022>      "g3";"g0";"/x24/x2B/x40"
CHARMAP
<U0165>           /d036/d055   % the character codes are only examples
<U0166>           /d036/d056
% more character encodings to be defined here
END CHARMAP
```

The merged encoding:

```
<escape_char> /
<comment_char> %
<code_set_name>    "shift-eastern"
<mb_cur_max>       2
<mb_cur_min>       1
<include>          "c0";"c0";"eastern7bit"
<include>          "g0";"g0";"eastern7bit"
<include>          "g1";"g0";"eastern14bit"
% This defines the g0 values of "eastern14bit" (without the 8th
% bit set) to be the g1 in this encoding (with the 8th bit set).
%
% So the bytes without the 8th bit set is from the "eastern7bit"
% coded character set, while bytes with the 8th bit set are from
% the 14-bit set.
```

Another merged encoding using the same charmaps:

```
<escape_char> /
<comment_char> %
<code_set_name>    "EUC-eastern"
<mb_cur_max>       2
<mb_cur_min>       1
<include>          "c0";"c0";"eastern7bit"
<include>          "g0";"g0";"eastern7bit"
<include>          "g0";"g0";"eastern14bit"
% As there are two "g0" sets defined, the first referenced is the
% initial g0 set, while the second can be shifted to via the SHIFT OUT
% control character. The first can then be shifted to by the SHIFT IN
% control character.
```

WIDTH section

After the "END CHARMAP" statement the following declarations can follow. Each consists of the keyword shown in the following list, starting in column 1, followed by the value(s) to be associated to the keyword, as defined below.

WIDTH An unsigned positive integer value defining the column width for the characters in the coded character set. Coded character values are defined using symbolic character names followed by a column width value. Defining a character with more than one WIDTH produces undefined results. The END WIDTH keyword is used to terminate the WIDTH definitions.

NOTE The WIDTH section is mostly intended to cover halfwidth and fullwidth characters in fixed width character sets of eastern Asia and corresponding characters in ISO/IEC 10646.

WIDTH_DEFAULT An unsigned positive integer value defining the column width for any character not listed by one of the WIDTH keywords. If no WIDTH_DEFAULT keyword is included in the charmap, the default character width is 1.

EXAMPLE After the "END CHARMAP" statement, a syntax for width definition would be:


```
WIDTH
<A> 1
<B> 1
<j0101>...<j0195> 2
<U4E00>..<U9FA5> 2
END WIDTH
WIDTH_DEFAULT 1
```

In this example, the code point values represented by <A> and <B> are assigned a width of 1. The code point values <j0101>...<j0195> (decimal ellipses) and <U4E00>..<U9FA5> are assigned a width of 2. The last line defines the DEFAULT_WIDTH to 1.

7 Repertoiremap

FDCC-set and charmap sources can be specified in a coded character set independent way, using symbolic character names. The relation between the symbolic character names and characters can be specified via a repertoiremap, which defines the repertoire of characters defined for a FDCC-set, and the symbolic character names and corresponding abstract character (by a reference to ISO/IEC 10646).

The repertoire mapping is defined by specifying the symbolic character name and the ISO/IEC 10646 code position in hexadecimal form (with a preceding 'U') and optionally the long ISO/IEC 10646 character name in the following syntax:

"%s %s %s\n",<symbolic-name>,<short-identifier>,<comments>

The symbolic character name and the short identifier are each surrounded by angle brackets <>, and the fields are separated by one or more spaces or tabs on a line. If a right-angle bracket or an escape character is used within a symbolic name, it is preceded by the escape character. The short identifier is either a ISO/IEC 10646 short identifier, or, if that does not exists, a short identifier in the range <P0000>..<PFFFF> or <P00000000>..<P7FFFFFFF>.

The escape character can be redefined from the default reverse solidus (\) with the first line of the Repertoiremap containing the string "escape_char" followed by one or more spaces or tabs and then the escape character.

Several symbolic character names can refer to the same abstract character and are then used as synonyms in FDCC-sets and charmaps. The set of <U0000>..<UFFFF> and <U00000000>..<U7FFFFFFF> symbolic names (no lowercase letters) are predefined and refer to the corresponding code points of ISO/IEC 10646 with the same short identifier.

The "i18nrep" repertoiremap is defined to accommodate prior art and used by ISO and IEC member bodies in their national POSIX locale specifications, and as used in POSIX locales distributed by the ISO/IEC POSIX working group and The Open Group. Many POSIX charmaps registered with ISO/IEC 15897 use these symbolic names. It also reflects use on the Internet, and many of the internet registered charsets are specified using these symbolic names. The "i18nrep" repertoiremap thus facilitates reuse of both POSIX locale data and POSIX charmaps with data from this document. The sequence <a8>..<z8> are used as hooks for tailoring to denote the last accented Latin letter of each of the ISO/IEC 646 letters <a>..<z>, so that tailorings that need to have specifications after the last letter of such a family, for example to introduce a new letter of an alphabet, can do so with a reference that is stable over different versions of the "i18n" FDCC-set. The "i18nrep" repertoiremap is not intended to cover the complete repertoire that the "i18n" FDCC-set covers. The contents of the "i18nrep" repertoiremap is as follows.

```
escape_char /
<NUL>                   <U0000>NULL (NUL)
<SOH>                   <U0001>START OF HEADING (SOH)
```

```
<STX>                <U0002>START OF TEXT (STX)
<ETX>                <U0003>END OF TEXT (ETX)
<EOT>                <U0004>END OF TRANSMISSION (EOT)
<ENQ>                <U0005>ENQUIRY (ENQ)
<ACK>                <U0006>ACKNOWLEDGE (ACK)
<alert>              <U0007>BELL (BEL)
<BEL>                <U0007>BELL (BEL)
<backspace>          <U0008>BACKSPACE (BS)
<tab>                <U0009>CHARACTER TABULATION (HT)
<newline>            <U000A>LINE FEED (LF)
<vertical-tab>       <U000B>LINE TABULATION (VT)
<form-feed>          <U000C>FORM FEED (FF)
<carriage-return>    <U000D>CARRIAGE RETURN (CR)
<DLE>                <U0010>DATALINK ESCAPE (DLE)
<DC1>                <U0011>DEVICE CONTROL ONE (DC1)
<DC2>                <U0012>DEVICE CONTROL TWO (DC2)
<DC3>                <U0013>DEVICE CONTROL THREE (DC3)
<DC4>                <U0014>DEVICE CONTROL FOUR (DC4)
<NAK>                <U0015>NEGATIVE ACKNOWLEDGE (NAK)
<SYN>                <U0016>SYNCRONOUS IDLE (SYN)
<ETB>                <U0017>END OF TRANSMISSION BLOCK (ETB)
<CAN>                <U0018>CANCEL (CAN)
<SUB>                <U001A>SUBSTITUTE (SUB)
<ESC>                <U001B>ESCAPE (ESC)
<IS4>                <U001C>FILE SEPARATOR (IS4)
<IS3>                <U001D>GROUP SEPARATOR (IS3)
<intro>              <U001D>GROUP SEPARATOR (IS3)
<IS2>                <U001E>RECORD SEPARATOR (IS2)
<IS1>                <U001F>UNIT SEPARATOR (IS1)
<DEL>                <U007F>DELETE (DEL)
<space>              <U0020>SPACE
<exclamation-mark>   <U0021>EXCLAMATION MARK
<quotation-mark>     <U0022>QUOTATION MARK
<number-sign>        <U0023>NUMBER SIGN
<dollar-sign>        <U0024>DOLLAR SIGN
<percent-sign>       <U0025>PERCENT SIGN
<ampersand>          <U0026>AMPERSAND
<apostrophe>         <U0027>APOSTROPHE
<left-parenthesis>   <U0028>LEFT PARENTHESIS
<right-parenthesis>  <U0029>RIGHT PARENTHESIS
<asterisk>           <U002A>ASTERISK
<plus-sign>          <U002B>PLUS SIGN
<comma>              <U002C>COMMA
<hyphen>             <U002D>HYPHEN-MINUS
<hyphen-minus>       <U002D>HYPHEN-MINUS
<period>             <U002E>FULL STOP
<full-stop>          <U002E>FULL STOP
<slash>              <U002F>SOLIDUS
<solidus>            <U002F>SOLIDUS
<zero>               <U0030>DIGIT ZERO
<one>                <U0031>DIGIT ONE
<two>                <U0032>DIGIT TWO
<three>              <U0033>DIGIT THREE
<four>               <U0034>DIGIT FOUR
<five>               <U0035>DIGIT FIVE
<six>                <U0036>DIGIT SIX
<seven>              <U0037>DIGIT SEVEN
<eight>              <U0038>DIGIT EIGHT
<nine>               <U0039>DIGIT NINE
<colon>              <U003A>COLON
<semicolon>          <U003B>SEMICOLON
<less-than-sign>     <U003C>LESS-THAN SIGN
```

```
<equals-sign>          <U003D>EQUALS SIGN
<greater-than-sign>    <U003E>GREATER-THAN SIGN
<question-mark>        <U003F>QUESTION MARK
<commercial-at>        <U0040>COMMERCIAL AT
<left-square-bracket>  <U005B>LEFT SQUARE BRACKET
<backslash>            <U005C>REVERSE SOLIDUS
<reverse-solidus>      <U005C>REVERSE SOLIDUS
<right-square-bracket>       <U005D>RIGHT SQUARE BRACKET
<circumflex>           <U005E>CIRCUMFLEX ACCENT
<circumflex-accent>    <U005E>CIRCUMFLEX ACCENT
<underscore>           <U005F>LOW LINE
<low-line>             <U005F>LOW LINE
<grave-accent>         <U0060>GRAVE ACCENT
<left-brace>           <U007B>LEFT CURLY BRACKET
<left-curly-bracket>   <U007B>LEFT CURLY BRACKET
<vertical-line>        <U007C>VERTICAL LINE
<right-brace>          <U007D>RIGHT CURLY BRACKET
<right-curly-bracket>  <U007D>RIGHT CURLY BRACKET
<tilde>                <U007E>TILDE

<a8>                   <P0001>Weight indicating the position of the last a
<b8>                   <P0002>Weight indicating the position of the last b
<c8>                   <P0003>Weight indicating the position of the last c
<d8>                   <P0004>Weight indicating the position of the last d
<e8>                   <P0005>Weight indicating the position of the last e
<f8>                   <P0006>Weight indicating the position of the last f
<g8>                   <P0007>Weight indicating the position of the last g
<h8>                   <P0008>Weight indicating the position of the last h
<i8>                   <P0009>Weight indicating the position of the last i
<j8>                   <P0010>Weight indicating the position of the last j
<k8>                   <P0011>Weight indicating the position of the last k
<l8>                   <P0012>Weight indicating the position of the last l
<m8>                   <P0013>Weight indicating the position of the last m
<n8>                   <P0014>Weight indicating the position of the last n
<o8>                   <P0015>Weight indicating the position of the last o
<p8>                   <P0016>Weight indicating the position of the last p
<q8>                   <P0017>Weight indicating the position of the last q
<r8>                   <P0018>Weight indicating the position of the last r
<s8>                   <P0019>Weight indicating the position of the last s
<t8>                   <P0020>Weight indicating the position of the last t
<u8>                   <P0021>Weight indicating the position of the last u
<v8>                   <P0022>Weight indicating the position of the last v
<w8>                   <P0023>Weight indicating the position of the last w
<x8>                   <P0024>Weight indicating the position of the last x
<y8>                   <P0025>Weight indicating the position of the last y
<z8>                   <P0026>Weight indicating the position of the last z

<NU>     <U0000> NULL (NUL)
<SH>     <U0001> START OF HEADING (SOH)
<SX>     <U0002> START OF TEXT (STX)
<EX>     <U0003> END OF TEXT (ETX)
<ET>     <U0004> END OF TRANSMISSION (EOT)
<EQ>     <U0005> ENQUIRY (ENQ)
<AK>     <U0006> ACKNOWLEDGE (ACK)
<BL>     <U0007> BELL (BEL)
<BS>     <U0008> BACKSPACE (BS)
<HT>     <U0009> CHARACTER TABULATION (HT)
<LF>     <U000A> LINE FEED (LF)
<VT>     <U000B> LINE TABULATION (VT)
<FF>     <U000C> FORM FEED (FF)
<CR>     <U000D> CARRIAGE RETURN (CR)
<SO>     <U000E> SHIFT OUT (SO)
```

```
<SI>     <U000F> SHIFT IN (SI)
<DL>     <U0010> DATALINK ESCAPE (DLE)
<D1>     <U0011> DEVICE CONTROL ONE (DC1)
<D2>     <U0012> DEVICE CONTROL TWO (DC2)
<D3>     <U0013> DEVICE CONTROL THREE (DC3)
<D4>     <U0014> DEVICE CONTROL FOUR (DC4)
<NK>     <U0015> NEGATIVE ACKNOWLEDGE (NAK)
<SY>     <U0016> SYNCHRONOUS IDLE (SYN)
<EB>     <U0017> END OF TRANSMISSION BLOCK (ETB)
<CN>     <U0018> CANCEL (CAN)
<EM>     <U0019> END OF MEDIUM (EM)
<SB>     <U001A> SUBSTITUTE (SUB)
<EC>     <U001B> ESCAPE (ESC)
<FS>     <U001C> FILE SEPARATOR (IS4)
<GS>     <U001D> GROUP SEPARATOR (IS3)
<RS>     <U001E> RECORD SEPARATOR (IS2)
<US>     <U001F> UNIT SEPARATOR (IS1)
<DT>     <U007F> DELETE (DEL)
<PA>     <U0080> PADDING CHARACTER (PAD)
<HO>     <U0081> HIGH OCTET PRESET (HOP)
<BH>     <U0082> BREAK PERMITTED HERE (BPH)
<NH>     <U0083> NO BREAK HERE (NBH)
<IN>     <U0084> INDEX (IND)
<NL>     <U0085> NEXT LINE (NEL)
<SA>     <U0086> START OF SELECTED AREA (SSA)
<ES>     <U0087> END OF SELECTED AREA (ESA)
<HS>     <U0088> CHARACTER TABULATION SET (HTS)
<HJ>     <U0089> CHARACTER TABULATION WITH JUSTIFICATION (HTJ)
<VS>     <U008A> LINE TABULATION SET (VTS)
<PD>     <U008B> PARTIAL LINE FORWARD (PLD)
<PU>     <U008C> PARTIAL LINE BACKWARD (PLU)
<RI>     <U008D> REVERSE LINE FEED (RI)
<S2>     <U008E> SINGLE-SHIFT TWO (SS2)
<S3>     <U008F> SINGLE-SHIFT THREE (SS3)
<DC>     <U0090> DEVICE CONTROL STRING (DCS)
<P1>     <U0091> PRIVATE USE ONE (PU1)
<P2>     <U0092> PRIVATE USE TWO (PU2)
<TS>     <U0093> SET TRANSMIT STATE (STS)
<CC>     <U0094> CANCEL CHARACTER (CCH)
<MW>     <U0095> MESSAGE WAITING (MW)
<SG>     <U0096> START OF GUARDED AREA (SPA)
<EG>     <U0097> END OF GUARDED AREA (EPA)
<SS>     <U0098> START OF STRING (SOS)
<GC>     <U0099> SINGLE GRAPHIC CHARACTER INTRODUCER (SGCI)
<SC>     <U009A> SINGLE CHARACTER INTRODUCER (SCI)
<CI>     <U009B> CONTROL SEQUENCE INTRODUCER (CSI)
<ST>     <U009C> STRING TERMINATOR (ST)
<OC>     <U009D> OPERATING SYSTEM COMMAND (OSC)
<PM>     <U009E> PRIVACY MESSAGE (PM)
<AC>     <U009F> APPLICATION PROGRAM COMMAND (APC)
<SP>     <U0020> SPACE
<!>      <U0021> EXCLAMATION MARK
<">      <U0022> QUOTATION MARK
<Nb>     <U0023> NUMBER SIGN
<DO>     <U0024> DOLLAR SIGN
<%>      <U0025> PERCENT SIGN
<&>      <U0026> AMPERSAND
<'>      <U0027> APOSTROPHE
<(>      <U0028> LEFT PARENTHESIS
<)>      <U0029> RIGHT PARENTHESIS
<*>      <U002A> ASTERISK
<+>      <U002B> PLUS SIGN
```

```
<,>      <U002C> COMMA
<->      <U002D> HYPHEN-MINUS
<.>      <U002E> FULL STOP
<//>     <U002F> SOLIDUS
<0>      <U0030> DIGIT ZERO
<1>      <U0031> DIGIT ONE
<2>      <U0032> DIGIT TWO
<3>      <U0033> DIGIT THREE
<4>      <U0034> DIGIT FOUR
<5>      <U0035> DIGIT FIVE
<6>      <U0036> DIGIT SIX
<7>      <U0037> DIGIT SEVEN
<8>      <U0038> DIGIT EIGHT
<9>      <U0039> DIGIT NINE
<:>      <U003A> COLON
<;>      <U003B> SEMICOLON
<<>      <U003C> LESS-THAN SIGN
<=>      <U003D> EQUALS SIGN
</>>     <U003E> GREATER-THAN SIGN
<?>      <U003F> QUESTION MARK
<At>     <U0040> COMMERCIAL AT
<A>      <U0041> LATIN CAPITAL LETTER A
<B>      <U0042> LATIN CAPITAL LETTER B
<C>      <U0043> LATIN CAPITAL LETTER C
<D>      <U0044> LATIN CAPITAL LETTER D
<E>      <U0045> LATIN CAPITAL LETTER E
<F>      <U0046> LATIN CAPITAL LETTER F
<G>      <U0047> LATIN CAPITAL LETTER G
<H>      <U0048> LATIN CAPITAL LETTER H
<I>      <U0049> LATIN CAPITAL LETTER I
<J>      <U004A> LATIN CAPITAL LETTER J
<K>      <U004B> LATIN CAPITAL LETTER K
<L>      <U004C> LATIN CAPITAL LETTER L
<M>      <U004D> LATIN CAPITAL LETTER M
<N>      <U004E> LATIN CAPITAL LETTER N
<O>      <U004F> LATIN CAPITAL LETTER O
<P>      <U0050> LATIN CAPITAL LETTER P
<Q>      <U0051> LATIN CAPITAL LETTER Q
<R>      <U0052> LATIN CAPITAL LETTER R
<S>      <U0053> LATIN CAPITAL LETTER S
<T>      <U0054> LATIN CAPITAL LETTER T
<U>      <U0055> LATIN CAPITAL LETTER U
<V>      <U0056> LATIN CAPITAL LETTER V
<W>      <U0057> LATIN CAPITAL LETTER W
<X>      <U0058> LATIN CAPITAL LETTER X
<Y>      <U0059> LATIN CAPITAL LETTER Y
<Z>      <U005A> LATIN CAPITAL LETTER Z
<<(>     <U005B> LEFT SQUARE BRACKET
<////>   <U005C> REVERSE SOLIDUS
<)/>>    <U005D> RIGHT SQUARE BRACKET
<'/>>    <U005E> CIRCUMFLEX ACCENT
<_>      <U005F> LOW LINE
<'!>     <U0060> GRAVE ACCENT
<a>      <U0061> LATIN SMALL LETTER A
<b>      <U0062> LATIN SMALL LETTER B
<c>      <U0063> LATIN SMALL LETTER C
<d>      <U0064> LATIN SMALL LETTER D
<e>      <U0065> LATIN SMALL LETTER E
<f>      <U0066> LATIN SMALL LETTER F
<g>      <U0067> LATIN SMALL LETTER G
<h>      <U0068> LATIN SMALL LETTER H
<i>      <U0069> LATIN SMALL LETTER I
```

```
<j>      <U006A> LATIN SMALL LETTER J
<k>      <U006B> LATIN SMALL LETTER K
<l>      <U006C> LATIN SMALL LETTER L
<m>      <U006D> LATIN SMALL LETTER M
<n>      <U006E> LATIN SMALL LETTER N
<o>      <U006F> LATIN SMALL LETTER O
<p>      <U0070> LATIN SMALL LETTER P
<q>      <U0071> LATIN SMALL LETTER Q
<r>      <U0072> LATIN SMALL LETTER R
<s>      <U0073> LATIN SMALL LETTER S
<t>      <U0074> LATIN SMALL LETTER T
<u>      <U0075> LATIN SMALL LETTER U
<v>      <U0076> LATIN SMALL LETTER V
<w>      <U0077> LATIN SMALL LETTER W
<x>      <U0078> LATIN SMALL LETTER X
<y>      <U0079> LATIN SMALL LETTER Y
<z>      <U007A> LATIN SMALL LETTER Z
<(!>     <U007B> LEFT CURLY BRACKET
<!!>     <U007C> VERTICAL LINE
<!)>     <U007D> RIGHT CURLY BRACKET
<'?>     <U007E> TILDE
<NS>     <U00A0> NO-BREAK SPACE
<!I>     <U00A1> INVERTED EXCLAMATION MARK
<Ct>     <U00A2> CENT SIGN
<Pd>     <U00A3> POUND SIGN
<Cu>     <U00A4> CURRENCY SIGN
<Ye>     <U00A5> YEN SIGN
<BB>     <U00A6> BROKEN BAR
<SE>     <U00A7> SECTION SIGN
<':>     <U00A8> DIAERESIS
<Co>     <U00A9> COPYRIGHT SIGN
<-a>     <U00AA> FEMININE ORDINAL INDICATOR
<<<>     <U00AB> LEFT-POINTING DOUBLE ANGLE QUOTATION MARK
<NO>     <U00AC> NOT SIGN
<-->     <U00AD> SOFT HYPHEN
<Rg>     <U00AE> REGISTERED SIGN
<'m>     <U00AF> MACRON
<DG>     <U00B0> DEGREE SIGN
<+->     <U00B1> PLUS-MINUS SIGN
<2S>     <U00B2> SUPERSCRIPT TWO
<3S>     <U00B3> SUPERSCRIPT THREE
<''>     <U00B4> ACUTE ACCENT
<My>     <U00B5> MICRO SIGN
<PI>     <U00B6> PILCROW SIGN
<.M>     <U00B7> MIDDLE DOT
<',>     <U00B8> CEDILLA
<1S>     <U00B9> SUPERSCRIPT ONE
<-o>     <U00BA> MASCULINE ORDINAL INDICATOR
</>/>>   <U00BB> RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK
<14>     <U00BC> VULGAR FRACTION ONE QUARTER
<12>     <U00BD> VULGAR FRACTION ONE HALF
<34>     <U00BE> VULGAR FRACTION THREE QUARTERS
<?I>     <U00BF> INVERTED QUESTION MARK
<A!>     <U00C0> LATIN CAPITAL LETTER A WITH GRAVE
<A'>     <U00C1> LATIN CAPITAL LETTER A WITH ACUTE
<A/>>    <U00C2> LATIN CAPITAL LETTER A WITH CIRCUMFLEX
<A?>     <U00C3> LATIN CAPITAL LETTER A WITH TILDE
<A:>     <U00C4> LATIN CAPITAL LETTER A WITH DIAERESIS
<AA>     <U00C5> LATIN CAPITAL LETTER A WITH RING ABOVE
<AE>     <U00C6> LATIN CAPITAL LETTER AE (ash)
<C,>     <U00C7> LATIN CAPITAL LETTER C WITH CEDILLA
<E!>     <U00C8> LATIN CAPITAL LETTER E WITH GRAVE
```

```
<E'>     <U00C9> LATIN CAPITAL LETTER E WITH ACUTE
<E/>>    <U00CA> LATIN CAPITAL LETTER E WITH CIRCUMFLEX
<E:>     <U00CB> LATIN CAPITAL LETTER E WITH DIAERESIS
<I!>     <U00CC> LATIN CAPITAL LETTER I WITH GRAVE
<I'>     <U00CD> LATIN CAPITAL LETTER I WITH ACUTE
<I/>>    <U00CE> LATIN CAPITAL LETTER I WITH CIRCUMFLEX
<I:>     <U00CF> LATIN CAPITAL LETTER I WITH DIAERESIS
<D->     <U00D0> LATIN CAPITAL LETTER ETH (Icelandic)
<N?>     <U00D1> LATIN CAPITAL LETTER N WITH TILDE
<O!>     <U00D2> LATIN CAPITAL LETTER O WITH GRAVE
<O'>     <U00D3> LATIN CAPITAL LETTER O WITH ACUTE
<O/>>    <U00D4> LATIN CAPITAL LETTER O WITH CIRCUMFLEX
<O?>     <U00D5> LATIN CAPITAL LETTER O WITH TILDE
<O:>     <U00D6> LATIN CAPITAL LETTER O WITH DIAERESIS
<*X>     <U00D7> MULTIPLICATION SIGN
<O//>    <U00D8> LATIN CAPITAL LETTER O WITH STROKE
<U!>     <U00D9> LATIN CAPITAL LETTER U WITH GRAVE
<U'>     <U00DA> LATIN CAPITAL LETTER U WITH ACUTE
<U/>>    <U00DB> LATIN CAPITAL LETTER U WITH CIRCUMFLEX
<U:>     <U00DC> LATIN CAPITAL LETTER U WITH DIAERESIS
<Y'>     <U00DD> LATIN CAPITAL LETTER Y WITH ACUTE
<TH>     <U00DE> LATIN CAPITAL LETTER THORN (Icelandic)
<ss>     <U00DF> LATIN SMALL LETTER SHARP S (German)
<a!>     <U00E0> LATIN SMALL LETTER A WITH GRAVE
<a'>     <U00E1> LATIN SMALL LETTER A WITH ACUTE
<a/>>    <U00E2> LATIN SMALL LETTER A WITH CIRCUMFLEX
<a?>     <U00E3> LATIN SMALL LETTER A WITH TILDE
<a:>     <U00E4> LATIN SMALL LETTER A WITH DIAERESIS
<aa>     <U00E5> LATIN SMALL LETTER A WITH RING ABOVE
<ae>     <U00E6> LATIN SMALL LETTER AE (ash)
<c,>     <U00E7> LATIN SMALL LETTER C WITH CEDILLA
<e!>     <U00E8> LATIN SMALL LETTER E WITH GRAVE
<e'>     <U00E9> LATIN SMALL LETTER E WITH ACUTE
<e/>>    <U00EA> LATIN SMALL LETTER E WITH CIRCUMFLEX
<e:>     <U00EB> LATIN SMALL LETTER E WITH DIAERESIS
<i!>     <U00EC> LATIN SMALL LETTER I WITH GRAVE
<i'>     <U00ED> LATIN SMALL LETTER I WITH ACUTE
<i/>>    <U00EE> LATIN SMALL LETTER I WITH CIRCUMFLEX
<i:>     <U00EF> LATIN SMALL LETTER I WITH DIAERESIS
<d->     <U00F0> LATIN SMALL LETTER ETH (Icelandic)
<n?>     <U00F1> LATIN SMALL LETTER N WITH TILDE
<o!>     <U00F2> LATIN SMALL LETTER O WITH GRAVE
<o'>     <U00F3> LATIN SMALL LETTER O WITH ACUTE
<o/>>    <U00F4> LATIN SMALL LETTER O WITH CIRCUMFLEX
<o?>     <U00F5> LATIN SMALL LETTER O WITH TILDE
<o:>     <U00F6> LATIN SMALL LETTER O WITH DIAERESIS
<-:>     <U00F7> DIVISION SIGN
<o//>    <U00F8> LATIN SMALL LETTER O WITH STROKE
<u!>     <U00F9> LATIN SMALL LETTER U WITH GRAVE
<u'>     <U00FA> LATIN SMALL LETTER U WITH ACUTE
<u/>>    <U00FB> LATIN SMALL LETTER U WITH CIRCUMFLEX
<u:>     <U00FC> LATIN SMALL LETTER U WITH DIAERESIS
<y'>     <U00FD> LATIN SMALL LETTER Y WITH ACUTE
<th>     <U00FE> LATIN SMALL LETTER THORN (Icelandic)
<y:>     <U00FF> LATIN SMALL LETTER Y WITH DIAERESIS
<A->     <U0100> LATIN CAPITAL LETTER A WITH MACRON
<a->     <U0101> LATIN SMALL LETTER A WITH MACRON
<A(>     <U0102> LATIN CAPITAL LETTER A WITH BREVE
<a(>     <U0103> LATIN SMALL LETTER A WITH BREVE
<A;>     <U0104> LATIN CAPITAL LETTER A WITH OGONEK
<a;>     <U0105> LATIN SMALL LETTER A WITH OGONEK
<C'>     <U0106> LATIN CAPITAL LETTER C WITH ACUTE
```

```
<c'>     <U0107> LATIN SMALL LETTER C WITH ACUTE
<C/>>    <U0108> LATIN CAPITAL LETTER C WITH CIRCUMFLEX
<c/>>    <U0109> LATIN SMALL LETTER C WITH CIRCUMFLEX
<C.>     <U010A> LATIN CAPITAL LETTER C WITH DOT ABOVE
<c.>     <U010B> LATIN SMALL LETTER C WITH DOT ABOVE
<C<>     <U010C> LATIN CAPITAL LETTER C WITH CARON
<c<>     <U010D> LATIN SMALL LETTER C WITH CARON
<D<>     <U010E> LATIN CAPITAL LETTER D WITH CARON
<d<>     <U010F> LATIN SMALL LETTER D WITH CARON
<D//>    <U0110> LATIN CAPITAL LETTER D WITH STROKE
<d//>    <U0111> LATIN SMALL LETTER D WITH STROKE
<E->     <U0112> LATIN CAPITAL LETTER E WITH MACRON
<e->     <U0113> LATIN SMALL LETTER E WITH MACRON
<E(>     <U0114> LATIN CAPITAL LETTER E WITH BREVE
<e(>     <U0115> LATIN SMALL LETTER E WITH BREVE
<E.>     <U0116> LATIN CAPITAL LETTER E WITH DOT ABOVE
<e.>     <U0117> LATIN SMALL LETTER E WITH DOT ABOVE
<E;>     <U0118> LATIN CAPITAL LETTER E WITH OGONEK
<e;>     <U0119> LATIN SMALL LETTER E WITH OGONEK
<E<>     <U011A> LATIN CAPITAL LETTER E WITH CARON
<e<>     <U011B> LATIN SMALL LETTER E WITH CARON
<G/>>    <U011C> LATIN CAPITAL LETTER G WITH CIRCUMFLEX
<g/>>    <U011D> LATIN SMALL LETTER G WITH CIRCUMFLEX
<G(>     <U011E> LATIN CAPITAL LETTER G WITH BREVE
<g(>     <U011F> LATIN SMALL LETTER G WITH BREVE
<G.>     <U0120> LATIN CAPITAL LETTER G WITH DOT ABOVE
<g.>     <U0121> LATIN SMALL LETTER G WITH DOT ABOVE
<G,>     <U0122> LATIN CAPITAL LETTER G WITH CEDILLA
<g,>     <U0123> LATIN SMALL LETTER G WITH CEDILLA
<H/>>    <U0124> LATIN CAPITAL LETTER H WITH CIRCUMFLEX
<h/>>    <U0125> LATIN SMALL LETTER H WITH CIRCUMFLEX
<H//>    <U0126> LATIN CAPITAL LETTER H WITH STROKE
<h//>    <U0127> LATIN SMALL LETTER H WITH STROKE
<I?>     <U0128> LATIN CAPITAL LETTER I WITH TILDE
<i?>     <U0129> LATIN SMALL LETTER I WITH TILDE
<I->     <U012A> LATIN CAPITAL LETTER I WITH MACRON
<i->     <U012B> LATIN SMALL LETTER I WITH MACRON
<I(>     <U012C> LATIN CAPITAL LETTER I WITH BREVE
<i(>     <U012D> LATIN SMALL LETTER I WITH BREVE
<I;>     <U012E> LATIN CAPITAL LETTER I WITH OGONEK
<i;>     <U012F> LATIN SMALL LETTER I WITH OGONEK
<I.>     <U0130> LATIN CAPITAL LETTER I WITH DOT ABOVE
<i.>     <U0131> LATIN SMALL LETTER DOTLESS I
<IJ>     <U0132> LATIN CAPITAL LIGATURE IJ
<ij>     <U0133> LATIN SMALL LIGATURE IJ
<J/>>    <U0134> LATIN CAPITAL LETTER J WITH CIRCUMFLEX
<j/>>    <U0135> LATIN SMALL LETTER J WITH CIRCUMFLEX
<K,>     <U0136> LATIN CAPITAL LETTER K WITH CEDILLA
<k,>     <U0137> LATIN SMALL LETTER K WITH CEDILLA
<kk>     <U0138> LATIN SMALL LETTER KRA (Greenlandic)
<L'>     <U0139> LATIN CAPITAL LETTER L WITH ACUTE
<l'>     <U013A> LATIN SMALL LETTER L WITH ACUTE
<L,>     <U013B> LATIN CAPITAL LETTER L WITH CEDILLA
<l,>     <U013C> LATIN SMALL LETTER L WITH CEDILLA
<L<>     <U013D> LATIN CAPITAL LETTER L WITH CARON
<l<>     <U013E> LATIN SMALL LETTER L WITH CARON
<L.>     <U013F> LATIN CAPITAL LETTER L WITH MIDDLE DOT
<l.>     <U0140> LATIN SMALL LETTER L WITH MIDDLE DOT
<L//>    <U0141> LATIN CAPITAL LETTER L WITH STROKE
<l//>    <U0142> LATIN SMALL LETTER L WITH STROKE
<N'>     <U0143> LATIN CAPITAL LETTER N WITH ACUTE
<n'>     <U0144> LATIN SMALL LETTER N WITH ACUTE
```

```
<N,>     <U0145> LATIN CAPITAL LETTER N WITH CEDILLA
<n,>     <U0146> LATIN SMALL LETTER N WITH CEDILLA
<N<>     <U0147> LATIN CAPITAL LETTER N WITH CARON
<n<>     <U0148> LATIN SMALL LETTER N WITH CARON
<'n>     <U0149> LATIN SMALL LETTER N PRECEDED BY APOSTROPHE
<NG>     <U014A> LATIN CAPITAL LETTER ENG (Sami)
<ng>     <U014B> LATIN SMALL LETTER ENG (Sami)
<O->     <U014C> LATIN CAPITAL LETTER O WITH MACRON
<o->     <U014D> LATIN SMALL LETTER O WITH MACRON
<O(>     <U014E> LATIN CAPITAL LETTER O WITH BREVE
<o(>     <U014F> LATIN SMALL LETTER O WITH BREVE
<O">     <U0150> LATIN CAPITAL LETTER O WITH DOUBLE ACUTE
<o">     <U0151> LATIN SMALL LETTER O WITH DOUBLE ACUTE
<OE>     <U0152> LATIN CAPITAL LIGATURE OE
<oe>     <U0153> LATIN SMALL LIGATURE OE
<R'>     <U0154> LATIN CAPITAL LETTER R WITH ACUTE
<r'>     <U0155> LATIN SMALL LETTER R WITH ACUTE
<R,>     <U0156> LATIN CAPITAL LETTER R WITH CEDILLA
<r,>     <U0157> LATIN SMALL LETTER R WITH CEDILLA
<R<>     <U0158> LATIN CAPITAL LETTER R WITH CARON
<r<>     <U0159> LATIN SMALL LETTER R WITH CARON
<S'>     <U015A> LATIN CAPITAL LETTER S WITH ACUTE
<s'>     <U015B> LATIN SMALL LETTER S WITH ACUTE
<S/>>    <U015C> LATIN CAPITAL LETTER S WITH CIRCUMFLEX
<s/>>    <U015D> LATIN SMALL LETTER S WITH CIRCUMFLEX
<S,>     <U015E> LATIN CAPITAL LETTER S WITH CEDILLA
<s,>     <U015F> LATIN SMALL LETTER S WITH CEDILLA
<S<>     <U0160> LATIN CAPITAL LETTER S WITH CARON
<s<>     <U0161> LATIN SMALL LETTER S WITH CARON
<T,>     <U0162> LATIN CAPITAL LETTER T WITH CEDILLA
<t,>     <U0163> LATIN SMALL LETTER T WITH CEDILLA
<T<>     <U0164> LATIN CAPITAL LETTER T WITH CARON
<t<>     <U0165> LATIN SMALL LETTER T WITH CARON
<T//>    <U0166> LATIN CAPITAL LETTER T WITH STROKE
<t//>    <U0167> LATIN SMALL LETTER T WITH STROKE
<U?>     <U0168> LATIN CAPITAL LETTER U WITH TILDE
<u?>     <U0169> LATIN SMALL LETTER U WITH TILDE
<U->     <U016A> LATIN CAPITAL LETTER U WITH MACRON
<u->     <U016B> LATIN SMALL LETTER U WITH MACRON
<U(>     <U016C> LATIN CAPITAL LETTER U WITH BREVE
<u(>     <U016D> LATIN SMALL LETTER U WITH BREVE
<U0>     <U016E> LATIN CAPITAL LETTER U WITH RING ABOVE
<u0>     <U016F> LATIN SMALL LETTER U WITH RING ABOVE
<U">     <U0170> LATIN CAPITAL LETTER U WITH DOUBLE ACUTE
<u">     <U0171> LATIN SMALL LETTER U WITH DOUBLE ACUTE
<U;>     <U0172> LATIN CAPITAL LETTER U WITH OGONEK
<u;>     <U0173> LATIN SMALL LETTER U WITH OGONEK
<W/>>    <U0174> LATIN CAPITAL LETTER W WITH CIRCUMFLEX
<w/>>    <U0175> LATIN SMALL LETTER W WITH CIRCUMFLEX
<Y/>>    <U0176> LATIN CAPITAL LETTER Y WITH CIRCUMFLEX
<y/>>    <U0177> LATIN SMALL LETTER Y WITH CIRCUMFLEX
<Y:>     <U0178> LATIN CAPITAL LETTER Y WITH DIAERESIS
<Z'>     <U0179> LATIN CAPITAL LETTER Z WITH ACUTE
<z'>     <U017A> LATIN SMALL LETTER Z WITH ACUTE
<Z.>     <U017B> LATIN CAPITAL LETTER Z WITH DOT ABOVE
<z.>     <U017C> LATIN SMALL LETTER Z WITH DOT ABOVE
<Z<>     <U017D> LATIN CAPITAL LETTER Z WITH CARON
<z<>     <U017E> LATIN SMALL LETTER Z WITH CARON
<s1>     <U017F> LATIN SMALL LETTER LONG S
<b//>    <U0180> LATIN SMALL LETTER B WITH STROKE
<B2>     <U0181> LATIN CAPITAL LETTER B WITH HOOK
<C2>     <U0187> LATIN CAPITAL LETTER C WITH HOOK
```

```
<c2>     <U0188> LATIN SMALL LETTER C WITH HOOK
<F2>     <U0191> LATIN CAPITAL LETTER F WITH HOOK
<f2>     <U0192> LATIN SMALL LETTER F WITH HOOK
<K2>     <U0198> LATIN CAPITAL LETTER K WITH HOOK
<k2>     <U0199> LATIN SMALL LETTER K WITH HOOK
<O9>     <U01A0> LATIN CAPITAL LETTER O WITH HORN
<o9>     <U01A1> LATIN SMALL LETTER O WITH HORN
<OI>     <U01A2> LATIN CAPITAL LETTER OI
<oi>     <U01A3> LATIN SMALL LETTER OI
<yr>     <U01A6> LATIN LETTER YR
<U9>     <U01AF> LATIN CAPITAL LETTER U WITH HORN
<u9>     <U01B0> LATIN SMALL LETTER U WITH HORN
<Z//>    <U01B5> LATIN CAPITAL LETTER Z WITH STROKE
<z//>    <U01B6> LATIN SMALL LETTER Z WITH STROKE
<ED>     <U01B7> LATIN CAPITAL LETTER EZH
<DZ<>    <U01C4> LATIN CAPITAL LETTER DZ WITH CARON
<Dz<>    <U01C5> LATIN CAPITAL LETTER D WITH SMALL LETTER Z WITH CARON
<dz<>    <U01C6> LATIN SMALL LETTER DZ WITH CARON
<LJ3>    <U01C7> LATIN CAPITAL LETTER LJ
<Lj3>    <U01C8> LATIN CAPITAL LETTER L WITH SMALL LETTER J
<lj3>    <U01C9> LATIN SMALL LETTER LJ
<NJ3>    <U01CA> LATIN CAPITAL LETTER NJ
<Nj3>    <U01CB> LATIN CAPITAL LETTER N WITH SMALL LETTER J
<nj3>    <U01CC> LATIN SMALL LETTER NJ
<A<>     <U01CD> LATIN CAPITAL LETTER A WITH CARON
<a<>     <U01CE> LATIN SMALL LETTER A WITH CARON
<I<>     <U01CF> LATIN CAPITAL LETTER I WITH CARON
<i<>     <U01D0> LATIN SMALL LETTER I WITH CARON
<O<>     <U01D1> LATIN CAPITAL LETTER O WITH CARON
<o<>     <U01D2> LATIN SMALL LETTER O WITH CARON
<U<>     <U01D3> LATIN CAPITAL LETTER U WITH CARON
<u<>     <U01D4> LATIN SMALL LETTER U WITH CARON
<U:->    <U01D5> LATIN CAPITAL LETTER U WITH DIAERESIS AND MACRON
<u:->    <U01D6> LATIN SMALL LETTER U WITH DIAERESIS AND MACRON
<U:'>    <U01D7> LATIN CAPITAL LETTER U WITH DIAERESIS AND ACUTE
<u:'>    <U01D8> LATIN SMALL LETTER U WITH DIAERESIS AND ACUTE
<U:<>    <U01D9> LATIN CAPITAL LETTER U WITH DIAERESIS AND CARON
<u:<>    <U01DA> LATIN SMALL LETTER U WITH DIAERESIS AND CARON
<U:!>    <U01DB> LATIN CAPITAL LETTER U WITH DIAERESIS AND GRAVE
<u:!>    <U01DC> LATIN SMALL LETTER U WITH DIAERESIS AND GRAVE
<e1>     <U01DD> LATIN SMALL LETTER TURNED E
<A1>     <U01DE> LATIN CAPITAL LETTER A WITH DIAERESIS AND MACRON
<a1>     <U01DF> LATIN SMALL LETTER A WITH DIAERESIS AND MACRON
<A7>     <U01E0> LATIN CAPITAL LETTER A WITH DOT ABOVE AND MACRON
<a7>     <U01E1> LATIN SMALL LETTER A WITH DOT ABOVE AND MACRON
<A3>     <U01E2> LATIN CAPITAL LETTER AE WITH MACRON (ash)
<a3>     <U01E3> LATIN SMALL LETTER AE WITH MACRON (ash)
<G//>    <U01E4> LATIN CAPITAL LETTER G WITH STROKE
<g//>    <U01E5> LATIN SMALL LETTER G WITH STROKE
<G<>     <U01E6> LATIN CAPITAL LETTER G WITH CARON
<g<>     <U01E7> LATIN SMALL LETTER G WITH CARON
<K<>     <U01E8> LATIN CAPITAL LETTER K WITH CARON
<k<>     <U01E9> LATIN SMALL LETTER K WITH CARON
<O;>     <U01EA> LATIN CAPITAL LETTER O WITH OGONEK
<o;>     <U01EB> LATIN SMALL LETTER O WITH OGONEK
<O1>     <U01EC> LATIN CAPITAL LETTER O WITH OGONEK AND MACRON
<o1>     <U01ED> LATIN SMALL LETTER O WITH OGONEK AND MACRON
<EZ>     <U01EE> LATIN CAPITAL LETTER EZH WITH CARON
<ez>     <U01EF> LATIN SMALL LETTER EZH WITH CARON
<j<>     <U01F0> LATIN SMALL LETTER J WITH CARON
<DZ3>    <U01F1> LATIN CAPITAL LETTER DZ
<Dz3>    <U01F2> LATIN CAPITAL LETTER D WITH SMALL LETTER Z
```

```
<dz3>    <U01F3> LATIN SMALL LETTER DZ
<G'>     <U01F4> LATIN CAPITAL LETTER G WITH ACUTE
<g'>     <U01F5> LATIN SMALL LETTER G WITH ACUTE
<AA'>    <U01FA> LATIN CAPITAL LETTER A WITH RING ABOVE AND ACUTE
<aa'>    <U01FB> LATIN SMALL LETTER A WITH RING ABOVE AND ACUTE
<AE'>    <U01FC> LATIN CAPITAL LETTER AE WITH ACUTE (ash)
<ae'>    <U01FD> LATIN SMALL LETTER AE WITH ACUTE (ash)
<O//'>   <U01FE> LATIN CAPITAL LETTER O WITH STROKE AND ACUTE
<o//'>   <U01FF> LATIN SMALL LETTER O WITH STROKE AND ACUTE
<A!!>    <U0200> LATIN CAPITAL LETTER A WITH DOUBLE GRAVE
<a!!>    <U0201> LATIN SMALL LETTER A WITH DOUBLE GRAVE
<A)>     <U0202> LATIN CAPITAL LETTER A WITH INVERTED BREVE
<a)>     <U0203> LATIN SMALL LETTER A WITH INVERTED BREVE
<E!!>    <U0204> LATIN CAPITAL LETTER E WITH DOUBLE GRAVE
<e!!>    <U0205> LATIN SMALL LETTER E WITH DOUBLE GRAVE
<E)>     <U0206> LATIN CAPITAL LETTER E WITH INVERTED BREVE
<e)>     <U0207> LATIN SMALL LETTER E WITH INVERTED BREVE
<I!!>    <U0208> LATIN CAPITAL LETTER I WITH DOUBLE GRAVE
<i!!>    <U0209> LATIN SMALL LETTER I WITH DOUBLE GRAVE
<I)>     <U020A> LATIN CAPITAL LETTER I WITH INVERTED BREVE
<i)>     <U020B> LATIN SMALL LETTER I WITH INVERTED BREVE
<O!!>    <U020C> LATIN CAPITAL LETTER O WITH DOUBLE GRAVE
<o!!>    <U020D> LATIN SMALL LETTER O WITH DOUBLE GRAVE
<O)>     <U020E> LATIN CAPITAL LETTER O WITH INVERTED BREVE
<o)>     <U020F> LATIN SMALL LETTER O WITH INVERTED BREVE
<R!!>    <U0210> LATIN CAPITAL LETTER R WITH DOUBLE GRAVE
<r!!>    <U0211> LATIN SMALL LETTER R WITH DOUBLE GRAVE
<R)>     <U0212> LATIN CAPITAL LETTER R WITH INVERTED BREVE
<r)>     <U0213> LATIN SMALL LETTER R WITH INVERTED BREVE
<U!!>    <U0214> LATIN CAPITAL LETTER U WITH DOUBLE GRAVE
<u!!>    <U0215> LATIN SMALL LETTER U WITH DOUBLE GRAVE
<U)>     <U0216> LATIN CAPITAL LETTER U WITH INVERTED BREVE
<u)>     <U0217> LATIN SMALL LETTER U WITH INVERTED BREVE
<r1>     <U027C> LATIN SMALL LETTER R WITH LONG LEG
<ed>     <U0292> LATIN SMALL LETTER EZH
<;S>     <U02BB> MODIFIER LETTER TURNED COMMA
<1/>>    <U02C6> MODIFIER LETTER CIRCUMFLEX ACCENT
<'<>     <U02C7> CARON (Mandarin Chinese third tone)
<1->     <U02C9> MODIFIER LETTER MACRON (Mandarin Chinese first tone)
<1!>     <U02CB> MODIFIER LETTER GRAVE ACCENT (Mandarin Chinese fourth tone)
<'(>     <U02D8> BREVE
<'.>     <U02D9> DOT ABOVE (Mandarin Chinese light tone)
<'0>     <U02DA> RING ABOVE
<';>     <U02DB> OGONEK
<1?>     <U02DC> SMALL TILDE
<'">     <U02DD> DOUBLE ACUTE ACCENT
<'G>     <U0374> GREEK NUMERAL SIGN (Dexia keraia)
<,G>     <U0375> GREEK LOWER NUMERAL SIGN (Aristeri keraia)
<j3>     <U037A> GREEK YPOGEGRAMMENI
<?%>     <U037E> GREEK QUESTION MARK (Erotimatiko)
<'*>     <U0384> GREEK TONOS
<'%>     <U0385> GREEK DIALYTIKA TONOS
<A%>     <U0386> GREEK CAPITAL LETTER ALPHA WITH TONOS
<.*>     <U0387> GREEK ANO TELEIA
<E%>     <U0388> GREEK CAPITAL LETTER EPSILON WITH TONOS
<Y%>     <U0389> GREEK CAPITAL LETTER ETA WITH TONOS
<I%>     <U038A> GREEK CAPITAL LETTER IOTA WITH TONOS
<O%>     <U038C> GREEK CAPITAL LETTER OMICRON WITH TONOS
<U%>     <U038E> GREEK CAPITAL LETTER UPSILON WITH TONOS
<W%>     <U038F> GREEK CAPITAL LETTER OMEGA WITH TONOS
<i3>     <U0390> GREEK SMALL LETTER IOTA WITH DIALYTIKA AND TONOS
<A*>     <U0391> GREEK CAPITAL LETTER ALPHA
```

```
<B*>     <U0392> GREEK CAPITAL LETTER BETA
<G*>     <U0393> GREEK CAPITAL LETTER GAMMA
<D*>     <U0394> GREEK CAPITAL LETTER DELTA
<E*>     <U0395> GREEK CAPITAL LETTER EPSILON
<Z*>     <U0396> GREEK CAPITAL LETTER ZETA
<Y*>     <U0397> GREEK CAPITAL LETTER ETA
<H*>     <U0398> GREEK CAPITAL LETTER THETA
<I*>     <U0399> GREEK CAPITAL LETTER IOTA
<K*>     <U039A> GREEK CAPITAL LETTER KAPPA
<L*>     <U039B> GREEK CAPITAL LETTER LAMDA
<M*>     <U039C> GREEK CAPITAL LETTER MU
<N*>     <U039D> GREEK CAPITAL LETTER NU
<C*>     <U039E> GREEK CAPITAL LETTER XI
<O*>     <U039F> GREEK CAPITAL LETTER OMICRON
<P*>     <U03A0> GREEK CAPITAL LETTER PI
<R*>     <U03A1> GREEK CAPITAL LETTER RHO
<S*>     <U03A3> GREEK CAPITAL LETTER SIGMA
<T*>     <U03A4> GREEK CAPITAL LETTER TAU
<U*>     <U03A5> GREEK CAPITAL LETTER UPSILON
<F*>     <U03A6> GREEK CAPITAL LETTER PHI
<X*>     <U03A7> GREEK CAPITAL LETTER CHI
<Q*>     <U03A8> GREEK CAPITAL LETTER PSI
<W*>     <U03A9> GREEK CAPITAL LETTER OMEGA
<J*>     <U03AA> GREEK CAPITAL LETTER IOTA WITH DIALYTIKA
<V*>     <U03AB> GREEK CAPITAL LETTER UPSILON WITH DIALYTIKA
<a%>     <U03AC> GREEK SMALL LETTER ALPHA WITH TONOS
<e%>     <U03AD> GREEK SMALL LETTER EPSILON WITH TONOS
<y%>     <U03AE> GREEK SMALL LETTER ETA WITH TONOS
<i%>     <U03AF> GREEK SMALL LETTER IOTA WITH TONOS
<u3>     <U03B0> GREEK SMALL LETTER UPSILON WITH DIALYTIKA AND TONOS
<a*>     <U03B1> GREEK SMALL LETTER ALPHA
<b*>     <U03B2> GREEK SMALL LETTER BETA
<g*>     <U03B3> GREEK SMALL LETTER GAMMA
<d*>     <U03B4> GREEK SMALL LETTER DELTA
<e*>     <U03B5> GREEK SMALL LETTER EPSILON
<z*>     <U03B6> GREEK SMALL LETTER ZETA
<y*>     <U03B7> GREEK SMALL LETTER ETA
<h*>     <U03B8> GREEK SMALL LETTER THETA
<i*>     <U03B9> GREEK SMALL LETTER IOTA
<k*>     <U03BA> GREEK SMALL LETTER KAPPA
<l*>     <U03BB> GREEK SMALL LETTER LAMDA
<m*>     <U03BC> GREEK SMALL LETTER MU
<n*>     <U03BD> GREEK SMALL LETTER NU
<c*>     <U03BE> GREEK SMALL LETTER XI
<o*>     <U03BF> GREEK SMALL LETTER OMICRON
<p*>     <U03C0> GREEK SMALL LETTER PI
<r*>     <U03C1> GREEK SMALL LETTER RHO
<*s>     <U03C2> GREEK SMALL LETTER FINAL SIGMA
<s*>     <U03C3> GREEK SMALL LETTER SIGMA
<t*>     <U03C4> GREEK SMALL LETTER TAU
<u*>     <U03C5> GREEK SMALL LETTER UPSILON
<f*>     <U03C6> GREEK SMALL LETTER PHI
<x*>     <U03C7> GREEK SMALL LETTER CHI
<q*>     <U03C8> GREEK SMALL LETTER PSI
<w*>     <U03C9> GREEK SMALL LETTER OMEGA
<j*>     <U03CA> GREEK SMALL LETTER IOTA WITH DIALYTIKA
<v*>     <U03CB> GREEK SMALL LETTER UPSILON WITH DIALYTIKA
<o%>     <U03CC> GREEK SMALL LETTER OMICRON WITH TONOS
<u%>     <U03CD> GREEK SMALL LETTER UPSILON WITH TONOS
<w%>     <U03CE> GREEK SMALL LETTER OMEGA WITH TONOS
<b3>     <U03D0> GREEK BETA SYMBOL
<T3>     <U03DA> GREEK LETTER STIGMA
```

```
<M3>     <U03DC> GREEK LETTER DIGAMMA
<K3>     <U03DE> GREEK LETTER KOPPA
<P3>     <U03E0> GREEK LETTER SAMPI
<IO>     <U0401> CYRILLIC CAPITAL LETTER IO
<D%>     <U0402> CYRILLIC CAPITAL LETTER DJE (Serbocroatian)
<G%>     <U0403> CYRILLIC CAPITAL LETTER GJE
<IE>     <U0404> CYRILLIC CAPITAL LETTER UKRAINIAN IE
<DS>     <U0405> CYRILLIC CAPITAL LETTER DZE
<II>     <U0406> CYRILLIC CAPITAL LETTER BYELORUSSIAN-UKRAINIAN I
<YI>     <U0407> CYRILLIC CAPITAL LETTER YI (Ukrainian)
<J%>     <U0408> CYRILLIC CAPITAL LETTER JE
<LJ>     <U0409> CYRILLIC CAPITAL LETTER LJE
<NJ>     <U040A> CYRILLIC CAPITAL LETTER NJE
<Ts>     <U040B> CYRILLIC CAPITAL LETTER TSHE (Serbocroatian)
<KJ>     <U040C> CYRILLIC CAPITAL LETTER KJE
<V%>     <U040E> CYRILLIC CAPITAL LETTER SHORT U (Byelorussian)
<DZ>     <U040F> CYRILLIC CAPITAL LETTER DZHE
<A=>     <U0410> CYRILLIC CAPITAL LETTER A
<B=>     <U0411> CYRILLIC CAPITAL LETTER BE
<V=>     <U0412> CYRILLIC CAPITAL LETTER VE
<G=>     <U0413> CYRILLIC CAPITAL LETTER GHE
<D=>     <U0414> CYRILLIC CAPITAL LETTER DE
<E=>     <U0415> CYRILLIC CAPITAL LETTER IE
<Z%>     <U0416> CYRILLIC CAPITAL LETTER ZHE
<Z=>     <U0417> CYRILLIC CAPITAL LETTER ZE
<I=>     <U0418> CYRILLIC CAPITAL LETTER I
<J=>     <U0419> CYRILLIC CAPITAL LETTER SHORT I
<K=>     <U041A> CYRILLIC CAPITAL LETTER KA
<L=>     <U041B> CYRILLIC CAPITAL LETTER EL
<M=>     <U041C> CYRILLIC CAPITAL LETTER EM
<N=>     <U041D> CYRILLIC CAPITAL LETTER EN
<O=>     <U041E> CYRILLIC CAPITAL LETTER O
<P=>     <U041F> CYRILLIC CAPITAL LETTER PE
<R=>     <U0420> CYRILLIC CAPITAL LETTER ER
<S=>     <U0421> CYRILLIC CAPITAL LETTER ES
<T=>     <U0422> CYRILLIC CAPITAL LETTER TE
<U=>     <U0423> CYRILLIC CAPITAL LETTER U
<F=>     <U0424> CYRILLIC CAPITAL LETTER EF
<H=>     <U0425> CYRILLIC CAPITAL LETTER HA
<C=>     <U0426> CYRILLIC CAPITAL LETTER TSE
<C%>     <U0427> CYRILLIC CAPITAL LETTER CHE
<S%>     <U0428> CYRILLIC CAPITAL LETTER SHA
<Sc>     <U0429> CYRILLIC CAPITAL LETTER SHCHA
<=">     <U042A> CYRILLIC CAPITAL LETTER HARD SIGN
<Y=>     <U042B> CYRILLIC CAPITAL LETTER YERU
<%">     <U042C> CYRILLIC CAPITAL LETTER SOFT SIGN
<JE>     <U042D> CYRILLIC CAPITAL LETTER E
<JU>     <U042E> CYRILLIC CAPITAL LETTER YU
<JA>     <U042F> CYRILLIC CAPITAL LETTER YA
<a=>     <U0430> CYRILLIC SMALL LETTER A
<b=>     <U0431> CYRILLIC SMALL LETTER BE
<v=>     <U0432> CYRILLIC SMALL LETTER VE
<g=>     <U0433> CYRILLIC SMALL LETTER GHE
<d=>     <U0434> CYRILLIC SMALL LETTER DE
<e=>     <U0435> CYRILLIC SMALL LETTER IE
<z%>     <U0436> CYRILLIC SMALL LETTER ZHE
<z=>     <U0437> CYRILLIC SMALL LETTER ZE
<i=>     <U0438> CYRILLIC SMALL LETTER I
<j=>     <U0439> CYRILLIC SMALL LETTER SHORT I
<k=>     <U043A> CYRILLIC SMALL LETTER KA
<l=>     <U043B> CYRILLIC SMALL LETTER EL
<m=>     <U043C> CYRILLIC SMALL LETTER EM
```

```
<n=>     <U043D> CYRILLIC SMALL LETTER EN
<o=>     <U043E> CYRILLIC SMALL LETTER O
<p=>     <U043F> CYRILLIC SMALL LETTER PE
<r=>     <U0440> CYRILLIC SMALL LETTER ER
<s=>     <U0441> CYRILLIC SMALL LETTER ES
<t=>     <U0442> CYRILLIC SMALL LETTER TE
<u=>     <U0443> CYRILLIC SMALL LETTER U
<f=>     <U0444> CYRILLIC SMALL LETTER EF
<h=>     <U0445> CYRILLIC SMALL LETTER HA
<c=>     <U0446> CYRILLIC SMALL LETTER TSE
<c%>     <U0447> CYRILLIC SMALL LETTER CHE
<s%>     <U0448> CYRILLIC SMALL LETTER SHA
<sc>     <U0449> CYRILLIC SMALL LETTER SHCHA
<='>     <U044A> CYRILLIC SMALL LETTER HARD SIGN
<y=>     <U044B> CYRILLIC SMALL LETTER YERU
<%'>     <U044C> CYRILLIC SMALL LETTER SOFT SIGN
<je>     <U044D> CYRILLIC SMALL LETTER E
<ju>     <U044E> CYRILLIC SMALL LETTER YU
<ja>     <U044F> CYRILLIC SMALL LETTER YA
<io>     <U0451> CYRILLIC SMALL LETTER IO
<d%>     <U0452> CYRILLIC SMALL LETTER DJE (Serbocroatian)
<g%>     <U0453> CYRILLIC SMALL LETTER GJE
<ie>     <U0454> CYRILLIC SMALL LETTER UKRAINIAN IE
<ds>     <U0455> CYRILLIC SMALL LETTER DZE
<ii>     <U0456> CYRILLIC SMALL LETTER BYELORUSSIAN-UKRAINIAN I
<yi>     <U0457> CYRILLIC SMALL LETTER YI (Ukrainian)
<j%>     <U0458> CYRILLIC SMALL LETTER JE
<lj>     <U0459> CYRILLIC SMALL LETTER LJE
<nj>     <U045A> CYRILLIC SMALL LETTER NJE
<ts>     <U045B> CYRILLIC SMALL LETTER TSHE (Serbocroatian)
<kj>     <U045C> CYRILLIC SMALL LETTER KJE
<v%>     <U045E> CYRILLIC SMALL LETTER SHORT U (Byelorussian)
<dz>     <U045F> CYRILLIC SMALL LETTER DZHE
<Y3>     <U0462> CYRILLIC CAPITAL LETTER YAT
<y3>     <U0463> CYRILLIC SMALL LETTER YAT
<O3>     <U046A> CYRILLIC CAPITAL LETTER BIG YUS
<o3>     <U046B> CYRILLIC SMALL LETTER BIG YUS
<F3>     <U0472> CYRILLIC CAPITAL LETTER FITA
<f3>     <U0473> CYRILLIC SMALL LETTER FITA
<V3>     <U0474> CYRILLIC CAPITAL LETTER IZHITSA
<v3>     <U0475> CYRILLIC SMALL LETTER IZHITSA
<C3>     <U0480> CYRILLIC CAPITAL LETTER KOPPA
<c3>     <U0481> CYRILLIC SMALL LETTER KOPPA
<G3>     <U0490> CYRILLIC CAPITAL LETTER GHE WITH UPTURN
<g3>     <U0491> CYRILLIC SMALL LETTER GHE WITH UPTURN
<A+>     <U05D0> HEBREW LETTER ALEF
<B+>     <U05D1> HEBREW LETTER BET
<G+>     <U05D2> HEBREW LETTER GIMEL
<D+>     <U05D3> HEBREW LETTER DALET
<H+>     <U05D4> HEBREW LETTER HE
<W+>     <U05D5> HEBREW LETTER VAV
<Z+>     <U05D6> HEBREW LETTER ZAYIN
<X+>     <U05D7> HEBREW LETTER HET
<Tj>     <U05D8> HEBREW LETTER TET
<J+>     <U05D9> HEBREW LETTER YOD
<K%>     <U05DA> HEBREW LETTER FINAL KAF
<K+>     <U05DB> HEBREW LETTER KAF
<L+>     <U05DC> HEBREW LETTER LAMED
<M%>     <U05DD> HEBREW LETTER FINAL MEM
<M+>     <U05DE> HEBREW LETTER MEM
<N%>     <U05DF> HEBREW LETTER FINAL NUN
<N+>     <U05E0> HEBREW LETTER NUN
```

```
<S+>     <U05E1> HEBREW LETTER SAMEKH
<E+>     <U05E2> HEBREW LETTER AYIN
<P%>     <U05E3> HEBREW LETTER FINAL PE
<P+>     <U05E4> HEBREW LETTER PE
<Zj>     <U05E5> HEBREW LETTER FINAL TSADI
<ZJ>     <U05E6> HEBREW LETTER TSADI
<Q+>     <U05E7> HEBREW LETTER QOF
<R+>     <U05E8> HEBREW LETTER RESH
<Sh>     <U05E9> HEBREW LETTER SHIN
<T+>     <U05EA> HEBREW LETTER TAV
<,+>     <U060C> ARABIC COMMA
<;+>     <U061B> ARABIC SEMICOLON
<?+>     <U061F> ARABIC QUESTION MARK
<H'>     <U0621> ARABIC LETTER HAMZA
<aM>     <U0622> ARABIC LETTER ALEF WITH MADDA ABOVE
<aH>     <U0623> ARABIC LETTER ALEF WITH HAMZA ABOVE
<wH>     <U0624> ARABIC LETTER WAW WITH HAMZA ABOVE
<ah>     <U0625> ARABIC LETTER ALEF WITH HAMZA BELOW
<yH>     <U0626> ARABIC LETTER YEH WITH HAMZA ABOVE
<a+>     <U0627> ARABIC LETTER ALEF
<b+>     <U0628> ARABIC LETTER BEH
<tm>     <U0629> ARABIC LETTER TEH MARBUTA
<t+>     <U062A> ARABIC LETTER TEH
<tk>     <U062B> ARABIC LETTER THEH
<g+>     <U062C> ARABIC LETTER JEEM
<hk>     <U062D> ARABIC LETTER HAH
<x+>     <U062E> ARABIC LETTER KHAH
<d+>     <U062F> ARABIC LETTER DAL
<dk>     <U0630> ARABIC LETTER THAL
<r+>     <U0631> ARABIC LETTER REH
<z+>     <U0632> ARABIC LETTER ZAIN
<s+>     <U0633> ARABIC LETTER SEEN
<sn>     <U0634> ARABIC LETTER SHEEN
<c+>     <U0635> ARABIC LETTER SAD
<dd>     <U0636> ARABIC LETTER DAD
<tj>     <U0637> ARABIC LETTER TAH
<zH>     <U0638> ARABIC LETTER ZAH
<e+>     <U0639> ARABIC LETTER AIN
<i+>     <U063A> ARABIC LETTER GHAIN
<++>     <U0640> ARABIC TATWEEL
<f+>     <U0641> ARABIC LETTER FEH
<q+>     <U0642> ARABIC LETTER QAF
<k+>     <U0643> ARABIC LETTER KAF
<l+>     <U0644> ARABIC LETTER LAM
<m+>     <U0645> ARABIC LETTER MEEM
<n+>     <U0646> ARABIC LETTER NOON
<h+>     <U0647> ARABIC LETTER HEH
<w+>     <U0648> ARABIC LETTER WAW
<j+>     <U0649> ARABIC LETTER ALEF MAKSURA
<y+>     <U064A> ARABIC LETTER YEH
<:+>     <U064B> ARABIC FATHATAN
<"+>     <U064C> ARABIC DAMMATAN
<=+>     <U064D> ARABIC KASRATAN
<//+>    <U064E> ARABIC FATHA
<'+>     <U064F> ARABIC DAMMA
<1+>     <U0650> ARABIC KASRA
<3+>     <U0651> ARABIC SHADDA
<0+>     <U0652> ARABIC SUKUN
<0a>     <U0660> ARABIC-INDIC DIGIT ZERO
<1a>     <U0661> ARABIC-INDIC DIGIT ONE
<2a>     <U0662> ARABIC-INDIC DIGIT TWO
<3a>     <U0663> ARABIC-INDIC DIGIT THREE
```

```
<4a>     <U0664> ARABIC-INDIC DIGIT FOUR
<5a>     <U0665> ARABIC-INDIC DIGIT FIVE
<6a>     <U0666> ARABIC-INDIC DIGIT SIX
<7a>     <U0667> ARABIC-INDIC DIGIT SEVEN
<8a>     <U0668> ARABIC-INDIC DIGIT EIGHT
<9a>     <U0669> ARABIC-INDIC DIGIT NINE
<aS>     <U0670> ARABIC LETTER SUPERSCRIPT ALEF
<p+>     <U067E> ARABIC LETTER PEH
<hH>     <U0681> ARABIC LETTER HAH WITH HAMZA ABOVE
<tc>     <U0686> ARABIC LETTER TCHEH
<zj>     <U0698> ARABIC LETTER JEH
<v+>     <U06A4> ARABIC LETTER VEH
<gf>     <U06AF> ARABIC LETTER GAF
<A-0>    <U1E00> LATIN CAPITAL LETTER A WITH RING BELOW
<a-0>    <U1E01> LATIN SMALL LETTER A WITH RING BELOW
<B.>     <U1E02> LATIN CAPITAL LETTER B WITH DOT ABOVE
<b.>     <U1E03> LATIN SMALL LETTER B WITH DOT ABOVE
<B-.>    <U1E04> LATIN CAPITAL LETTER B WITH DOT BELOW
<b-.>    <U1E05> LATIN SMALL LETTER B WITH DOT BELOW
<B_>     <U1E06> LATIN CAPITAL LETTER B WITH LINE BELOW
<b_>     <U1E07> LATIN SMALL LETTER B WITH LINE BELOW
<C,'>    <U1E08> LATIN CAPITAL LETTER C WITH CEDILLA AND ACUTE
<c,'>    <U1E09> LATIN SMALL LETTER C WITH CEDILLA AND ACUTE
<D.>     <U1E0A> LATIN CAPITAL LETTER D WITH DOT ABOVE
<d.>     <U1E0B> LATIN SMALL LETTER D WITH DOT ABOVE
<D-.>    <U1E0C> LATIN CAPITAL LETTER D WITH DOT BELOW
<d-.>    <U1E0D> LATIN SMALL LETTER D WITH DOT BELOW
<D_>     <U1E0E> LATIN CAPITAL LETTER D WITH LINE BELOW
<d_>     <U1E0F> LATIN SMALL LETTER D WITH LINE BELOW
<D,>     <U1E10> LATIN CAPITAL LETTER D WITH CEDILLA
<d,>     <U1E11> LATIN SMALL LETTER D WITH CEDILLA
<D-/>>   <U1E12> LATIN CAPITAL LETTER D WITH CIRCUMFLEX BELOW
<d-/>>   <U1E13> LATIN SMALL LETTER D WITH CIRCUMFLEX BELOW
<E-!>    <U1E14> LATIN CAPITAL LETTER E WITH MACRON AND GRAVE
<e-!>    <U1E15> LATIN SMALL LETTER E WITH MACRON AND GRAVE
<E-'>    <U1E16> LATIN CAPITAL LETTER E WITH MACRON AND ACUTE
<e-'>    <U1E17> LATIN SMALL LETTER E WITH MACRON AND ACUTE
<E-/>>   <U1E18> LATIN CAPITAL LETTER E WITH CIRCUMFLEX BELOW
<e-/>>   <U1E19> LATIN SMALL LETTER E WITH CIRCUMFLEX BELOW
<E-?>    <U1E1A> LATIN CAPITAL LETTER E WITH TILDE BELOW
<e-?>    <U1E1B> LATIN SMALL LETTER E WITH TILDE BELOW
<E,(>    <U1E1C> LATIN CAPITAL LETTER E WITH CEDILLA AND BREVE
<e,(>    <U1E1D> LATIN SMALL LETTER E WITH CEDILLA AND BREVE
<F.>     <U1E1E> LATIN CAPITAL LETTER F WITH DOT ABOVE
<f.>     <U1E1F> LATIN SMALL LETTER F WITH DOT ABOVE
<G->     <U1E20> LATIN CAPITAL LETTER G WITH MACRON
<g->     <U1E21> LATIN SMALL LETTER G WITH MACRON
<H.>     <U1E22> LATIN CAPITAL LETTER H WITH DOT ABOVE
<h.>     <U1E23> LATIN SMALL LETTER H WITH DOT ABOVE
<H-.>    <U1E24> LATIN CAPITAL LETTER H WITH DOT BELOW
<h-.>    <U1E25> LATIN SMALL LETTER H WITH DOT BELOW
<H:>     <U1E26> LATIN CAPITAL LETTER H WITH DIAERESIS
<h:>     <U1E27> LATIN SMALL LETTER H WITH DIAERESIS
<H,>     <U1E28> LATIN CAPITAL LETTER H WITH CEDILLA
<h,>     <U1E29> LATIN SMALL LETTER H WITH CEDILLA
<H-(>    <U1E2A> LATIN CAPITAL LETTER H WITH BREVE BELOW
<h-(>    <U1E2B> LATIN SMALL LETTER H WITH BREVE BELOW
<I-?>    <U1E2C> LATIN CAPITAL LETTER I WITH TILDE BELOW
<i-?>    <U1E2D> LATIN SMALL LETTER I WITH TILDE BELOW
<I:'>    <U1E2E> LATIN CAPITAL LETTER I WITH DIAERESIS AND ACUTE
<i:'>    <U1E2F> LATIN SMALL LETTER I WITH DIAERESIS AND ACUTE
<K'>     <U1E30> LATIN CAPITAL LETTER K WITH ACUTE
```

```
<k'>     <U1E31> LATIN SMALL LETTER K WITH ACUTE
<K-.>    <U1E32> LATIN CAPITAL LETTER K WITH DOT BELOW
<k-.>    <U1E33> LATIN SMALL LETTER K WITH DOT BELOW
<K_>     <U1E34> LATIN CAPITAL LETTER K WITH LINE BELOW
<k_>     <U1E35> LATIN SMALL LETTER K WITH LINE BELOW
<L-.>    <U1E36> LATIN CAPITAL LETTER L WITH DOT BELOW
<l-.>    <U1E37> LATIN SMALL LETTER L WITH DOT BELOW
<L--.>   <U1E38> LATIN CAPITAL LETTER L WITH DOT BELOW AND MACRON
<l--.>   <U1E39> LATIN SMALL LETTER L WITH DOT BELOW AND MACRON
<L_>     <U1E3A> LATIN CAPITAL LETTER L WITH LINE BELOW
<l_>     <U1E3B> LATIN SMALL LETTER L WITH LINE BELOW
<L-/>>   <U1E3C> LATIN CAPITAL LETTER L WITH CIRCUMFLEX BELOW
<l-/>>   <U1E3D> LATIN SMALL LETTER L WITH CIRCUMFLEX BELOW
<M'>     <U1E3E> LATIN CAPITAL LETTER M WITH ACUTE
<m'>     <U1E3F> LATIN SMALL LETTER M WITH ACUTE
<M.>     <U1E40> LATIN CAPITAL LETTER M WITH DOT ABOVE
<m.>     <U1E41> LATIN SMALL LETTER M WITH DOT ABOVE
<M-.>    <U1E42> LATIN CAPITAL LETTER M WITH DOT BELOW
<m-.>    <U1E43> LATIN SMALL LETTER M WITH DOT BELOW
<N.>     <U1E44> LATIN CAPITAL LETTER N WITH DOT ABOVE
<n.>     <U1E45> LATIN SMALL LETTER N WITH DOT ABOVE
<N-.>    <U1E46> LATIN CAPITAL LETTER N WITH DOT BELOW
<n-.>    <U1E47> LATIN SMALL LETTER N WITH DOT BELOW
<N_>     <U1E48> LATIN CAPITAL LETTER N WITH LINE BELOW
<n_>     <U1E49> LATIN SMALL LETTER N WITH LINE BELOW
<N-/>>   <U1E4A> LATIN CAPITAL LETTER N WITH CIRCUMFLEX BELOW
<n-/>>   <U1E4B> LATIN SMALL LETTER N WITH CIRCUMFLEX BELOW
<O?'>    <U1E4C> LATIN CAPITAL LETTER O WITH TILDE AND ACUTE
<o?'>    <U1E4D> LATIN SMALL LETTER O WITH TILDE AND ACUTE
<O?:>    <U1E4E> LATIN CAPITAL LETTER O WITH TILDE AND DIAERESIS
<o?:>    <U1E4F> LATIN SMALL LETTER O WITH TILDE AND DIAERESIS
<O-!>    <U1E50> LATIN CAPITAL LETTER O WITH MACRON AND GRAVE
<o-!>    <U1E51> LATIN SMALL LETTER O WITH MACRON AND GRAVE
<O-'>    <U1E52> LATIN CAPITAL LETTER O WITH MACRON AND ACUTE
<o-'>    <U1E53> LATIN SMALL LETTER O WITH MACRON AND ACUTE
<P'>     <U1E54> LATIN CAPITAL LETTER P WITH ACUTE
<p'>     <U1E55> LATIN SMALL LETTER P WITH ACUTE
<P.>     <U1E56> LATIN CAPITAL LETTER P WITH DOT ABOVE
<p.>     <U1E57> LATIN SMALL LETTER P WITH DOT ABOVE
<R.>     <U1E58> LATIN CAPITAL LETTER R WITH DOT ABOVE
<r.>     <U1E59> LATIN SMALL LETTER R WITH DOT ABOVE
<R-.>    <U1E5A> LATIN CAPITAL LETTER R WITH DOT BELOW
<r-.>    <U1E5B> LATIN SMALL LETTER R WITH DOT BELOW
<R--.>   <U1E5C> LATIN CAPITAL LETTER R WITH DOT BELOW AND MACRON
<r--.>   <U1E5D> LATIN SMALL LETTER R WITH DOT BELOW AND MACRON
<R_>     <U1E5E> LATIN CAPITAL LETTER R WITH LINE BELOW
<r_>     <U1E5F> LATIN SMALL LETTER R WITH LINE BELOW
<S.>     <U1E60> LATIN CAPITAL LETTER S WITH DOT ABOVE
<s.>     <U1E61> LATIN SMALL LETTER S WITH DOT ABOVE
<S-.>    <U1E62> LATIN CAPITAL LETTER S WITH DOT BELOW
<s-.>    <U1E63> LATIN SMALL LETTER S WITH DOT BELOW
<S'.>    <U1E64> LATIN CAPITAL LETTER S WITH ACUTE AND DOT ABOVE
<s'.>    <U1E65> LATIN SMALL LETTER S WITH ACUTE AND DOT ABOVE
<S<.>    <U1E66> LATIN CAPITAL LETTER S WITH CARON AND DOT ABOVE
<s<.>    <U1E67> LATIN SMALL LETTER S WITH CARON AND DOT ABOVE
<S.-.>   <U1E68> LATIN CAPITAL LETTER S WITH DOT BELOW AND DOT ABOVE
<s.-.>   <U1E69> LATIN SMALL LETTER S WITH DOT BELOW AND DOT ABOVE
<T.>     <U1E6A> LATIN CAPITAL LETTER T WITH DOT ABOVE
<t.>     <U1E6B> LATIN SMALL LETTER T WITH DOT ABOVE
<T-.>    <U1E6C> LATIN CAPITAL LETTER T WITH DOT BELOW
<t-.>    <U1E6D> LATIN SMALL LETTER T WITH DOT BELOW
<T_>     <U1E6E> LATIN CAPITAL LETTER T WITH LINE BELOW
```

```
<t_>     <U1E6F> LATIN SMALL LETTER T WITH LINE BELOW
<T-/>>   <U1E70> LATIN CAPITAL LETTER T WITH CIRCUMFLEX BELOW
<t-/>>   <U1E71> LATIN SMALL LETTER T WITH CIRCUMFLEX BELOW
<U--:>   <U1E72> LATIN CAPITAL LETTER U WITH DIAERESIS BELOW
<u--:>   <U1E73> LATIN SMALL LETTER U WITH DIAERESIS BELOW
<U-?>    <U1E74> LATIN CAPITAL LETTER U WITH TILDE BELOW
<u-?>    <U1E75> LATIN SMALL LETTER U WITH TILDE BELOW
<U-/>>   <U1E76> LATIN CAPITAL LETTER U WITH CIRCUMFLEX BELOW
<u-/>>   <U1E77> LATIN SMALL LETTER U WITH CIRCUMFLEX BELOW
<U?'>    <U1E78> LATIN CAPITAL LETTER U WITH TILDE AND ACUTE
<u?'>    <U1E79> LATIN SMALL LETTER U WITH TILDE AND ACUTE
<U-:>    <U1E7A> LATIN CAPITAL LETTER U WITH MACRON AND DIAERESIS
<u-:>    <U1E7B> LATIN SMALL LETTER U WITH MACRON AND DIAERESIS
<V?>     <U1E7C> LATIN CAPITAL LETTER V WITH TILDE
<v?>     <U1E7D> LATIN SMALL LETTER V WITH TILDE
<V-.>    <U1E7E> LATIN CAPITAL LETTER V WITH DOT BELOW
<v-.>    <U1E7F> LATIN SMALL LETTER V WITH DOT BELOW
<W!>     <U1E80> LATIN CAPITAL LETTER W WITH GRAVE
<w!>     <U1E81> LATIN SMALL LETTER W WITH GRAVE
<W'>     <U1E82> LATIN CAPITAL LETTER W WITH ACUTE
<w'>     <U1E83> LATIN SMALL LETTER W WITH ACUTE
<W:>     <U1E84> LATIN CAPITAL LETTER W WITH DIAERESIS
<w:>     <U1E85> LATIN SMALL LETTER W WITH DIAERESIS
<W.>     <U1E86> LATIN CAPITAL LETTER W WITH DOT ABOVE
<w.>     <U1E87> LATIN SMALL LETTER W WITH DOT ABOVE
<W-.>    <U1E88> LATIN CAPITAL LETTER W WITH DOT BELOW
<w-.>    <U1E89> LATIN SMALL LETTER W WITH DOT BELOW
<X.>     <U1E8A> LATIN CAPITAL LETTER X WITH DOT ABOVE
<x.>     <U1E8B> LATIN SMALL LETTER X WITH DOT ABOVE
<X:>     <U1E8C> LATIN CAPITAL LETTER X WITH DIAERESIS
<x:>     <U1E8D> LATIN SMALL LETTER X WITH DIAERESIS
<Y.>     <U1E8E> LATIN CAPITAL LETTER Y WITH DOT ABOVE
<y.>     <U1E8F> LATIN SMALL LETTER Y WITH DOT ABOVE
<Z/>>    <U1E90> LATIN CAPITAL LETTER Z WITH CIRCUMFLEX
<z/>>    <U1E91> LATIN SMALL LETTER Z WITH CIRCUMFLEX
<Z-.>    <U1E92> LATIN CAPITAL LETTER Z WITH DOT BELOW
<z-.>    <U1E93> LATIN SMALL LETTER Z WITH DOT BELOW
<Z_>     <U1E94> LATIN CAPITAL LETTER Z WITH LINE BELOW
<z_>     <U1E95> LATIN SMALL LETTER Z WITH LINE BELOW
<A-.>    <U1EA0> LATIN CAPITAL LETTER A WITH DOT BELOW
<a-.>    <U1EA1> LATIN SMALL LETTER A WITH DOT BELOW
<A2>     <U1EA2> LATIN CAPITAL LETTER A WITH HOOK ABOVE
<a2>     <U1EA3> LATIN SMALL LETTER A WITH HOOK ABOVE
<A/>'>   <U1EA4> LATIN CAPITAL LETTER A WITH CIRCUMFLEX AND ACUTE
<a/>'>   <U1EA5> LATIN SMALL LETTER A WITH CIRCUMFLEX AND ACUTE
<A/>!>   <U1EA6> LATIN CAPITAL LETTER A WITH CIRCUMFLEX AND GRAVE
<a/>!>   <U1EA7> LATIN SMALL LETTER A WITH CIRCUMFLEX AND GRAVE
<A/>2>   <U1EA8> LATIN CAPITAL LETTER A WITH CIRCUMFLEX AND HOOK ABOVE
<a/>2>   <U1EA9> LATIN SMALL LETTER A WITH CIRCUMFLEX AND HOOK ABOVE
<A/>?>   <U1EAA> LATIN CAPITAL LETTER A WITH CIRCUMFLEX AND TILDE
<a/>?>   <U1EAB> LATIN SMALL LETTER A WITH CIRCUMFLEX AND TILDE
<A/>-.>  <U1EAC> LATIN CAPITAL LETTER A WITH CIRCUMFLEX AND DOT BELOW
<a/>-.>  <U1EAD> LATIN SMALL LETTER A WITH CIRCUMFLEX AND DOT BELOW
<A('>    <U1EAE> LATIN CAPITAL LETTER A WITH BREVE AND ACUTE
<a('>    <U1EAF> LATIN SMALL LETTER A WITH BREVE AND ACUTE
<A(!>    <U1EB0> LATIN CAPITAL LETTER A WITH BREVE AND GRAVE
<a(!>    <U1EB1> LATIN SMALL LETTER A WITH BREVE AND GRAVE
<A(2>    <U1EB2> LATIN CAPITAL LETTER A WITH BREVE AND HOOK ABOVE
<a(2>    <U1EB3> LATIN SMALL LETTER A WITH BREVE AND HOOK ABOVE
<A(?>    <U1EB4> LATIN CAPITAL LETTER A WITH BREVE AND TILDE
<a(?>    <U1EB5> LATIN SMALL LETTER A WITH BREVE AND TILDE
<A(-.>   <U1EB6> LATIN CAPITAL LETTER A WITH BREVE AND DOT BELOW
```

```
<a(-.>   <U1EB7> LATIN SMALL LETTER A WITH BREVE AND DOT BELOW
<E-.>    <U1EB8> LATIN CAPITAL LETTER E WITH DOT BELOW
<e-.>    <U1EB9> LATIN SMALL LETTER E WITH DOT BELOW
<E2>     <U1EBA> LATIN CAPITAL LETTER E WITH HOOK ABOVE
<e2>     <U1EBB> LATIN SMALL LETTER E WITH HOOK ABOVE
<E?>     <U1EBC> LATIN CAPITAL LETTER E WITH TILDE
<e?>     <U1EBD> LATIN SMALL LETTER E WITH TILDE
<E/>'>   <U1EBE> LATIN CAPITAL LETTER E WITH CIRCUMFLEX AND ACUTE
<e/>'>   <U1EBF> LATIN SMALL LETTER E WITH CIRCUMFLEX AND ACUTE
<E/>!>   <U1EC0> LATIN CAPITAL LETTER E WITH CIRCUMFLEX AND GRAVE
<e/>!>   <U1EC1> LATIN SMALL LETTER E WITH CIRCUMFLEX AND GRAVE
<E/>2>   <U1EC2> LATIN CAPITAL LETTER E WITH CIRCUMFLEX AND HOOK ABOVE
<e/>2>   <U1EC3> LATIN SMALL LETTER E WITH CIRCUMFLEX AND HOOK ABOVE
<E/>?>   <U1EC4> LATIN CAPITAL LETTER E WITH CIRCUMFLEX AND TILDE
<e/>?>   <U1EC5> LATIN SMALL LETTER E WITH CIRCUMFLEX AND TILDE
<E/>-.>  <U1EC6> LATIN CAPITAL LETTER E WITH CIRCUMFLEX AND DOT BELOW
<e/>-.>  <U1EC7> LATIN SMALL LETTER E WITH CIRCUMFLEX AND DOT BELOW
<I2>     <U1EC8> LATIN CAPITAL LETTER I WITH HOOK ABOVE
<i2>     <U1EC9> LATIN SMALL LETTER I WITH HOOK ABOVE
<I-.>    <U1ECA> LATIN CAPITAL LETTER I WITH DOT BELOW
<i-.>    <U1ECB> LATIN SMALL LETTER I WITH DOT BELOW
<O-.>    <U1ECC> LATIN CAPITAL LETTER O WITH DOT BELOW
<o-.>    <U1ECD> LATIN SMALL LETTER O WITH DOT BELOW
<O2>     <U1ECE> LATIN CAPITAL LETTER O WITH HOOK ABOVE
<o2>     <U1ECF> LATIN SMALL LETTER O WITH HOOK ABOVE
<O/>'>   <U1ED0> LATIN CAPITAL LETTER O WITH CIRCUMFLEX AND ACUTE
<o/>'>   <U1ED1> LATIN SMALL LETTER O WITH CIRCUMFLEX AND ACUTE
<O/>!>   <U1ED2> LATIN CAPITAL LETTER O WITH CIRCUMFLEX AND GRAVE
<o/>!>   <U1ED3> LATIN SMALL LETTER O WITH CIRCUMFLEX AND GRAVE
<O/>2>   <U1ED4> LATIN CAPITAL LETTER O WITH CIRCUMFLEX AND HOOK ABOVE
<o/>2>   <U1ED5> LATIN SMALL LETTER O WITH CIRCUMFLEX AND HOOK ABOVE
<O/>?>   <U1ED6> LATIN CAPITAL LETTER O WITH CIRCUMFLEX AND TILDE
<o/>?>   <U1ED7> LATIN SMALL LETTER O WITH CIRCUMFLEX AND TILDE
<O/>-.>  <U1ED8> LATIN CAPITAL LETTER O WITH CIRCUMFLEX AND DOT BELOW
<o/>-.>  <U1ED9> LATIN SMALL LETTER O WITH CIRCUMFLEX AND DOT BELOW
<O9'>    <U1EDA> LATIN CAPITAL LETTER O WITH HORN AND ACUTE
<o9'>    <U1EDB> LATIN SMALL LETTER O WITH HORN AND ACUTE
<O9!>    <U1EDC> LATIN CAPITAL LETTER O WITH HORN AND GRAVE
<o9!>    <U1EDD> LATIN SMALL LETTER O WITH HORN AND GRAVE
<O92>    <U1EDE> LATIN CAPITAL LETTER O WITH HORN AND HOOK ABOVE
<o92>    <U1EDF> LATIN SMALL LETTER O WITH HORN AND HOOK ABOVE
<O9?>    <U1EE0> LATIN CAPITAL LETTER O WITH HORN AND TILDE
<o9?>    <U1EE1> LATIN SMALL LETTER O WITH HORN AND TILDE
<O9-.>   <U1EE2> LATIN CAPITAL LETTER O WITH HORN AND DOT BELOW
<o9-.>   <U1EE3> LATIN SMALL LETTER O WITH HORN AND DOT BELOW
<U-.>    <U1EE4> LATIN CAPITAL LETTER U WITH DOT BELOW
<u-.>    <U1EE5> LATIN SMALL LETTER U WITH DOT BELOW
<U2>     <U1EE6> LATIN CAPITAL LETTER U WITH HOOK ABOVE
<u2>     <U1EE7> LATIN SMALL LETTER U WITH HOOK ABOVE
<U9'>    <U1EE8> LATIN CAPITAL LETTER U WITH HORN AND ACUTE
<u9'>    <U1EE9> LATIN SMALL LETTER U WITH HORN AND ACUTE
<U9!>    <U1EEA> LATIN CAPITAL LETTER U WITH HORN AND GRAVE
<u9!>    <U1EEB> LATIN SMALL LETTER U WITH HORN AND GRAVE
<U92>    <U1EEC> LATIN CAPITAL LETTER U WITH HORN AND HOOK ABOVE
<u92>    <U1EED> LATIN SMALL LETTER U WITH HORN AND HOOK ABOVE
<U9?>    <U1EEE> LATIN CAPITAL LETTER U WITH HORN AND TILDE
<u9?>    <U1EEF> LATIN SMALL LETTER U WITH HORN AND TILDE
<U9-.>   <U1EF0> LATIN CAPITAL LETTER U WITH HORN AND DOT BELOW
<u9-.>   <U1EF1> LATIN SMALL LETTER U WITH HORN AND DOT BELOW
<Y!>     <U1EF2> LATIN CAPITAL LETTER Y WITH GRAVE
<y!>     <U1EF3> LATIN SMALL LETTER Y WITH GRAVE
<Y-.>    <U1EF4> LATIN CAPITAL LETTER Y WITH DOT BELOW
```

```
<y-.>    <U1EF5> LATIN SMALL LETTER Y WITH DOT BELOW
<Y2>     <U1EF6> LATIN CAPITAL LETTER Y WITH HOOK ABOVE
<y2>     <U1EF7> LATIN SMALL LETTER Y WITH HOOK ABOVE
<Y?>     <U1EF8> LATIN CAPITAL LETTER Y WITH TILDE
<y?>     <U1EF9> LATIN SMALL LETTER Y WITH TILDE
<a*,>    <U1F00> GREEK SMALL LETTER ALPHA WITH PSILI
<a*;>    <U1F01> GREEK SMALL LETTER ALPHA WITH DASIA
<a*,!>   <U1F02> GREEK SMALL LETTER ALPHA WITH PSILI AND VARIA
<a*;!>   <U1F03> GREEK SMALL LETTER ALPHA WITH DASIA AND VARIA
<a*,'>   <U1F04> GREEK SMALL LETTER ALPHA WITH PSILI AND OXIA
<a*;'>   <U1F05> GREEK SMALL LETTER ALPHA WITH DASIA AND OXIA
<a*,?>   <U1F06> GREEK SMALL LETTER ALPHA WITH PSILI AND PERISPOMENI
<a*;?>   <U1F07> GREEK SMALL LETTER ALPHA WITH DASIA AND PERISPOMENI
<A*,>    <U1F08> GREEK CAPITAL LETTER ALPHA WITH PSILI
<A*;>    <U1F09> GREEK CAPITAL LETTER ALPHA WITH DASIA
<A*,!>   <U1F0A> GREEK CAPITAL LETTER ALPHA WITH PSILI AND VARIA
<A*;!>   <U1F0B> GREEK CAPITAL LETTER ALPHA WITH DASIA AND VARIA
<A*,'>   <U1F0C> GREEK CAPITAL LETTER ALPHA WITH PSILI AND OXIA
<A*;'>   <U1F0D> GREEK CAPITAL LETTER ALPHA WITH DASIA AND OXIA
<A*,?>   <U1F0E> GREEK CAPITAL LETTER ALPHA WITH PSILI AND PERISPOMENI
<A*;?>   <U1F0F> GREEK CAPITAL LETTER ALPHA WITH DASIA AND PERISPOMENI
<e*,>    <U1F10> GREEK SMALL LETTER EPSILON WITH PSILI
<e*;>    <U1F11> GREEK SMALL LETTER EPSILON WITH DASIA
<e*,!>   <U1F12> GREEK SMALL LETTER EPSILON WITH PSILI AND VARIA
<e*;!>   <U1F13> GREEK SMALL LETTER EPSILON WITH DASIA AND VARIA
<e*,'>   <U1F14> GREEK SMALL LETTER EPSILON WITH PSILI AND OXIA
<e*;'>   <U1F15> GREEK SMALL LETTER EPSILON WITH DASIA AND OXIA
<E*,>    <U1F18> GREEK CAPITAL LETTER EPSILON WITH PSILI
<E*;>    <U1F19> GREEK CAPITAL LETTER EPSILON WITH DASIA
<E*,!>   <U1F1A> GREEK CAPITAL LETTER EPSILON WITH PSILI AND VARIA
<E*;!>   <U1F1B> GREEK CAPITAL LETTER EPSILON WITH DASIA AND VARIA
<E*,'>   <U1F1C> GREEK CAPITAL LETTER EPSILON WITH PSILI AND OXIA
<E*;'>   <U1F1D> GREEK CAPITAL LETTER EPSILON WITH DASIA AND OXIA
<y*,>    <U1F20> GREEK SMALL LETTER ETA WITH PSILI
<y*;>    <U1F21> GREEK SMALL LETTER ETA WITH DASIA
<y*,!>   <U1F22> GREEK SMALL LETTER ETA WITH PSILI AND VARIA
<y*;!>   <U1F23> GREEK SMALL LETTER ETA WITH DASIA AND VARIA
<y*,'>   <U1F24> GREEK SMALL LETTER ETA WITH PSILI AND OXIA
<y*;'>   <U1F25> GREEK SMALL LETTER ETA WITH DASIA AND OXIA
<y*,?>   <U1F26> GREEK SMALL LETTER ETA WITH PSILI AND PERISPOMENI
<y*;?>   <U1F27> GREEK SMALL LETTER ETA WITH DASIA AND PERISPOMENI
<Y*,>    <U1F28> GREEK CAPITAL LETTER ETA WITH PSILI
<Y*;>    <U1F29> GREEK CAPITAL LETTER ETA WITH DASIA
<Y*,!>   <U1F2A> GREEK CAPITAL LETTER ETA WITH PSILI AND VARIA
<Y*;!>   <U1F2B> GREEK CAPITAL LETTER ETA WITH DASIA AND VARIA
<Y*,'>   <U1F2C> GREEK CAPITAL LETTER ETA WITH PSILI AND OXIA
<Y*;'>   <U1F2D> GREEK CAPITAL LETTER ETA WITH DASIA AND OXIA
<Y*,?>   <U1F2E> GREEK CAPITAL LETTER ETA WITH PSILI AND PERISPOMENI
<Y*;?>   <U1F2F> GREEK CAPITAL LETTER ETA WITH DASIA AND PERISPOMENI
<i*,>    <U1F30> GREEK SMALL LETTER IOTA WITH PSILI
<i*;>    <U1F31> GREEK SMALL LETTER IOTA WITH DASIA
<i*,!>   <U1F32> GREEK SMALL LETTER IOTA WITH PSILI AND VARIA
<i*;!>   <U1F33> GREEK SMALL LETTER IOTA WITH DASIA AND VARIA
<i*,'>   <U1F34> GREEK SMALL LETTER IOTA WITH PSILI AND OXIA
<i*;'>   <U1F35> GREEK SMALL LETTER IOTA WITH DASIA AND OXIA
<i*,?>   <U1F36> GREEK SMALL LETTER IOTA WITH PSILI AND PERISPOMENI
<i*;?>   <U1F37> GREEK SMALL LETTER IOTA WITH DASIA AND PERISPOMENI
<I*,>    <U1F38> GREEK CAPITAL LETTER IOTA WITH PSILI
<I*;>    <U1F39> GREEK CAPITAL LETTER IOTA WITH DASIA
<I*,!>   <U1F3A> GREEK CAPITAL LETTER IOTA WITH PSILI AND VARIA
<I*;!>   <U1F3B> GREEK CAPITAL LETTER IOTA WITH DASIA AND VARIA
<I*,'>   <U1F3C> GREEK CAPITAL LETTER IOTA WITH PSILI AND OXIA
```

```
<I*;'>   <U1F3D> GREEK CAPITAL LETTER IOTA WITH DASIA AND OXIA
<I*,?>   <U1F3E> GREEK CAPITAL LETTER IOTA WITH PSILI AND PERISPOMENI
<I*;?>   <U1F3F> GREEK CAPITAL LETTER IOTA WITH DASIA AND PERISPOMENI
<o*,>    <U1F40> GREEK SMALL LETTER OMICRON WITH PSILI
<o*;>    <U1F41> GREEK SMALL LETTER OMICRON WITH DASIA
<o*,!>   <U1F42> GREEK SMALL LETTER OMICRON WITH PSILI AND VARIA
<o*;!>   <U1F43> GREEK SMALL LETTER OMICRON WITH DASIA AND VARIA
<o*,'>   <U1F44> GREEK SMALL LETTER OMICRON WITH PSILI AND OXIA
<o*;'>   <U1F45> GREEK SMALL LETTER OMICRON WITH DASIA AND OXIA
<O*,>    <U1F48> GREEK CAPITAL LETTER OMICRON WITH PSILI
<O*;>    <U1F49> GREEK CAPITAL LETTER OMICRON WITH DASIA
<O*,!>   <U1F4A> GREEK CAPITAL LETTER OMICRON WITH PSILI AND VARIA
<O*;!>   <U1F4B> GREEK CAPITAL LETTER OMICRON WITH DASIA AND VARIA
<O*,'>   <U1F4C> GREEK CAPITAL LETTER OMICRON WITH PSILI AND OXIA
<O*;'>   <U1F4D> GREEK CAPITAL LETTER OMICRON WITH DASIA AND OXIA
<u*,>    <U1F50> GREEK SMALL LETTER UPSILON WITH PSILI
<u*;>    <U1F51> GREEK SMALL LETTER UPSILON WITH DASIA
<u*,!>   <U1F52> GREEK SMALL LETTER UPSILON WITH PSILI AND VARIA
<u*;!>   <U1F53> GREEK SMALL LETTER UPSILON WITH DASIA AND VARIA
<u*,'>   <U1F54> GREEK SMALL LETTER UPSILON WITH PSILI AND OXIA
<u*;'>   <U1F55> GREEK SMALL LETTER UPSILON WITH DASIA AND OXIA
<u*,?>   <U1F56> GREEK SMALL LETTER UPSILON WITH PSILI AND PERISPOMENI
<u*;?>   <U1F57> GREEK SMALL LETTER UPSILON WITH DASIA AND PERISPOMENI
<U*;>    <U1F59> GREEK CAPITAL LETTER UPSILON WITH DASIA
<U*;!>   <U1F5B> GREEK CAPITAL LETTER UPSILON WITH DASIA AND VARIA
<U*;'>   <U1F5D> GREEK CAPITAL LETTER UPSILON WITH DASIA AND OXIA
<U*;?>   <U1F5F> GREEK CAPITAL LETTER UPSILON WITH DASIA AND PERISPOMENI
<w*,>    <U1F60> GREEK SMALL LETTER OMEGA WITH PSILI
<w*;>    <U1F61> GREEK SMALL LETTER OMEGA WITH DASIA
<w*,!>   <U1F62> GREEK SMALL LETTER OMEGA WITH PSILI AND VARIA
<w*;!>   <U1F63> GREEK SMALL LETTER OMEGA WITH DASIA AND VARIA
<w*,'>   <U1F64> GREEK SMALL LETTER OMEGA WITH PSILI AND OXIA
<w*;'>   <U1F65> GREEK SMALL LETTER OMEGA WITH DASIA AND OXIA
<w*,?>   <U1F66> GREEK SMALL LETTER OMEGA WITH PSILI AND PERISPOMENI
<w*;?>   <U1F67> GREEK SMALL LETTER OMEGA WITH DASIA AND PERISPOMENI
<W*,>    <U1F68> GREEK CAPITAL LETTER OMEGA WITH PSILI
<W*;>    <U1F69> GREEK CAPITAL LETTER OMEGA WITH DASIA
<W*,!>   <U1F6A> GREEK CAPITAL LETTER OMEGA WITH PSILI AND VARIA
<W*;!>   <U1F6B> GREEK CAPITAL LETTER OMEGA WITH DASIA AND VARIA
<W*,'>   <U1F6C> GREEK CAPITAL LETTER OMEGA WITH PSILI AND OXIA
<W*;'>   <U1F6D> GREEK CAPITAL LETTER OMEGA WITH DASIA AND OXIA
<W*,?>   <U1F6E> GREEK CAPITAL LETTER OMEGA WITH PSILI AND PERISPOMENI
<W*;?>   <U1F6F> GREEK CAPITAL LETTER OMEGA WITH DASIA AND PERISPOMENI
<a*!>    <U1F70> GREEK SMALL LETTER ALPHA WITH VARIA
<a*'>    <U1F71> GREEK SMALL LETTER ALPHA WITH OXIA
<e*!>    <U1F72> GREEK SMALL LETTER EPSILON WITH VARIA
<e*'>    <U1F73> GREEK SMALL LETTER EPSILON WITH OXIA
<y*!>    <U1F74> GREEK SMALL LETTER ETA WITH VARIA
<y*'>    <U1F75> GREEK SMALL LETTER ETA WITH OXIA
<i*!>    <U1F76> GREEK SMALL LETTER IOTA WITH VARIA
<i*'>    <U1F77> GREEK SMALL LETTER IOTA WITH OXIA
<o*!>    <U1F78> GREEK SMALL LETTER OMICRON WITH VARIA
<o*'>    <U1F79> GREEK SMALL LETTER OMICRON WITH OXIA
<u*!>    <U1F7A> GREEK SMALL LETTER UPSILON WITH VARIA
<u*'>    <U1F7B> GREEK SMALL LETTER UPSILON WITH OXIA
<w*!>    <U1F7C> GREEK SMALL LETTER OMEGA WITH VARIA
<w*'>    <U1F7D> GREEK SMALL LETTER OMEGA WITH OXIA
<a*,j>   <U1F80> GREEK SMALL LETTER ALPHA WITH PSILI AND YPOGEGRAMMENI
<a*;j>   <U1F81> GREEK SMALL LETTER ALPHA WITH DASIA AND YPOGEGRAMMENI
<a*,!j>  <U1F82> GREEK SMALL LETTER ALPHA WITH PSILI AND VARIA AND YPOGEGRAMMENI
<a*;!j>  <U1F83> GREEK SMALL LETTER ALPHA WITH DASIA AND VARIA AND YPOGEGRAMMENI
<a*,'j>  <U1F84> GREEK SMALL LETTER ALPHA WITH PSILI AND OXIA AND YPOGEGRAMMENI
```

```
<a*;'j>  <U1F85> GREEK SMALL LETTER ALPHA WITH DASIA AND OXIA AND YPOGEGRAMMENI
<a*,?j>  <U1F86> GREEK SMALL LETTER ALPHA WITH PSILI AND PERISPOMENI AND
YPOGEGRAMMENI
<a*;?j>  <U1F87> GREEK SMALL LETTER ALPHA WITH DASIA AND PERISPOMENI AND
YPOGEGRAMMENI
<A*,J>   <U1F88> GREEK CAPITAL LETTER ALPHA WITH PSILI AND PROSGEGRAMMENI
<A*;J>   <U1F89> GREEK CAPITAL LETTER ALPHA WITH DASIA AND PROSGEGRAMMENI
<A*,!J>  <U1F8A> GREEK CAPITAL LETTER ALPHA WITH PSILI AND VARIA AND
PROSGEGRAMMENI
<A*;!J>  <U1F8B> GREEK CAPITAL LETTER ALPHA WITH DASIA AND VARIA AND
PROSGEGRAMMENI
<A*,'J>  <U1F8C> GREEK CAPITAL LETTER ALPHA WITH PSILI AND OXIA AND
PROSGEGRAMMENI
<A*;'J>  <U1F8D> GREEK CAPITAL LETTER ALPHA WITH DASIA AND OXIA AND
PROSGEGRAMMENI
<A*,?J>  <U1F8E> GREEK CAPITAL LETTER ALPHA WITH PSILI AND PERISPOMENI AND
PROSGEGRAMMENI
<A*;?J>  <U1F8F> GREEK CAPITAL LETTER ALPHA WITH DASIA AND PERISPOMENI AND
PROSGEGRAMMENI
<y*,j>   <U1F90> GREEK SMALL LETTER ETA WITH PSILI AND YPOGEGRAMMENI
<y*;j>   <U1F91> GREEK SMALL LETTER ETA WITH DASIA AND YPOGEGRAMMENI
<y*,!j>  <U1F92> GREEK SMALL LETTER ETA WITH PSILI AND VARIA AND YPOGEGRAMMENI
<y*;!j>  <U1F93> GREEK SMALL LETTER ETA WITH DASIA AND VARIA AND YPOGEGRAMMENI
<y*,'j>  <U1F94> GREEK SMALL LETTER ETA WITH PSILI AND OXIA AND YPOGEGRAMMENI
<y*;'j>  <U1F95> GREEK SMALL LETTER ETA WITH DASIA AND OXIA AND YPOGEGRAMMENI
<y*,?j>  <U1F96> GREEK SMALL LETTER ETA WITH PSILI AND PERISPOMENI AND
YPOGEGRAMMENI
<y*;?j>  <U1F97> GREEK SMALL LETTER ETA WITH DASIA AND PERISPOMENI AND
YPOGEGRAMMENI
<Y*,J>   <U1F98> GREEK CAPITAL LETTER ETA WITH PSILI AND PROSGEGRAMMENI
<Y*;J>   <U1F99> GREEK CAPITAL LETTER ETA WITH DASIA AND PROSGEGRAMMENI
<Y*,!J>  <U1F9A> GREEK CAPITAL LETTER ETA WITH PSILI AND VARIA AND PROSGEGRAMMENI
<Y*;!J>  <U1F9B> GREEK CAPITAL LETTER ETA WITH DASIA AND VARIA AND PROSGEGRAMMENI
<Y*,'J>  <U1F9C> GREEK CAPITAL LETTER ETA WITH PSILI AND OXIA AND PROSGEGRAMMENI
<Y*;'J>  <U1F9D> GREEK CAPITAL LETTER ETA WITH DASIA AND OXIA AND PROSGEGRAMMENI
<Y*,?J>  <U1F9E> GREEK CAPITAL LETTER ETA WITH PSILI AND PERISPOMENI AND
PROSGEGRAMMENI
<Y*;?J>  <U1F9F> GREEK CAPITAL LETTER ETA WITH DASIA AND PERISPOMENI AND
PROSGEGRAMMENI
<w*,j>   <U1FA0> GREEK SMALL LETTER OMEGA WITH PSILI AND YPOGEGRAMMENI
<w*;j>   <U1FA1> GREEK SMALL LETTER OMEGA WITH DASIA AND YPOGEGRAMMENI
<w*,!j>  <U1FA2> GREEK SMALL LETTER OMEGA WITH PSILI AND VARIA AND YPOGEGRAMMENI
<w*;!j>  <U1FA3> GREEK SMALL LETTER OMEGA WITH DASIA AND VARIA AND YPOGEGRAMMENI
<w*,'j>  <U1FA4> GREEK SMALL LETTER OMEGA WITH PSILI AND OXIA AND YPOGEGRAMMENI
<w*;'j>  <U1FA5> GREEK SMALL LETTER OMEGA WITH DASIA AND OXIA AND YPOGEGRAMMENI
<w*,?j>  <U1FA6> GREEK SMALL LETTER OMEGA WITH PSILI AND PERISPOMENI AND
YPOGEGRAMMENI
<w*;?j>  <U1FA7> GREEK SMALL LETTER OMEGA WITH DASIA AND PERISPOMENI AND
YPOGEGRAMMENI
<W*,J>   <U1FA8> GREEK CAPITAL LETTER OMEGA WITH PSILI AND PROSGEGRAMMENI
<W*;J>   <U1FA9> GREEK CAPITAL LETTER OMEGA WITH DASIA AND PROSGEGRAMMENI
<W*,!J>  <U1FAA> GREEK CAPITAL LETTER OMEGA WITH PSILI AND VARIA AND
PROSGEGRAMMENI
<W*;!J>  <U1FAB> GREEK CAPITAL LETTER OMEGA WITH DASIA AND VARIA AND
PROSGEGRAMMENI
<W*,'J>  <U1FAC> GREEK CAPITAL LETTER OMEGA WITH PSILI AND OXIA AND
PROSGEGRAMMENI
<W*;'J>  <U1FAD> GREEK CAPITAL LETTER OMEGA WITH DASIA AND OXIA AND
PROSGEGRAMMENI
<W*,?J>  <U1FAE> GREEK CAPITAL LETTER OMEGA WITH PSILI AND PERISPOMENI AND
PROSGEGRAMMENI
<W*;?J>  <U1FAF> GREEK CAPITAL LETTER OMEGA WITH DASIA AND PERISPOMENI AND
```

```
PROSGEGRAMMENI
<a*(>     <U1FB0> GREEK SMALL LETTER ALPHA WITH VRACHY
<a*->     <U1FB1> GREEK SMALL LETTER ALPHA WITH MACRON
<a*!j>    <U1FB2> GREEK SMALL LETTER ALPHA WITH VARIA AND YPOGEGRAMMENI
<a*j>     <U1FB3> GREEK SMALL LETTER ALPHA WITH YPOGEGRAMMENI
<a*'j>    <U1FB4> GREEK SMALL LETTER ALPHA WITH OXIA AND YPOGEGRAMMENI
<a*?>     <U1FB6> GREEK SMALL LETTER ALPHA WITH PERISPOMENI
<a*?j>    <U1FB7> GREEK SMALL LETTER ALPHA WITH PERISPOMENI AND YPOGEGRAMMENI
<A*(>     <U1FB8> GREEK CAPITAL LETTER ALPHA WITH VRACHY
<A*->     <U1FB9> GREEK CAPITAL LETTER ALPHA WITH MACRON
<A*!>     <U1FBA> GREEK CAPITAL LETTER ALPHA WITH VARIA
<A*'>     <U1FBB> GREEK CAPITAL LETTER ALPHA WITH OXIA
<A*J>     <U1FBC> GREEK CAPITAL LETTER ALPHA WITH PROSGEGRAMMENI
<)*>      <U1FBD> GREEK KORONIS
<J3>      <U1FBE> GREEK PROSGEGRAMMENI
<,,>      <U1FBF> GREEK PSILI
<?*>      <U1FC0> GREEK PERISPOMENI
<?:>      <U1FC1> GREEK DIALYTIKA AND PERISPOMENI
<y*!j>    <U1FC2> GREEK SMALL LETTER ETA WITH VARIA AND YPOGEGRAMMENI
<y*j>     <U1FC3> GREEK SMALL LETTER ETA WITH YPOGEGRAMMENI
<y*'j>    <U1FC4> GREEK SMALL LETTER ETA WITH OXIA AND YPOGEGRAMMENI
<y*?>     <U1FC6> GREEK SMALL LETTER ETA WITH PERISPOMENI
<y*?j>    <U1FC7> GREEK SMALL LETTER ETA WITH PERISPOMENI AND YPOGEGRAMMENI
<E*!!>    <U1FC8> GREEK CAPITAL LETTER EPSILON WITH VARIA
<E*'>     <U1FC9> GREEK CAPITAL LETTER EPSILON WITH OXIA
<Y*!>     <U1FCA> GREEK CAPITAL LETTER ETA WITH VARIA
<Y*'>     <U1FCB> GREEK CAPITAL LETTER ETA WITH OXIA
<Y*J>     <U1FCC> GREEK CAPITAL LETTER ETA WITH PROSGEGRAMMENI
<,!>      <U1FCD> GREEK PSILI AND VARIA
<,'>      <U1FCE> GREEK PSILI AND OXIA
<?,>      <U1FCF> GREEK PSILI AND PERISPOMENI
<i*(>     <U1FD0> GREEK SMALL LETTER IOTA WITH VRACHY
<i*->     <U1FD1> GREEK SMALL LETTER IOTA WITH MACRON
<i*:!>    <U1FD2> GREEK SMALL LETTER IOTA WITH DIALYTIKA AND VARIA
<i*:'>    <U1FD3> GREEK SMALL LETTER IOTA WITH DIALYTIKA AND OXIA
<i*?>     <U1FD6> GREEK SMALL LETTER IOTA WITH PERISPOMENI
<i*:?>    <U1FD7> GREEK SMALL LETTER IOTA WITH DIALYTIKA AND PERISPOMENI
<I*(>     <U1FD8> GREEK CAPITAL LETTER IOTA WITH VRACHY
<I*->     <U1FD9> GREEK CAPITAL LETTER IOTA WITH MACRON
<I*!>     <U1FDA> GREEK CAPITAL LETTER IOTA WITH VARIA
<I*'>     <U1FDB> GREEK CAPITAL LETTER IOTA WITH OXIA
<;!>      <U1FDD> GREEK DASIA AND VARIA
<;'>      <U1FDE> GREEK DASIA AND OXIA
<?;>      <U1FDF> GREEK DASIA AND PERISPOMENI
<u*(>     <U1FE0> GREEK SMALL LETTER UPSILON WITH VRACHY
<u*->     <U1FE1> GREEK SMALL LETTER UPSILON WITH MACRON
<u*:!>    <U1FE2> GREEK SMALL LETTER UPSILON WITH DIALYTIKA AND VARIA
<u*:'>    <U1FE3> GREEK SMALL LETTER UPSILON WITH DIALYTIKA AND OXIA
<r*,>     <U1FE4> GREEK SMALL LETTER RHO WITH PSILI
<r*;>     <U1FE5> GREEK SMALL LETTER RHO WITH DASIA
<u*?>     <U1FE6> GREEK SMALL LETTER UPSILON WITH PERISPOMENI
<u*:?>    <U1FE7> GREEK SMALL LETTER UPSILON WITH DIALYTIKA AND PERISPOMENI
<U*(>     <U1FE8> GREEK CAPITAL LETTER UPSILON WITH VRACHY
<U*->     <U1FE9> GREEK CAPITAL LETTER UPSILON WITH MACRON
<U*!>     <U1FEA> GREEK CAPITAL LETTER UPSILON WITH VARIA
<U*'>     <U1FEB> GREEK CAPITAL LETTER UPSILON WITH OXIA
<R*;>     <U1FEC> GREEK CAPITAL LETTER RHO WITH DASIA
<!:>      <U1FED> GREEK DIALYTIKA AND VARIA
<:'>      <U1FEE> GREEK DIALYTIKA AND OXIA
<!*>      <U1FEF> GREEK VARIA
<w*!j>    <U1FF2> GREEK SMALL LETTER OMEGA WITH VARIA AND YPOGEGRAMMENI
<w*j>     <U1FF3> GREEK SMALL LETTER OMEGA WITH YPOGEGRAMMENI
```

```
<w*'j>   <U1FF4> GREEK SMALL LETTER OMEGA WITH OXIA AND YPOGEGRAMMENI
<w*?>    <U1FF6> GREEK SMALL LETTER OMEGA WITH PERISPOMENI
<w*?j>   <U1FF7> GREEK SMALL LETTER OMEGA WITH PERISPOMENI AND YPOGEGRAMMENI
<O*!>    <U1FF8> GREEK CAPITAL LETTER OMICRON WITH VARIA
<O*'>    <U1FF9> GREEK CAPITAL LETTER OMICRON WITH OXIA
<W*!>    <U1FFA> GREEK CAPITAL LETTER OMEGA WITH VARIA
<W*'>    <U1FFB> GREEK CAPITAL LETTER OMEGA WITH OXIA
<W*J>    <U1FFC> GREEK CAPITAL LETTER OMEGA WITH PROSGEGRAMMENI
<//*>    <U1FFD> GREEK OXIA
<;;>     <U1FFE> GREEK DASIA
<1N>     <U2002> EN SPACE
<1M>     <U2003> EM SPACE
<3M>     <U2004> THREE-PER-EM SPACE
<4M>     <U2005> FOUR-PER-EM SPACE
<6M>     <U2006> SIX-PER-EM SPACE
<LR>     <U200E> LEFT-TO-RIGHT MARK
<RL>     <U200F> RIGHT-TO-LEFT MARK
<1T>     <U2009> THIN SPACE
<1H>     <U200A> HAIR SPACE
<-1>     <U2010> HYPHEN
<-N>     <U2013> EN DASH
<-M>     <U2014> EM DASH
<-3>     <U2015> HORIZONTAL BAR
<!2>     <U2016> DOUBLE VERTICAL LINE
<=2>     <U2017> DOUBLE LOW LINE
<'6>     <U2018> LEFT SINGLE QUOTATION MARK
<'9>     <U2019> RIGHT SINGLE QUOTATION MARK
<.9>     <U201A> SINGLE LOW-9 QUOTATION MARK
<9'>     <U201B> SINGLE HIGH-REVERSED-9 QUOTATION MARK
<"6>     <U201C> LEFT DOUBLE QUOTATION MARK
<"9>     <U201D> RIGHT DOUBLE QUOTATION MARK
<:9>     <U201E> DOUBLE LOW-9 QUOTATION MARK
<9">     <U201F> DOUBLE HIGH-REVERSED-9 QUOTATION MARK
<//->    <U2020> DAGGER
<//=>    <U2021> DOUBLE DAGGER
<sb>     <U2022> BULLET
<3b>     <U2023> TRIANGULAR BULLET
<..>     <U2025> TWO DOT LEADER
<.3>     <U2026> HORIZONTAL ELLIPSIS
<.->     <U2027> HYPHENATION POINT
<linesep>        <U2028>     LINE SEPARATOR
<parsep> <U2029> PARAGRAPH SEPARATOR
<%0>     <U2030> PER MILLE SIGN
<1'>     <U2032> PRIME
<2'>     <U2033> DOUBLE PRIME
<3'>     <U2034> TRIPLE PRIME
<1">     <U2035> REVERSED PRIME
<2">     <U2036> REVERSED DOUBLE PRIME
<3">     <U2037> REVERSED TRIPLE PRIME
<Ca>     <U2038> CARET
<<1>     <U2039> SINGLE LEFT-POINTING ANGLE QUOTATION MARK
</>1>    <U203A> SINGLE RIGHT-POINTING ANGLE QUOTATION MARK
<:X>     <U203B> REFERENCE MARK
<!*2>    <U203C> DOUBLE EXCLAMATION MARK
<'->     <U203E> OVERLINE
<-b>     <U2043> HYPHEN BULLET
<//f>    <U2044> FRACTION SLASH
<0S>     <U2070> SUPERSCRIPT ZERO
<4S>     <U2074> SUPERSCRIPT FOUR
<5S>     <U2075> SUPERSCRIPT FIVE
<6S>     <U2076> SUPERSCRIPT SIX
<7S>     <U2077> SUPERSCRIPT SEVEN
```

```
<8S>     <U2078> SUPERSCRIPT EIGHT
<9S>     <U2079> SUPERSCRIPT NINE
<+S>     <U207A> SUPERSCRIPT PLUS SIGN
<-S>     <U207B> SUPERSCRIPT MINUS
<=S>     <U207C> SUPERSCRIPT EQUALS SIGN
<(S>     <U207D> SUPERSCRIPT LEFT PARENTHESIS
<)S>     <U207E> SUPERSCRIPT RIGHT PARENTHESIS
<nS>     <U207F> SUPERSCRIPT LATIN SMALL LETTER N
<0s>     <U2080> SUBSCRIPT ZERO
<1s>     <U2081> SUBSCRIPT ONE
<2s>     <U2082> SUBSCRIPT TWO
<3s>     <U2083> SUBSCRIPT THREE
<4s>     <U2084> SUBSCRIPT FOUR
<5s>     <U2085> SUBSCRIPT FIVE
<6s>     <U2086> SUBSCRIPT SIX
<7s>     <U2087> SUBSCRIPT SEVEN
<8s>     <U2088> SUBSCRIPT EIGHT
<9s>     <U2089> SUBSCRIPT NINE
<+s>     <U208A> SUBSCRIPT PLUS SIGN
<-s>     <U208B> SUBSCRIPT MINUS
<=s>     <U208C> SUBSCRIPT EQUALS SIGN
<(s>     <U208D> SUBSCRIPT LEFT PARENTHESIS
<)s>     <U208E> SUBSCRIPT RIGHT PARENTHESIS
<Ff>     <U20A3> FRENCH FRANC SIGN
<Li>     <U20A4> LIRA SIGN
<Pt>     <U20A7> PESETA SIGN
<W=>     <U20A9> WON SIGN
<Eu>     <U20AC> EURO SIGN
<"7>     <U20D1> COMBINING RIGHT HARPOON ABOVE
<oC>     <U2103> DEGREE CELSIUS
<co>     <U2105> CARE OF
<oF>     <U2109> DEGREE FAHRENHEIT
<N0>     <U2116> NUMERO SIGN
<PO>     <U2117> SOUND RECORDING COPYRIGHT
<Rx>     <U211E> PRESCRIPTION TAKE
<SM>     <U2120> SERVICE MARK
<TM>     <U2122> TRADE MARK SIGN
<Om>     <U2126> OHM SIGN
<AO>     <U212B> ANGSTROM SIGN
<Est>    <U212E> ESTIMATED SYMBOL
<13>     <U2153> VULGAR FRACTION ONE THIRD
<23>     <U2154> VULGAR FRACTION TWO THIRDS
<15>     <U2155> VULGAR FRACTION ONE FIFTH
<25>     <U2156> VULGAR FRACTION TWO FIFTHS
<35>     <U2157> VULGAR FRACTION THREE FIFTHS
<45>     <U2158> VULGAR FRACTION FOUR FIFTHS
<16>     <U2159> VULGAR FRACTION ONE SIXTH
<56>     <U215A> VULGAR FRACTION FIVE SIXTHS
<18>     <U215B> VULGAR FRACTION ONE EIGHTH
<38>     <U215C> VULGAR FRACTION THREE EIGHTHS
<58>     <U215D> VULGAR FRACTION FIVE EIGHTHS
<78>     <U215E> VULGAR FRACTION SEVEN EIGHTHS
<1R>     <U2160> ROMAN NUMERAL ONE
<2R>     <U2161> ROMAN NUMERAL TWO
<3R>     <U2162> ROMAN NUMERAL THREE
<4R>     <U2163> ROMAN NUMERAL FOUR
<5R>     <U2164> ROMAN NUMERAL FIVE
<6R>     <U2165> ROMAN NUMERAL SIX
<7R>     <U2166> ROMAN NUMERAL SEVEN
<8R>     <U2167> ROMAN NUMERAL EIGHT
<9R>     <U2168> ROMAN NUMERAL NINE
<aR>     <U2169> ROMAN NUMERAL TEN
```

```
<bR>      <U216A> ROMAN NUMERAL ELEVEN
<cR>      <U216B> ROMAN NUMERAL TWELVE
<50R>     <U216C> ROMAN NUMERAL FIFTY
<100R>    <U216D> ROMAN NUMERAL ONE HUNDRED
<500R>    <U216E> ROMAN NUMERAL FIVE HUNDRED
<1000R>   <U216F> ROMAN NUMERAL ONE THOUSAND
<1r>      <U2170> SMALL ROMAN NUMERAL ONE
<2r>      <U2171> SMALL ROMAN NUMERAL TWO
<3r>      <U2172> SMALL ROMAN NUMERAL THREE
<4r>      <U2173> SMALL ROMAN NUMERAL FOUR
<5r>      <U2174> SMALL ROMAN NUMERAL FIVE
<6r>      <U2175> SMALL ROMAN NUMERAL SIX
<7r>      <U2176> SMALL ROMAN NUMERAL SEVEN
<8r>      <U2177> SMALL ROMAN NUMERAL EIGHT
<9r>      <U2178> SMALL ROMAN NUMERAL NINE
<ar>      <U2179> SMALL ROMAN NUMERAL TEN
<br>      <U217A> SMALL ROMAN NUMERAL ELEVEN
<cr>      <U217B> SMALL ROMAN NUMERAL TWELVE
<50r>     <U217C> SMALL ROMAN NUMERAL FIFTY
<100r>    <U217D> SMALL ROMAN NUMERAL ONE HUNDRED
<500r>    <U217E> SMALL ROMAN NUMERAL FIVE HUNDRED
<1000r>   <U217F> SMALL ROMAN NUMERAL ONE THOUSAND
<1000RCD>         <U2180>     ROMAN NUMERAL ONE THOUSAND C D
<5000R>   <U2181> ROMAN NUMERAL FIVE THOUSAND
<10000R>  <U2182> ROMAN NUMERAL TEN THOUSAND
<<->      <U2190> LEFTWARDS ARROW
<-!>      <U2191> UPWARDS ARROW
<-/>>     <U2192> RIGHTWARDS ARROW
<-v>      <U2193> DOWNWARDS ARROW
<</>>     <U2194> LEFT RIGHT ARROW
<UD>      <U2195> UP DOWN ARROW
<<!!>     <U2196> NORTH WEST ARROW
<//////>> <U2197> NORTH EAST ARROW
<!!/>>    <U2198> SOUTH EAST ARROW
<<////>   <U2199> SOUTH WEST ARROW
<UD->     <U21A8> UP DOWN ARROW WITH BASE
</>V>     <U21C0> RIGHTWARDS HARPOON WITH BARB UPWARDS
<<=>      <U21D0> LEFTWARDS DOUBLE ARROW
<=/>>     <U21D2> RIGHTWARDS DOUBLE ARROW
<==>      <U21D4> LEFT RIGHT DOUBLE ARROW
<FA>      <U2200> FOR ALL
<dP>      <U2202> PARTIAL DIFFERENTIAL
<TE>      <U2203> THERE EXISTS
<//0>     <U2205> EMPTY SET
<DE>      <U2206> INCREMENT
<NB>      <U2207> NABLA
<(->      <U2208> ELEMENT OF
<-)>      <U220B> CONTAINS AS MEMBER
<FP>      <U220E> END OF PROOF
<*P>      <U220F> N-ARY PRODUCT
<+Z>      <U2211> N-ARY SUMMATION
<-2>      <U2212> MINUS SIGN
<-+>      <U2213> MINUS-OR-PLUS SIGN
<.+>      <U2214> DOT PLUS
<*->      <U2217> ASTERISK OPERATOR
<Ob>      <U2218> RING OPERATOR
<Sb>      <U2219> BULLET OPERATOR
<RT>      <U221A> SQUARE ROOT
<0(>      <U221D> PROPORTIONAL TO
<00>      <U221E> INFINITY
<-L>      <U221F> RIGHT ANGLE
<-V>      <U2220> ANGLE
```

```
<PP>     <U2225> PARALLEL TO
<AN>     <U2227> LOGICAL AND
<OR>     <U2228> LOGICAL OR
<(U>     <U2229> INTERSECTION
<)U>     <U222A> UNION
<In>     <U222B> INTEGRAL
<DI>     <U222C> DOUBLE INTEGRAL
<Io>     <U222E> CONTOUR INTEGRAL
<.:>     <U2234> THEREFORE
<:.>     <U2235> BECAUSE
<:R>     <U2236> RATIO
<::>     <U2237> PROPORTION
<?1>     <U223C> TILDE OPERATOR
<CG>     <U223E> INVERTED LAZY S
<?->     <U2243> ASYMPTOTICALLY EQUAL TO
<?=>     <U2245> APPROXIMATELY EQUAL TO
<?2>     <U2248> ALMOST EQUAL TO
<=?>     <U224C> ALL EQUAL TO
<HI>     <U2253> IMAGE OF OR APPROXIMATELY EQUAL TO
<!=>     <U2260> NOT EQUAL TO
<=3>     <U2261> IDENTICAL TO
<=<>     <U2264> LESS-THAN OR EQUAL TO
</>=>    <U2265> GREATER-THAN OR EQUAL TO
<<*>     <U226A> MUCH LESS-THAN
<*/>>    <U226B> MUCH GREATER-THAN
<!<>     <U226E> NOT LESS-THAN
<!/>>    <U226F> NOT GREATER-THAN
<(C>     <U2282> SUBSET OF
<)C>     <U2283> SUPERSET OF
<(_>     <U2286> SUBSET OF OR EQUAL TO
<)_>     <U2287> SUPERSET OF OR EQUAL TO
<0.>     <U2299> CIRCLED DOT OPERATOR
<02>     <U229A> CIRCLED RING OPERATOR
<-T>     <U22A5> UP TACK
<.P>     <U22C5> DOT OPERATOR
<:3>     <U22EE> VERTICAL ELLIPSIS
<Eh>     <U2302> HOUSE
<<7>     <U2308> LEFT CEILING
</>7>    <U2309> RIGHT CEILING
<7<>     <U230A> LEFT FLOOR
<7/>>    <U230B> RIGHT FLOOR
<NI>     <U2310> REVERSED NOT SIGN
<(A>     <U2312> ARC
<TR>     <U2315> TELEPHONE RECORDER
<88>     <U2318> PLACE OF INTEREST SIGN
<Iu>     <U2320> TOP HALF INTEGRAL
<Il>     <U2321> BOTTOM HALF INTEGRAL
<<//>    <U2329> LEFT-POINTING ANGLE BRACKET
<///>>   <U232A> RIGHT-POINTING ANGLE BRACKET
<Vs>     <U2423> OPEN BOX
<1h>     <U2440> OCR HOOK
<3h>     <U2441> OCR CHAIR
<2h>     <U2442> OCR FORK
<4h>     <U2443> OCR INVERTED FORK
<1j>     <U2446> OCR BRANCH BANK IDENTIFICATION
<2j>     <U2447> OCR AMOUNT OF CHECK
<3j>     <U2448> OCR DASH
<4j>     <U2449> OCR CUSTOMER ACCOUNT NUMBER
<1-o>    <U2460> CIRCLED DIGIT ONE
<2-o>    <U2461> CIRCLED DIGIT TWO
<3-o>    <U2462> CIRCLED DIGIT THREE
<4-o>    <U2463> CIRCLED DIGIT FOUR
```

```
<5-o>    <U2464> CIRCLED DIGIT FIVE
<6-o>    <U2465> CIRCLED DIGIT SIX
<7-o>    <U2466> CIRCLED DIGIT SEVEN
<8-o>    <U2467> CIRCLED DIGIT EIGHT
<9-o>    <U2468> CIRCLED DIGIT NINE
<10-o>   <U2469> CIRCLED NUMBER TEN
<11-o>   <U246A> CIRCLED NUMBER ELEVEN
<12-o>   <U246B> CIRCLED NUMBER TWELVE
<13-o>   <U246C> CIRCLED NUMBER THIRTEEN
<14-o>   <U246D> CIRCLED NUMBER FOURTEEN
<15-o>   <U246E> CIRCLED NUMBER FIFTEEN
<16-o>   <U246F> CIRCLED NUMBER SIXTEEN
<17-o>   <U2470> CIRCLED NUMBER SEVENTEEN
<18-o>   <U2471> CIRCLED NUMBER EIGHTEEN
<19-o>   <U2472> CIRCLED NUMBER NINETEEN
<20-o>   <U2473> CIRCLED NUMBER TWENTY
<(1)>    <U2474> PARENTHESIZED DIGIT ONE
<(2)>    <U2475> PARENTHESIZED DIGIT TWO
<(3)>    <U2476> PARENTHESIZED DIGIT THREE
<(4)>    <U2477> PARENTHESIZED DIGIT FOUR
<(5)>    <U2478> PARENTHESIZED DIGIT FIVE
<(6)>    <U2479> PARENTHESIZED DIGIT SIX
<(7)>    <U247A> PARENTHESIZED DIGIT SEVEN
<(8)>    <U247B> PARENTHESIZED DIGIT EIGHT
<(9)>    <U247C> PARENTHESIZED DIGIT NINE
<(10)>   <U247D> PARENTHESIZED NUMBER TEN
<(11)>   <U247E> PARENTHESIZED NUMBER ELEVEN
<(12)>   <U247F> PARENTHESIZED NUMBER TWELVE
<(13)>   <U2480> PARENTHESIZED NUMBER THIRTEEN
<(14)>   <U2481> PARENTHESIZED NUMBER FOURTEEN
<(15)>   <U2482> PARENTHESIZED NUMBER FIFTEEN
<(16)>   <U2483> PARENTHESIZED NUMBER SIXTEEN
<(17)>   <U2484> PARENTHESIZED NUMBER SEVENTEEN
<(18)>   <U2485> PARENTHESIZED NUMBER EIGHTEEN
<(19)>   <U2486> PARENTHESIZED NUMBER NINETEEN
<(20)>   <U2487> PARENTHESIZED NUMBER TWENTY
<1.>     <U2488> DIGIT ONE FULL STOP
<2.>     <U2489> DIGIT TWO FULL STOP
<3.>     <U248A> DIGIT THREE FULL STOP
<4.>     <U248B> DIGIT FOUR FULL STOP
<5.>     <U248C> DIGIT FIVE FULL STOP
<6.>     <U248D> DIGIT SIX FULL STOP
<7.>     <U248E> DIGIT SEVEN FULL STOP
<8.>     <U248F> DIGIT EIGHT FULL STOP
<9.>     <U2490> DIGIT NINE FULL STOP
<10.>    <U2491> NUMBER TEN FULL STOP
<11.>    <U2492> NUMBER ELEVEN FULL STOP
<12.>    <U2493> NUMBER TWELVE FULL STOP
<13.>    <U2494> NUMBER THIRTEEN FULL STOP
<14.>    <U2495> NUMBER FOURTEEN FULL STOP
<15.>    <U2496> NUMBER FIFTEEN FULL STOP
<16.>    <U2497> NUMBER SIXTEEN FULL STOP
<17.>    <U2498> NUMBER SEVENTEEN FULL STOP
<18.>    <U2499> NUMBER EIGHTEEN FULL STOP
<19.>    <U249A> NUMBER NINETEEN FULL STOP
<20.>    <U249B> NUMBER TWENTY FULL STOP
<(a)>    <U249C> PARENTHESIZED LATIN SMALL LETTER A
<(b)>    <U249D> PARENTHESIZED LATIN SMALL LETTER B
<(c)>    <U249E> PARENTHESIZED LATIN SMALL LETTER C
<(d)>    <U249F> PARENTHESIZED LATIN SMALL LETTER D
<(e)>    <U24A0> PARENTHESIZED LATIN SMALL LETTER E
<(f)>    <U24A1> PARENTHESIZED LATIN SMALL LETTER F
```

```
<(g)>    <U24A2> PARENTHESIZED LATIN SMALL LETTER G
<(h)>    <U24A3> PARENTHESIZED LATIN SMALL LETTER H
<(i)>    <U24A4> PARENTHESIZED LATIN SMALL LETTER I
<(j)>    <U24A5> PARENTHESIZED LATIN SMALL LETTER J
<(k)>    <U24A6> PARENTHESIZED LATIN SMALL LETTER K
<(l)>    <U24A7> PARENTHESIZED LATIN SMALL LETTER L
<(m)>    <U24A8> PARENTHESIZED LATIN SMALL LETTER M
<(n)>    <U24A9> PARENTHESIZED LATIN SMALL LETTER N
<(o)>    <U24AA> PARENTHESIZED LATIN SMALL LETTER O
<(p)>    <U24AB> PARENTHESIZED LATIN SMALL LETTER P
<(q)>    <U24AC> PARENTHESIZED LATIN SMALL LETTER Q
<(r)>    <U24AD> PARENTHESIZED LATIN SMALL LETTER R
<(s)>    <U24AE> PARENTHESIZED LATIN SMALL LETTER S
<(t)>    <U24AF> PARENTHESIZED LATIN SMALL LETTER T
<(u)>    <U24B0> PARENTHESIZED LATIN SMALL LETTER U
<(v)>    <U24B1> PARENTHESIZED LATIN SMALL LETTER V
<(w)>    <U24B2> PARENTHESIZED LATIN SMALL LETTER W
<(x)>    <U24B3> PARENTHESIZED LATIN SMALL LETTER X
<(y)>    <U24B4> PARENTHESIZED LATIN SMALL LETTER Y
<(z)>    <U24B5> PARENTHESIZED LATIN SMALL LETTER Z
<A-o>    <U24B6> CIRCLED LATIN CAPITAL LETTER A
<B-o>    <U24B7> CIRCLED LATIN CAPITAL LETTER B
<C-o>    <U24B8> CIRCLED LATIN CAPITAL LETTER C
<D-o>    <U24B9> CIRCLED LATIN CAPITAL LETTER D
<E-o>    <U24BA> CIRCLED LATIN CAPITAL LETTER E
<F-o>    <U24BB> CIRCLED LATIN CAPITAL LETTER F
<G-o>    <U24BC> CIRCLED LATIN CAPITAL LETTER G
<H-o>    <U24BD> CIRCLED LATIN CAPITAL LETTER H
<I-o>    <U24BE> CIRCLED LATIN CAPITAL LETTER I
<J-o>    <U24BF> CIRCLED LATIN CAPITAL LETTER J
<K-o>    <U24C0> CIRCLED LATIN CAPITAL LETTER K
<L-o>    <U24C1> CIRCLED LATIN CAPITAL LETTER L
<M-o>    <U24C2> CIRCLED LATIN CAPITAL LETTER M
<N-o>    <U24C3> CIRCLED LATIN CAPITAL LETTER N
<O-o>    <U24C4> CIRCLED LATIN CAPITAL LETTER O
<P-o>    <U24C5> CIRCLED LATIN CAPITAL LETTER P
<Q-o>    <U24C6> CIRCLED LATIN CAPITAL LETTER Q
<R-o>    <U24C7> CIRCLED LATIN CAPITAL LETTER R
<S-o>    <U24C8> CIRCLED LATIN CAPITAL LETTER S
<T-o>    <U24C9> CIRCLED LATIN CAPITAL LETTER T
<U-o>    <U24CA> CIRCLED LATIN CAPITAL LETTER U
<V-o>    <U24CB> CIRCLED LATIN CAPITAL LETTER V
<W-o>    <U24CC> CIRCLED LATIN CAPITAL LETTER W
<X-o>    <U24CD> CIRCLED LATIN CAPITAL LETTER X
<Y-o>    <U24CE> CIRCLED LATIN CAPITAL LETTER Y
<Z-o>    <U24CF> CIRCLED LATIN CAPITAL LETTER Z
<a-o>    <U24D0> CIRCLED LATIN SMALL LETTER A
<b-o>    <U24D1> CIRCLED LATIN SMALL LETTER B
<c-o>    <U24D2> CIRCLED LATIN SMALL LETTER C
<d-o>    <U24D3> CIRCLED LATIN SMALL LETTER D
<e-o>    <U24D4> CIRCLED LATIN SMALL LETTER E
<f-o>    <U24D5> CIRCLED LATIN SMALL LETTER F
<g-o>    <U24D6> CIRCLED LATIN SMALL LETTER G
<h-o>    <U24D7> CIRCLED LATIN SMALL LETTER H
<i-o>    <U24D8> CIRCLED LATIN SMALL LETTER I
<j-o>    <U24D9> CIRCLED LATIN SMALL LETTER J
<k-o>    <U24DA> CIRCLED LATIN SMALL LETTER K
<l-o>    <U24DB> CIRCLED LATIN SMALL LETTER L
<m-o>    <U24DC> CIRCLED LATIN SMALL LETTER M
<n-o>    <U24DD> CIRCLED LATIN SMALL LETTER N
<o-o>    <U24DE> CIRCLED LATIN SMALL LETTER O
<p-o>    <U24DF> CIRCLED LATIN SMALL LETTER P
```

```
<q-o>    <U24E0> CIRCLED LATIN SMALL LETTER Q
<r-o>    <U24E1> CIRCLED LATIN SMALL LETTER R
<s-o>    <U24E2> CIRCLED LATIN SMALL LETTER S
<t-o>    <U24E3> CIRCLED LATIN SMALL LETTER T
<u-o>    <U24E4> CIRCLED LATIN SMALL LETTER U
<v-o>    <U24E5> CIRCLED LATIN SMALL LETTER V
<w-o>    <U24E6> CIRCLED LATIN SMALL LETTER W
<x-o>    <U24E7> CIRCLED LATIN SMALL LETTER X
<y-o>    <U24E8> CIRCLED LATIN SMALL LETTER Y
<z-o>    <U24E9> CIRCLED LATIN SMALL LETTER Z
<0-o>    <U24EA> CIRCLED DIGIT ZERO
<hh>     <U2500> BOX DRAWINGS LIGHT HORIZONTAL
<HH->    <U2501> BOX DRAWINGS HEAVY HORIZONTAL
<vv>     <U2502> BOX DRAWINGS LIGHT VERTICAL
<VV->    <U2503> BOX DRAWINGS HEAVY VERTICAL
<3->     <U2504> BOX DRAWINGS LIGHT TRIPLE DASH HORIZONTAL
<3_>     <U2505> BOX DRAWINGS HEAVY TRIPLE DASH HORIZONTAL
<3!>     <U2506> BOX DRAWINGS LIGHT TRIPLE DASH VERTICAL
<3//>    <U2507> BOX DRAWINGS HEAVY TRIPLE DASH VERTICAL
<4->     <U2508> BOX DRAWINGS LIGHT QUADRUPLE DASH HORIZONTAL
<4_>     <U2509> BOX DRAWINGS HEAVY QUADRUPLE DASH HORIZONTAL
<4!>     <U250A> BOX DRAWINGS LIGHT QUADRUPLE DASH VERTICAL
<4//>    <U250B> BOX DRAWINGS HEAVY QUADRUPLE DASH VERTICAL
<dr>     <U250C> BOX DRAWINGS LIGHT DOWN AND RIGHT
<dR->    <U250D> BOX DRAWINGS DOWN LIGHT AND RIGHT HEAVY
<Dr->    <U250E> BOX DRAWINGS DOWN HEAVY AND RIGHT LIGHT
<DR->    <U250F> BOX DRAWINGS HEAVY DOWN AND RIGHT
<dl>     <U2510> BOX DRAWINGS LIGHT DOWN AND LEFT
<dL->    <U2511> BOX DRAWINGS DOWN LIGHT AND LEFT HEAVY
<Dl->    <U2512> BOX DRAWINGS DOWN HEAVY AND LEFT LIGHT
<LD->    <U2513> BOX DRAWINGS HEAVY DOWN AND LEFT
<ur>     <U2514> BOX DRAWINGS LIGHT UP AND RIGHT
<uR->    <U2515> BOX DRAWINGS UP LIGHT AND RIGHT HEAVY
<Ur->    <U2516> BOX DRAWINGS UP HEAVY AND RIGHT LIGHT
<UR->    <U2517> BOX DRAWINGS HEAVY UP AND RIGHT
<ul>     <U2518> BOX DRAWINGS LIGHT UP AND LEFT
<uL->    <U2519> BOX DRAWINGS UP LIGHT AND LEFT HEAVY
<Ul->    <U251A> BOX DRAWINGS UP HEAVY AND LEFT LIGHT
<UL->    <U251B> BOX DRAWINGS HEAVY UP AND LEFT
<vr>     <U251C> BOX DRAWINGS LIGHT VERTICAL AND RIGHT
<vR->    <U251D> BOX DRAWINGS VERTICAL LIGHT AND RIGHT HEAVY
<Udr>    <U251E> BOX DRAWINGS UP HEAVY AND RIGHT DOWN LIGHT
<uDr>    <U251F> BOX DRAWINGS DOWN HEAVY AND RIGHT UP LIGHT
<Vr->    <U2520> BOX DRAWINGS VERTICAL HEAVY AND RIGHT LIGHT
<UdR>    <U2521> BOX DRAWINGS DOWN LIGHT AND RIGHT UP HEAVY
<uDR>    <U2522> BOX DRAWINGS UP LIGHT AND RIGHT DOWN HEAVY
<VR->    <U2523> BOX DRAWINGS HEAVY VERTICAL AND RIGHT
<vl>     <U2524> BOX DRAWINGS LIGHT VERTICAL AND LEFT
<vL->    <U2525> BOX DRAWINGS VERTICAL LIGHT AND LEFT HEAVY
<Udl>    <U2526> BOX DRAWINGS UP HEAVY AND LEFT DOWN LIGHT
<uDl>    <U2527> BOX DRAWINGS DOWN HEAVY AND LEFT UP LIGHT
<Vl->    <U2528> BOX DRAWINGS VERTICAL HEAVY AND LEFT LIGHT
<UdL>    <U2529> BOX DRAWINGS DOWN LIGHT AND LEFT UP HEAVY
<uDL>    <U252A> BOX DRAWINGS UP LIGHT AND LEFT DOWN HEAVY
<VL->    <U252B> BOX DRAWINGS HEAVY VERTICAL AND LEFT
<dh>     <U252C> BOX DRAWINGS LIGHT DOWN AND HORIZONTAL
<dLr>    <U252D> BOX DRAWINGS LEFT HEAVY AND RIGHT DOWN LIGHT
<dlR>    <U252E> BOX DRAWINGS RIGHT HEAVY AND LEFT DOWN LIGHT
<dH->    <U252F> BOX DRAWINGS DOWN LIGHT AND HORIZONTAL HEAVY
<Dh->    <U2530> BOX DRAWINGS DOWN HEAVY AND HORIZONTAL LIGHT
<DLr>    <U2531> BOX DRAWINGS RIGHT LIGHT AND LEFT DOWN HEAVY
<DlR>    <U2532> BOX DRAWINGS LEFT LIGHT AND RIGHT DOWN HEAVY
```

```
<DH->    <U2533> BOX DRAWINGS HEAVY DOWN AND HORIZONTAL
<uh>     <U2534> BOX DRAWINGS LIGHT UP AND HORIZONTAL
<uLr>    <U2535> BOX DRAWINGS LEFT HEAVY AND RIGHT UP LIGHT
<ulR>    <U2536> BOX DRAWINGS RIGHT HEAVY AND LEFT UP LIGHT
<uH->    <U2537> BOX DRAWINGS UP LIGHT AND HORIZONTAL HEAVY
<Uh->    <U2538> BOX DRAWINGS UP HEAVY AND HORIZONTAL LIGHT
<ULr>    <U2539> BOX DRAWINGS RIGHT LIGHT AND LEFT UP HEAVY
<UlR>    <U253A> BOX DRAWINGS LEFT LIGHT AND RIGHT UP HEAVY
<UH->    <U253B> BOX DRAWINGS HEAVY UP AND HORIZONTAL
<vh>     <U253C> BOX DRAWINGS LIGHT VERTICAL AND HORIZONTAL
<vLr>    <U253D> BOX DRAWINGS LEFT HEAVY AND RIGHT VERTICAL LIGHT
<vlR>    <U253E> BOX DRAWINGS RIGHT HEAVY AND LEFT VERTICAL LIGHT
<vH->    <U253F> BOX DRAWINGS VERTICAL LIGHT AND HORIZONTAL HEAVY
<Udh>    <U2540> BOX DRAWINGS UP HEAVY AND DOWN HORIZONTAL LIGHT
<uDh>    <U2541> BOX DRAWINGS DOWN HEAVY AND UP HORIZONTAL LIGHT
<Vh->    <U2542> BOX DRAWINGS VERTICAL HEAVY AND HORIZONTAL LIGHT
<UdLr>   <U2543> BOX DRAWINGS LEFT UP HEAVY AND RIGHT DOWN LIGHT
<UdlR>   <U2544> BOX DRAWINGS RIGHT UP HEAVY AND LEFT DOWN LIGHT
<uDLr>   <U2545> BOX DRAWINGS LEFT DOWN HEAVY AND RIGHT UP LIGHT
<uDlR>   <U2546> BOX DRAWINGS RIGHT DOWN HEAVY AND LEFT UP LIGHT
<UdH>    <U2547> BOX DRAWINGS DOWN LIGHT AND UP HORIZONTAL HEAVY
<uDH>    <U2548> BOX DRAWINGS UP LIGHT AND DOWN HORIZONTAL HEAVY
<VLr>    <U2549> BOX DRAWINGS RIGHT LIGHT AND LEFT VERTICAL HEAVY
<VlR>    <U254A> BOX DRAWINGS LEFT LIGHT AND RIGHT VERTICAL HEAVY
<VH->    <U254B> BOX DRAWINGS HEAVY VERTICAL AND HORIZONTAL
<HH>     <U2550> BOX DRAWINGS DOUBLE HORIZONTAL
<VV>     <U2551> BOX DRAWINGS DOUBLE VERTICAL
<dR>     <U2552> BOX DRAWINGS DOWN SINGLE AND RIGHT DOUBLE
<Dr>     <U2553> BOX DRAWINGS DOWN DOUBLE AND RIGHT SINGLE
<DR>     <U2554> BOX DRAWINGS DOUBLE DOWN AND RIGHT
<dL>     <U2555> BOX DRAWINGS DOWN SINGLE AND LEFT DOUBLE
<Dl>     <U2556> BOX DRAWINGS DOWN DOUBLE AND LEFT SINGLE
<LD>     <U2557> BOX DRAWINGS DOUBLE DOWN AND LEFT
<uR>     <U2558> BOX DRAWINGS UP SINGLE AND RIGHT DOUBLE
<Ur>     <U2559> BOX DRAWINGS UP DOUBLE AND RIGHT SINGLE
<UR>     <U255A> BOX DRAWINGS DOUBLE UP AND RIGHT
<uL>     <U255B> BOX DRAWINGS UP SINGLE AND LEFT DOUBLE
<Ul>     <U255C> BOX DRAWINGS UP DOUBLE AND LEFT SINGLE
<UL>     <U255D> BOX DRAWINGS DOUBLE UP AND LEFT
<vR>     <U255E> BOX DRAWINGS VERTICAL SINGLE AND RIGHT DOUBLE
<Vr>     <U255F> BOX DRAWINGS VERTICAL DOUBLE AND RIGHT SINGLE
<VR>     <U2560> BOX DRAWINGS DOUBLE VERTICAL AND RIGHT
<vL>     <U2561> BOX DRAWINGS VERTICAL SINGLE AND LEFT DOUBLE
<Vl>     <U2562> BOX DRAWINGS VERTICAL DOUBLE AND LEFT SINGLE
<VL>     <U2563> BOX DRAWINGS DOUBLE VERTICAL AND LEFT
<dH>     <U2564> BOX DRAWINGS DOWN SINGLE AND HORIZONTAL DOUBLE
<Dh>     <U2565> BOX DRAWINGS DOWN DOUBLE AND HORIZONTAL SINGLE
<DH>     <U2566> BOX DRAWINGS DOUBLE DOWN AND HORIZONTAL
<uH>     <U2567> BOX DRAWINGS UP SINGLE AND HORIZONTAL DOUBLE
<Uh>     <U2568> BOX DRAWINGS UP DOUBLE AND HORIZONTAL SINGLE
<UH>     <U2569> BOX DRAWINGS DOUBLE UP AND HORIZONTAL
<vH>     <U256A> BOX DRAWINGS VERTICAL SINGLE AND HORIZONTAL DOUBLE
<Vh>     <U256B> BOX DRAWINGS VERTICAL DOUBLE AND HORIZONTAL SINGLE
<VH>     <U256C> BOX DRAWINGS DOUBLE VERTICAL AND HORIZONTAL
<FD>     <U2571> BOX DRAWINGS LIGHT DIAGONAL UPPER RIGHT TO LOWER LEFT
<BD>     <U2572> BOX DRAWINGS LIGHT DIAGONAL UPPER LEFT TO LOWER RIGHT
<TB>     <U2580> UPPER HALF BLOCK
<LB>     <U2584> LOWER HALF BLOCK
<FB>     <U2588> FULL BLOCK
<lB>     <U258C> LEFT HALF BLOCK
<RB>     <U2590> RIGHT HALF BLOCK
<.S>     <U2591> LIGHT SHADE
```

```
<:S>     <U2592> MEDIUM SHADE
<?S>     <U2593> DARK SHADE
<fS>     <U25A0> BLACK SQUARE
<OS>     <U25A1> WHITE SQUARE
<RO>     <U25A2> WHITE SQUARE WITH ROUNDED CORNERS
<Rr>     <U25A3> WHITE SQUARE CONTAINING BLACK SMALL SQUARE
<RF>     <U25A4> SQUARE WITH HORIZONTAL FILL
<RY>     <U25A5> SQUARE WITH VERTICAL FILL
<RH>     <U25A6> SQUARE WITH ORTHOGONAL CROSSHATCH FILL
<RZ>     <U25A7> SQUARE WITH UPPER LEFT TO LOWER RIGHT FILL
<RK>     <U25A8> SQUARE WITH UPPER RIGHT TO LOWER LEFT FILL
<RX>     <U25A9> SQUARE WITH DIAGONAL CROSSHATCH FILL
<sB>     <U25AA> BLACK SMALL SQUARE
<SR>     <U25AC> BLACK RECTANGLE
<Or>     <U25AD> WHITE RECTANGLE
<UT>     <U25B2> BLACK UP-POINTING TRIANGLE
<uT>     <U25B3> WHITE UP-POINTING TRIANGLE
<Tr>     <U25B7> WHITE RIGHT-POINTING TRIANGLE
<PR>     <U25BA> BLACK RIGHT-POINTING POINTER
<Dt>     <U25BC> BLACK DOWN-POINTING TRIANGLE
<dT>     <U25BD> WHITE DOWN-POINTING TRIANGLE
<Tl>     <U25C1> WHITE LEFT-POINTING TRIANGLE
<PL>     <U25C4> BLACK LEFT-POINTING POINTER
<Db>     <U25C6> BLACK DIAMOND
<Dw>     <U25C7> WHITE DIAMOND
<LZ>     <U25CA> LOZENGE
<0m>     <U25CB> WHITE CIRCLE
<0o>     <U25CE> BULLSEYE
<0M>     <U25CF> BLACK CIRCLE
<0L>     <U25D0> CIRCLE WITH LEFT HALF BLACK
<0R>     <U25D1> CIRCLE WITH RIGHT HALF BLACK
<Sn>     <U25D8> INVERSE BULLET
<Ic>     <U25D9> INVERSE WHITE CIRCLE
<Fd>     <U25E2> BLACK LOWER RIGHT TRIANGLE
<Bd>     <U25E3> BLACK LOWER LEFT TRIANGLE
<Ci>     <U25EF> LARGE CIRCLE
<*2>     <U2605> BLACK STAR
<*1>     <U2606> WHITE STAR
<TEL>    <U260E> BLACK TELEPHONE
<tel>    <U260F> WHITE TELEPHONE
<<H>     <U261C> WHITE LEFT POINTING INDEX
</>H>    <U261E> WHITE RIGHT POINTING INDEX
<0u>     <U263A> WHITE SMILING FACE
<0U>     <U263B> BLACK SMILING FACE
<SU>     <U263C> WHITE SUN WITH RAYS
<Fm>     <U2640> FEMALE SIGN
<Ml>     <U2642> MALE SIGN
<cS>     <U2660> BLACK SPADE SUIT
<cH>     <U2661> WHITE HEART SUIT
<cD>     <U2662> WHITE DIAMOND SUIT
<cC>     <U2663> BLACK CLUB SUIT
<cS->    <U2664> WHITE SPADE SUIT
<cH->    <U2665> BLACK HEART SUIT
<cD->    <U2666> BLACK DIAMOND SUIT
<cC->    <U2667> WHITE CLUB SUIT
<Md>     <U2669> QUARTER NOTE
<M8>     <U266A> EIGHTH NOTE
<M2>     <U266B> BEAMED EIGHTH NOTES
<M16>    <U266C> BEAMED SIXTEENTH NOTES
<Mb>     <U266D> MUSIC FLAT SIGN
<Mx>     <U266E> MUSIC NATURAL SIGN
<MX>     <U266F> MUSIC SHARP SIGN
```

```
<OK>     <U2713> CHECK MARK
<XX>     <U2717> BALLOT X
<-X>     <U2720> MALTESE CROSS
<IS>     <U3000> IDEOGRAPHIC SPACE
<,_>     <U3001> IDEOGRAPHIC COMMA
<._>     <U3002> IDEOGRAPHIC FULL STOP
<+">     <U3003> DITTO MARK
<JIS>    <U3004> JAPANESE INDUSTRIAL STANDARD SYMBOL
<*_>     <U3005> IDEOGRAPHIC ITERATION MARK
<;_>     <U3006> IDEOGRAPHIC CLOSING MARK
<0_>     <U3007> IDEOGRAPHIC NUMBER ZERO
<<+>     <U300A> LEFT DOUBLE ANGLE BRACKET
</>+>    <U300B> RIGHT DOUBLE ANGLE BRACKET
<<'>     <U300C> LEFT CORNER BRACKET
</>'>    <U300D> RIGHT CORNER BRACKET
<<">     <U300E> LEFT WHITE CORNER BRACKET
</>">    <U300F> RIGHT WHITE CORNER BRACKET
<(">     <U3010> LEFT BLACK LENTICULAR BRACKET
<)">     <U3011> RIGHT BLACK LENTICULAR BRACKET
<=T>     <U3012> POSTAL MARK
<=_>     <U3013> GETA MARK
<('>     <U3014> LEFT TORTOISE SHELL BRACKET
<)'>     <U3015> RIGHT TORTOISE SHELL BRACKET
<(I>     <U3016> LEFT WHITE LENTICULAR BRACKET
<)I>     <U3017> RIGHT WHITE LENTICULAR BRACKET
<-?>     <U301C> WAVE DASH
<=T:)>   <U3020> POSTAL MARK FACE
<A5>     <U3041> HIRAGANA LETTER SMALL A
<a5>     <U3042> HIRAGANA LETTER A
<I5>     <U3043> HIRAGANA LETTER SMALL I
<i5>     <U3044> HIRAGANA LETTER I
<U5>     <U3045> HIRAGANA LETTER SMALL U
<u5>     <U3046> HIRAGANA LETTER U
<E5>     <U3047> HIRAGANA LETTER SMALL E
<e5>     <U3048> HIRAGANA LETTER E
<O5>     <U3049> HIRAGANA LETTER SMALL O
<o5>     <U304A> HIRAGANA LETTER O
<ka>     <U304B> HIRAGANA LETTER KA
<ga>     <U304C> HIRAGANA LETTER GA
<ki>     <U304D> HIRAGANA LETTER KI
<gi>     <U304E> HIRAGANA LETTER GI
<ku>     <U304F> HIRAGANA LETTER KU
<gu>     <U3050> HIRAGANA LETTER GU
<ke>     <U3051> HIRAGANA LETTER KE
<ge>     <U3052> HIRAGANA LETTER GE
<ko>     <U3053> HIRAGANA LETTER KO
<go>     <U3054> HIRAGANA LETTER GO
<sa>     <U3055> HIRAGANA LETTER SA
<za>     <U3056> HIRAGANA LETTER ZA
<si>     <U3057> HIRAGANA LETTER SI
<zi>     <U3058> HIRAGANA LETTER ZI
<su>     <U3059> HIRAGANA LETTER SU
<zu>     <U305A> HIRAGANA LETTER ZU
<se>     <U305B> HIRAGANA LETTER SE
<ze>     <U305C> HIRAGANA LETTER ZE
<so>     <U305D> HIRAGANA LETTER SO
<zo>     <U305E> HIRAGANA LETTER ZO
<ta>     <U305F> HIRAGANA LETTER TA
<da>     <U3060> HIRAGANA LETTER DA
<ti>     <U3061> HIRAGANA LETTER TI
<di>     <U3062> HIRAGANA LETTER DI
<tU>     <U3063> HIRAGANA LETTER SMALL TU
```

```
<tu>     <U3064> HIRAGANA LETTER TU
<du>     <U3065> HIRAGANA LETTER DU
<te>     <U3066> HIRAGANA LETTER TE
<de>     <U3067> HIRAGANA LETTER DE
<to>     <U3068> HIRAGANA LETTER TO
<do>     <U3069> HIRAGANA LETTER DO
<na>     <U306A> HIRAGANA LETTER NA
<ni>     <U306B> HIRAGANA LETTER NI
<nu>     <U306C> HIRAGANA LETTER NU
<ne>     <U306D> HIRAGANA LETTER NE
<no>     <U306E> HIRAGANA LETTER NO
<ha>     <U306F> HIRAGANA LETTER HA
<ba>     <U3070> HIRAGANA LETTER BA
<pa>     <U3071> HIRAGANA LETTER PA
<hi>     <U3072> HIRAGANA LETTER HI
<bi>     <U3073> HIRAGANA LETTER BI
<pi>     <U3074> HIRAGANA LETTER PI
<hu>     <U3075> HIRAGANA LETTER HU
<bu>     <U3076> HIRAGANA LETTER BU
<pu>     <U3077> HIRAGANA LETTER PU
<he>     <U3078> HIRAGANA LETTER HE
<be>     <U3079> HIRAGANA LETTER BE
<pe>     <U307A> HIRAGANA LETTER PE
<ho>     <U307B> HIRAGANA LETTER HO
<bo>     <U307C> HIRAGANA LETTER BO
<po>     <U307D> HIRAGANA LETTER PO
<ma>     <U307E> HIRAGANA LETTER MA
<mi>     <U307F> HIRAGANA LETTER MI
<mu>     <U3080> HIRAGANA LETTER MU
<me>     <U3081> HIRAGANA LETTER ME
<mo>     <U3082> HIRAGANA LETTER MO
<yA>     <U3083> HIRAGANA LETTER SMALL YA
<ya>     <U3084> HIRAGANA LETTER YA
<yU>     <U3085> HIRAGANA LETTER SMALL YU
<yu>     <U3086> HIRAGANA LETTER YU
<yO>     <U3087> HIRAGANA LETTER SMALL YO
<yo>     <U3088> HIRAGANA LETTER YO
<ra>     <U3089> HIRAGANA LETTER RA
<ri>     <U308A> HIRAGANA LETTER RI
<ru>     <U308B> HIRAGANA LETTER RU
<re>     <U308C> HIRAGANA LETTER RE
<ro>     <U308D> HIRAGANA LETTER RO
<wA>     <U308E> HIRAGANA LETTER SMALL WA
<wa>     <U308F> HIRAGANA LETTER WA
<wi>     <U3090> HIRAGANA LETTER WI
<we>     <U3091> HIRAGANA LETTER WE
<wo>     <U3092> HIRAGANA LETTER WO
<n5>     <U3093> HIRAGANA LETTER N
<vu>     <U3094> HIRAGANA LETTER VU
<"5>     <U309B> KATAKANA-HIRAGANA VOICED SOUND MARK
<05>     <U309C> KATAKANA-HIRAGANA SEMI-VOICED SOUND MARK
<*5>     <U309D> HIRAGANA ITERATION MARK
<+5>     <U309E> HIRAGANA VOICED ITERATION MARK
<a6>     <U30A1> KATAKANA LETTER SMALL A
<A6>     <U30A2> KATAKANA LETTER A
<i6>     <U30A3> KATAKANA LETTER SMALL I
<I6>     <U30A4> KATAKANA LETTER I
<u6>     <U30A5> KATAKANA LETTER SMALL U
<U6>     <U30A6> KATAKANA LETTER U
<e6>     <U30A7> KATAKANA LETTER SMALL E
<E6>     <U30A8> KATAKANA LETTER E
<o6>     <U30A9> KATAKANA LETTER SMALL O
```

```
<O6>     <U30AA> KATAKANA LETTER O
<Ka>     <U30AB> KATAKANA LETTER KA
<Ga>     <U30AC> KATAKANA LETTER GA
<Ki>     <U30AD> KATAKANA LETTER KI
<Gi>     <U30AE> KATAKANA LETTER GI
<Ku>     <U30AF> KATAKANA LETTER KU
<Gu>     <U30B0> KATAKANA LETTER GU
<Ke>     <U30B1> KATAKANA LETTER KE
<Ge>     <U30B2> KATAKANA LETTER GE
<Ko>     <U30B3> KATAKANA LETTER KO
<Go>     <U30B4> KATAKANA LETTER GO
<Sa>     <U30B5> KATAKANA LETTER SA
<Za>     <U30B6> KATAKANA LETTER ZA
<Si>     <U30B7> KATAKANA LETTER SI
<Zi>     <U30B8> KATAKANA LETTER ZI
<Su>     <U30B9> KATAKANA LETTER SU
<Zu>     <U30BA> KATAKANA LETTER ZU
<Se>     <U30BB> KATAKANA LETTER SE
<Ze>     <U30BC> KATAKANA LETTER ZE
<So>     <U30BD> KATAKANA LETTER SO
<Zo>     <U30BE> KATAKANA LETTER ZO
<Ta>     <U30BF> KATAKANA LETTER TA
<Da>     <U30C0> KATAKANA LETTER DA
<Ti>     <U30C1> KATAKANA LETTER TI
<Di>     <U30C2> KATAKANA LETTER DI
<TU>     <U30C3> KATAKANA LETTER SMALL TU
<Tu>     <U30C4> KATAKANA LETTER TU
<Du>     <U30C5> KATAKANA LETTER DU
<Te>     <U30C6> KATAKANA LETTER TE
<De>     <U30C7> KATAKANA LETTER DE
<To>     <U30C8> KATAKANA LETTER TO
<Do>     <U30C9> KATAKANA LETTER DO
<Na>     <U30CA> KATAKANA LETTER NA
<Ni>     <U30CB> KATAKANA LETTER NI
<Nu>     <U30CC> KATAKANA LETTER NU
<Ne>     <U30CD> KATAKANA LETTER NE
<No>     <U30CE> KATAKANA LETTER NO
<Ha>     <U30CF> KATAKANA LETTER HA
<Ba>     <U30D0> KATAKANA LETTER BA
<Pa>     <U30D1> KATAKANA LETTER PA
<Hi>     <U30D2> KATAKANA LETTER HI
<Bi>     <U30D3> KATAKANA LETTER BI
<Pi>     <U30D4> KATAKANA LETTER PI
<Hu>     <U30D5> KATAKANA LETTER HU
<Bu>     <U30D6> KATAKANA LETTER BU
<Pu>     <U30D7> KATAKANA LETTER PU
<He>     <U30D8> KATAKANA LETTER HE
<Be>     <U30D9> KATAKANA LETTER BE
<Pe>     <U30DA> KATAKANA LETTER PE
<Ho>     <U30DB> KATAKANA LETTER HO
<Bo>     <U30DC> KATAKANA LETTER BO
<Po>     <U30DD> KATAKANA LETTER PO
<Ma>     <U30DE> KATAKANA LETTER MA
<Mi>     <U30DF> KATAKANA LETTER MI
<Mu>     <U30E0> KATAKANA LETTER MU
<Me>     <U30E1> KATAKANA LETTER ME
<Mo>     <U30E2> KATAKANA LETTER MO
<YA>     <U30E3> KATAKANA LETTER SMALL YA
<Ya>     <U30E4> KATAKANA LETTER YA
<YU>     <U30E5> KATAKANA LETTER SMALL YU
<Yu>     <U30E6> KATAKANA LETTER YU
<YO>     <U30E7> KATAKANA LETTER SMALL YO
```

```
<Yo>     <U30E8> KATAKANA LETTER YO
<Ra>     <U30E9> KATAKANA LETTER RA
<Ri>     <U30EA> KATAKANA LETTER RI
<Ru>     <U30EB> KATAKANA LETTER RU
<Re>     <U30EC> KATAKANA LETTER RE
<Ro>     <U30ED> KATAKANA LETTER RO
<WA>     <U30EE> KATAKANA LETTER SMALL WA
<Wa>     <U30EF> KATAKANA LETTER WA
<Wi>     <U30F0> KATAKANA LETTER WI
<We>     <U30F1> KATAKANA LETTER WE
<Wo>     <U30F2> KATAKANA LETTER WO
<N6>     <U30F3> KATAKANA LETTER N
<Vu>     <U30F4> KATAKANA LETTER VU
<KA>     <U30F5> KATAKANA LETTER SMALL KA
<KE>     <U30F6> KATAKANA LETTER SMALL KE
<Va>     <U30F7> KATAKANA LETTER VA
<Vi>     <U30F8> KATAKANA LETTER VI
<Ve>     <U30F9> KATAKANA LETTER VE
<Vo>     <U30FA> KATAKANA LETTER VO
<.6>     <U30FB> KATAKANA MIDDLE DOT
<-6>     <U30FC> KATAKANA-HIRAGANA PROLONGED SOUND MARK
<*6>     <U30FD> KATAKANA ITERATION MARK
<+6>     <U30FE> KATAKANA VOICED ITERATION MARK
<b4>     <U3105> BOPOMOFO LETTER B
<p4>     <U3106> BOPOMOFO LETTER P
<m4>     <U3107> BOPOMOFO LETTER M
<f4>     <U3108> BOPOMOFO LETTER F
<d4>     <U3109> BOPOMOFO LETTER D
<t4>     <U310A> BOPOMOFO LETTER T
<n4>     <U310B> BOPOMOFO LETTER N
<l4>     <U310C> BOPOMOFO LETTER L
<g4>     <U310D> BOPOMOFO LETTER G
<k4>     <U310E> BOPOMOFO LETTER K
<h4>     <U310F> BOPOMOFO LETTER H
<j4>     <U3110> BOPOMOFO LETTER J
<q4>     <U3111> BOPOMOFO LETTER Q
<x4>     <U3112> BOPOMOFO LETTER X
<zh>     <U3113> BOPOMOFO LETTER ZH
<ch>     <U3114> BOPOMOFO LETTER CH
<sh>     <U3115> BOPOMOFO LETTER SH
<r4>     <U3116> BOPOMOFO LETTER R
<z4>     <U3117> BOPOMOFO LETTER Z
<c4>     <U3118> BOPOMOFO LETTER C
<s4>     <U3119> BOPOMOFO LETTER S
<a4>     <U311A> BOPOMOFO LETTER A
<o4>     <U311B> BOPOMOFO LETTER O
<e4>     <U311C> BOPOMOFO LETTER E
<eh4>    <U311D> BOPOMOFO LETTER EH
<ai>     <U311E> BOPOMOFO LETTER AI
<ei>     <U311F> BOPOMOFO LETTER EI
<au>     <U3120> BOPOMOFO LETTER AU
<ou>     <U3121> BOPOMOFO LETTER OU
<an>     <U3122> BOPOMOFO LETTER AN
<en>     <U3123> BOPOMOFO LETTER EN
<aN>     <U3124> BOPOMOFO LETTER ANG
<eN>     <U3125> BOPOMOFO LETTER ENG
<er>     <U3126> BOPOMOFO LETTER ER
<i4>     <U3127> BOPOMOFO LETTER I
<u4>     <U3128> BOPOMOFO LETTER U
<iu>     <U3129> BOPOMOFO LETTER IU
<v4>     <U312A> BOPOMOFO LETTER V
<nG>     <U312B> BOPOMOFO LETTER NG
```

```
<gn>     <U312C> BOPOMOFO LETTER GN
<(JU)>   <U321C> PARENTHESIZED HANGUL CIEUC U
<1c>     <U3220> PARENTHESIZED IDEOGRAPH ONE
<2c>     <U3221> PARENTHESIZED IDEOGRAPH TWO
<3c>     <U3222> PARENTHESIZED IDEOGRAPH THREE
<4c>     <U3223> PARENTHESIZED IDEOGRAPH FOUR
<5c>     <U3224> PARENTHESIZED IDEOGRAPH FIVE
<6c>     <U3225> PARENTHESIZED IDEOGRAPH SIX
<7c>     <U3226> PARENTHESIZED IDEOGRAPH SEVEN
<8c>     <U3227> PARENTHESIZED IDEOGRAPH EIGHT
<9c>     <U3228> PARENTHESIZED IDEOGRAPH NINE
<10c>    <U3229> PARENTHESIZED IDEOGRAPH TEN
<KSC>    <U327F> KOREAN STANDARD SYMBOL
<am>     <U33C2> SQUARE AM
<pm>     <U33D8> SQUARE PM
<ff>     <UFB00> LATIN SMALL LIGATURE FF
<fi>     <UFB01> LATIN SMALL LIGATURE FI
<fl>     <UFB02> LATIN SMALL LIGATURE FL
<ffi>    <UFB03> LATIN SMALL LIGATURE FFI
<ffl>    <UFB04> LATIN SMALL LIGATURE FFL
<St>     <UFB05> LATIN SMALL LIGATURE LONG S T
<st>     <UFB06> LATIN SMALL LIGATURE ST
<3+;>    <UFE7D> ARABIC SHADDA MEDIAL FORM
<aM.>    <UFE82> ARABIC LETTER ALEF WITH MADDA ABOVE FINAL FORM
<aH.>    <UFE84> ARABIC LETTER ALEF WITH HAMZA ABOVE FINAL FORM
<ah.>    <UFE88> ARABIC LETTER ALEF WITH HAMZA BELOW FINAL FORM
<a+->    <UFE8D> ARABIC LETTER ALEF ISOLATED FORM
<a+.>    <UFE8E> ARABIC LETTER ALEF FINAL FORM
<b+->    <UFE8F> ARABIC LETTER BEH ISOLATED FORM
<b+.>    <UFE90> ARABIC LETTER BEH FINAL FORM
<b+,>    <UFE91> ARABIC LETTER BEH INITIAL FORM
<b+;>    <UFE92> ARABIC LETTER BEH MEDIAL FORM
<tm->    <UFE93> ARABIC LETTER TEH MARBUTA ISOLATED FORM
<tm.>    <UFE94> ARABIC LETTER TEH MARBUTA FINAL FORM
<t+->    <UFE95> ARABIC LETTER TEH ISOLATED FORM
<t+.>    <UFE96> ARABIC LETTER TEH FINAL FORM
<t+,>    <UFE97> ARABIC LETTER TEH INITIAL FORM
<t+;>    <UFE98> ARABIC LETTER TEH MEDIAL FORM
<tk->    <UFE99> ARABIC LETTER THEH ISOLATED FORM
<tk.>    <UFE9A> ARABIC LETTER THEH FINAL FORM
<tk,>    <UFE9B> ARABIC LETTER THEH INITIAL FORM
<tk;>    <UFE9C> ARABIC LETTER THEH MEDIAL FORM
<g+->    <UFE9D> ARABIC LETTER JEEM ISOLATED FORM
<g+.>    <UFE9E> ARABIC LETTER JEEM FINAL FORM
<g+,>    <UFE9F> ARABIC LETTER JEEM INITIAL FORM
<g+;>    <UFEA0> ARABIC LETTER JEEM MEDIAL FORM
<hk->    <UFEA1> ARABIC LETTER HAH ISOLATED FORM
<hk.>    <UFEA2> ARABIC LETTER HAH FINAL FORM
<hk,>    <UFEA3> ARABIC LETTER HAH INITIAL FORM
<hk;>    <UFEA4> ARABIC LETTER HAH MEDIAL FORM
<x+->    <UFEA5> ARABIC LETTER KHAH ISOLATED FORM
<x+.>    <UFEA6> ARABIC LETTER KHAH FINAL FORM
<x+,>    <UFEA7> ARABIC LETTER KHAH INITIAL FORM
<x+;>    <UFEA8> ARABIC LETTER KHAH MEDIAL FORM
<d+->    <UFEA9> ARABIC LETTER DAL ISOLATED FORM
<d+.>    <UFEAA> ARABIC LETTER DAL FINAL FORM
<dk->    <UFEAB> ARABIC LETTER THAL ISOLATED FORM
<dk.>    <UFEAC> ARABIC LETTER THAL FINAL FORM
<r+->    <UFEAD> ARABIC LETTER REH ISOLATED FORM
<r+.>    <UFEAE> ARABIC LETTER REH FINAL FORM
<z+->    <UFEAF> ARABIC LETTER ZAIN ISOLATED FORM
<z+.>    <UFEB0> ARABIC LETTER ZAIN FINAL FORM
```

```
<s+->    <UFEB1> ARABIC LETTER SEEN ISOLATED FORM
<s+.>    <UFEB2> ARABIC LETTER SEEN FINAL FORM
<s+,>    <UFEB3> ARABIC LETTER SEEN INITIAL FORM
<s+;>    <UFEB4> ARABIC LETTER SEEN MEDIAL FORM
<sn->    <UFEB5> ARABIC LETTER SHEEN ISOLATED FORM
<sn.>    <UFEB6> ARABIC LETTER SHEEN FINAL FORM
<sn,>    <UFEB7> ARABIC LETTER SHEEN INITIAL FORM
<sn;>    <UFEB8> ARABIC LETTER SHEEN MEDIAL FORM
<c+->    <UFEB9> ARABIC LETTER SAD ISOLATED FORM
<c+.>    <UFEBA> ARABIC LETTER SAD FINAL FORM
<c+,>    <UFEBB> ARABIC LETTER SAD INITIAL FORM
<c+;>    <UFEBC> ARABIC LETTER SAD MEDIAL FORM
<dd->    <UFEBD> ARABIC LETTER DAD ISOLATED FORM
<dd.>    <UFEBE> ARABIC LETTER DAD FINAL FORM
<dd,>    <UFEBF> ARABIC LETTER DAD INITIAL FORM
<dd;>    <UFEC0> ARABIC LETTER DAD MEDIAL FORM
<tj->    <UFEC1> ARABIC LETTER TAH ISOLATED FORM
<tj.>    <UFEC2> ARABIC LETTER TAH FINAL FORM
<tj,>    <UFEC3> ARABIC LETTER TAH INITIAL FORM
<tj;>    <UFEC4> ARABIC LETTER TAH MEDIAL FORM
<zH->    <UFEC5> ARABIC LETTER ZAH ISOLATED FORM
<zH.>    <UFEC6> ARABIC LETTER ZAH FINAL FORM
<zH,>    <UFEC7> ARABIC LETTER ZAH INITIAL FORM
<zH;>    <UFEC8> ARABIC LETTER ZAH MEDIAL FORM
<e+->    <UFEC9> ARABIC LETTER AIN ISOLATED FORM
<e+.>    <UFECA> ARABIC LETTER AIN FINAL FORM
<e+,>    <UFECB> ARABIC LETTER AIN INITIAL FORM
<e+;>    <UFECC> ARABIC LETTER AIN MEDIAL FORM
<i+->    <UFECD> ARABIC LETTER GHAIN ISOLATED FORM
<i+.>    <UFECE> ARABIC LETTER GHAIN FINAL FORM
<i+,>    <UFECF> ARABIC LETTER GHAIN INITIAL FORM
<i+;>    <UFED0> ARABIC LETTER GHAIN MEDIAL FORM
<f+->    <UFED1> ARABIC LETTER FEH ISOLATED FORM
<f+.>    <UFED2> ARABIC LETTER FEH FINAL FORM
<f+,>    <UFED3> ARABIC LETTER FEH INITIAL FORM
<f+;>    <UFED4> ARABIC LETTER FEH MEDIAL FORM
<q+->    <UFED5> ARABIC LETTER QAF ISOLATED FORM
<q+.>    <UFED6> ARABIC LETTER QAF FINAL FORM
<q+,>    <UFED7> ARABIC LETTER QAF INITIAL FORM
<q+;>    <UFED8> ARABIC LETTER QAF MEDIAL FORM
<k+->    <UFED9> ARABIC LETTER KAF ISOLATED FORM
<k+.>    <UFEDA> ARABIC LETTER KAF FINAL FORM
<k+,>    <UFEDB> ARABIC LETTER KAF INITIAL FORM
<k+;>    <UFEDC> ARABIC LETTER KAF MEDIAL FORM
<l+->    <UFEDD> ARABIC LETTER LAM ISOLATED FORM
<l+.>    <UFEDE> ARABIC LETTER LAM FINAL FORM
<l+,>    <UFEDF> ARABIC LETTER LAM INITIAL FORM
<l+;>    <UFEE0> ARABIC LETTER LAM MEDIAL FORM
<m+->    <UFEE1> ARABIC LETTER MEEM ISOLATED FORM
<m+.>    <UFEE2> ARABIC LETTER MEEM FINAL FORM
<m+,>    <UFEE3> ARABIC LETTER MEEM INITIAL FORM
<m+;>    <UFEE4> ARABIC LETTER MEEM MEDIAL FORM
<n+->    <UFEE5> ARABIC LETTER NOON ISOLATED FORM
<n+.>    <UFEE6> ARABIC LETTER NOON FINAL FORM
<n+,>    <UFEE7> ARABIC LETTER NOON INITIAL FORM
<n+;>    <UFEE8> ARABIC LETTER NOON MEDIAL FORM
<h+->    <UFEE9> ARABIC LETTER HEH ISOLATED FORM
<h+.>    <UFEEA> ARABIC LETTER HEH FINAL FORM
<h+,>    <UFEEB> ARABIC LETTER HEH INITIAL FORM
<h+;>    <UFEEC> ARABIC LETTER HEH MEDIAL FORM
<w+->    <UFEED> ARABIC LETTER WAW ISOLATED FORM
<w+.>    <UFEEE> ARABIC LETTER WAW FINAL FORM
```

```
<j+->     <UFEEF> ARABIC LETTER ALEF MAKSURA ISOLATED FORM
<j+.>     <UFEF0> ARABIC LETTER ALEF MAKSURA FINAL FORM
<y+->     <UFEF1> ARABIC LETTER YEH ISOLATED FORM
<y+.>     <UFEF2> ARABIC LETTER YEH FINAL FORM
<y+,>     <UFEF3> ARABIC LETTER YEH INITIAL FORM
<y+;>     <UFEF4> ARABIC LETTER YEH MEDIAL FORM
<lM->     <UFEF5> ARABIC LIGATURE LAM WITH ALEF WITH MADDA ABOVE ISOLATED FORM
<lM.>     <UFEF6> ARABIC LIGATURE LAM WITH ALEF WITH MADDA ABOVE FINAL FORM
<lH->     <UFEF7> ARABIC LIGATURE LAM WITH ALEF WITH HAMZA ABOVE ISOLATED FORM
<lH.>     <UFEF8> ARABIC LIGATURE LAM WITH ALEF WITH HAMZA ABOVE FINAL FORM
<lh->     <UFEF9> ARABIC LIGATURE LAM WITH ALEF WITH HAMZA BELOW ISOLATED FORM
<lh.>     <UFEFA> ARABIC LIGATURE LAM WITH ALEF WITH HAMZA BELOW FINAL FORM
<la->     <UFEFB> ARABIC LIGATURE LAM WITH ALEF ISOLATED FORM
<la.>     <UFEFC> ARABIC LIGATURE LAM WITH ALEF FINAL FORM
<H->      <U0023> NUMBER SIGN
<!S>      <U0024> DOLLAR SIGN
<@>       <U0040> COMMERCIAL AT
<Oa>      <U0040> COMMERCIAL AT
<!C>      <U00A2> CENT SIGN
<L->      <U00A3> POUND SIGN
<Xo>      <U00A4> CURRENCY SIGN
<Y->      <U00A5> YEN SIGN
<!B>      <U00A6> BROKEN BAR
<So>      <U00A7> SECTION SIGN
<7!>      <U00AC> NOT SIGN
<9I>      <U00B6> PILCROW SIGN
<_->      <U2500> BOX DRAWINGS LIGHT HORIZONTAL
<_=>      <U2501> BOX DRAWINGS HEAVY HORIZONTAL
<_!>      <U2502> BOX DRAWINGS LIGHT VERTICAL
<_V/>>    <U250C> BOX DRAWINGS LIGHT DOWN AND RIGHT
<_V<w>    <U2510> BOX DRAWINGS LIGHT DOWN AND LEFT
<_A/>>    <U2514> BOX DRAWINGS LIGHT UP AND RIGHT
<_A<>     <U2518> BOX DRAWINGS LIGHT UP AND LEFT
<_!/>>    <U251C> BOX DRAWINGS LIGHT VERTICAL AND RIGHT
<_!<>     <U2524> BOX DRAWINGS LIGHT VERTICAL AND LEFT
<_V->     <U252C> BOX DRAWINGS LIGHT DOWN AND HORIZONTAL
<_-A>     <U2534> BOX DRAWINGS LIGHT UP AND HORIZONTAL
<_!->     <U253C> BOX DRAWINGS LIGHT VERTICAL AND HORIZONTAL
<_/>//>   <U2571> BOX DRAWINGS LIGHT DIAGONAL UPPER RIGHT TO LOWER LEFT
<_<\>     <U2572> BOX DRAWINGS LIGHT DIAGONAL UPPER LEFT TO LOWER RIGHT
<_./>//>  <U25E2> BLACK LOWER RIGHT TRIANGLE
<_.<\>    <U25E3> BLACK LOWER LEFT TRIANGLE
<_d!>     <U266A> EIGHTH NOTE
```


8 Functionality

8.1 General

Functionality to access the information described in this document is specified in ISO/IEC 9899. In addition, the functions in subclause 8.2 through 8.4 are specified.

8.2 The “strpcoll” function

Synopsis

```
#include <string.h>

int strpcoll(const char *s1, const char *s2, int p);
```

Description

The strpcoll function compares the string pointed to by s1 to the string pointed to by s2, both interpreted as appropriate to the LC_COLLATE category of the current FDCC-set, and to the precision of p.

Returns

The strpcoll function returns an integer greater than, equal to, or less than zero, accordingly as the string pointed to by s1 is greater than, equal to, or less than the string pointed to by s2, given the precision p, when both are interpreted as appropriate to the current FDCC-set. The precision p is the level of the collation data that will be used, on alphabetic characters, precision=1 will normally regard all versions, including upper case, lowercase and accented versions of a letter as equal; and precision=2 will normally regard upper case and lower case versions of an accented letter as equal, both in composed and decomposed forms; precision=3 would normally distinction between composed and decomposed forms of a letter.

8.3 The “setmedia” function

Synopsis

```
int setmedia(int io, int media, int allow);
```

Description

The setmedia function sets the message interfaces to be used. io gives input or output; input=0, output=1. media gives the media type: text=1, voice=2, gestures=3, selection=4. allow specifies if the combination of io and media will be allowed or not, allow=1, and deny=0.

Returns

The setmedia function returns a 0 if the function executes without error, and a positive non-zero error code if the function executes with error.

8.4 String, encoding, repertoire and locale data types

8.4.1 General

As basic string handling is dependent on the user's preferences (as given via the string), encoding, repertoire, and locale data types are described together here.

8.4.2 String data type

The string handling APIs defined in this document operate on an internal representation of character strings, which are arrays of characters. A void string is indicated by the implementation-defined value NIL. The string data type is defined by:

```
#define string *wchar_t
```

8.4.3 Encoding data type

8.4.3.1 General

The "encoding" data type holds data necessary to convert to and from an external encoding and the

internal string representation. This includes mapping of coded characters to the internal repertoire, how to shift between subencodings such as via ISO 2022 techniques, or representation via symbolic character names identified via introducing sequences, and state information. The enocding data type is defined by:

```
struct encoding {
        string encodingname;
        // other things
}
```

NOTE The encoding definition is closely related to the "charmap" specification of ISO/IEC/IEEE 9945 and ISO/IEC TR 14652, the "charset" definition in the internet MIME specification, and newer developments for the C and C++ programming languages.

8.4.3.2 int newencoding(const string encodingname,encoding enc)

The "newencoding" API creates an encoding object with the necessary space to hold all information necessary to convert between the encoding and the internal string representation. The "newencoding" API sets default values, including the "line_terminator" to being the characters "CR""LF", the "invalid_char" to being the character "SUB", the "symbolic_char_introducer" to being "NUL" (not valid), the "sub_encoding_change" API, the "get_symbolic_char_name" API and the "put_symbolic_char_name" API to be the null API, and the "input_state" and the "output_state" variables to be the initial state .

The "encodingname" is an implementation defined string with the following characterisics:

An initial string of "std/" refers to the charmaps registered in the international cultural register, ISO/IEC 15897.

If the specified encoding is syntactically valid and supported by the implementation, the "newencoding" API allocates memory for the new object and returns a pointer to the object in the parameter "enc". It is the application's responsibility to free this memory with a call to the "freeencoding" API when the struct is no longer needed. If the API fails for any reason, the contents of "enc" is undefined.

The "newencoding" API returns one of the following values.

— 0 – LC_SUCCESS – The API call was successful.

— 1 – LC_NOTSUPPORTED – The encoding is not supported by the current system.

— 2 – LC_NOMEMORY – there was insufficient memory to perform the API.

— 3 – LC_INVALID – The specified encoding is invalid.

8.4.3.3 int freeencoding(encoding enc)

The "freeencoding" API frees the memory occupied by the encoding "enc". It returns a zero if the operation is succesful, and a -1 otherwise.

8.4.3.4 int setencint(encoding enc,const string param,int val)

The "setencint" API sets a specific parameter as specified in the string "param" of the encoding specification to a specific integer value as specified in "val". The defined values for "param" are:

(to be described)

It returns a zero if the operation is succesful, and a 1 otherwise.

8.4.3.5 int setencbytes(encoding enc,const string param,const char *val,int len)

The "setencbytes" API sets a specific parameter as specified in the string "param" of the encoding specification to a specific multibyte value as specified in "val" with the length "len" bytes. The defined values for "param" are:

"line_terminator"
"invalid_char"
"symbolic_char_introducer"

8.4.3.6 int setencproc(encoding enc, const string param, int val())

The "setencproc" API sets a specific parameter as specified in the string "param" of the encoding specification to a specific API value as specified in "val" . The defined values for "param" are:

"sub_encoding_change" - procedure subec() "get_symbolic_char_name" - procedure gscn(c, p , len)
"put_symbolic_char_name" - procedure pscn(c, p, len)

8.4.3.7 int gscn(c, p, len)

The application defined "get_symbolic_char_name" API is called by the "bytes2string" API when the character sequence in "symbolic_char_introducer" is met in the input octet sequence. It gets a pointer "p" to the first octet after the "symbolic_char_introducer" and determines whether there is a symbolic character according to the application APIs definitions, with or without a terminator sequence, within "len" octets after the "p" pointer. If successful the API returns the found character in the internal string representation in "c" and the pointer "p" to the first octet after the symbolic character, including the possible terminator sequence. The application defined API returns.

— 0 if succesful.

— 1 if it could not recognise a symbolic character within the "len" octets. "p" is not changed.

— 2 if the octet sequence is invalid according to the rules of the application. "p" is not changed.

8.4.3.8 int pscn(c, p, len)

The application defined "put_symbolic_char_name" API is called by the "string2bytes" API when a character is not present in the external encoding. It gets a pointer "p" to the next octet to be written in the sequence of octets and determines whether there is room to put a symbolic character according to the application APIs definitions, with the "symbolic_char_introducer" value and with or without a terminator sequence, within "len" octets after the "p" pointer. If successful, the API returns "p", a pointer, to the first octet after the symbolic character written, including the possible terminator sequence. The application defined API returns.

— 0 if successful.

— 1 if the API was not able to write the symbolic character within "len" octets. The pointer "p" is not changed.

— 2 if the API had no means of writing the character "c", The pointer "p" is not changed.

8.4.4 Repertoire data type

8.4.4.1 General

The "repertoire" data type holds data necessary for the "stringtrans" transliteration API.

8.4.4.2 int newrepertoire(const string repertoirename,repertoire rep)

The "newrepertoire" API creates a repertoire object with the necessary space to hold all information necessary. The "repertoirename" is an implementation defined string with the following characteristics: An initial string of "std/" refers to repertoiremaps registered in the international cultural register, ISO/IEC 15897. If the specified repertoire is valid and supported, the "newrepertoire" API allocates memory for the new object and returns a pointer to the object in "rep". It is the application's responsibility to free this memory with a call to the "freerepertoire" API when the object is no longer needed. If the API fails for any reason, the contents of "rep" is undefined.

The "newrepertoire" API returns one of the following values.

— 0 – The API call was successful.

— 1 – The repertoire is not supported by the current system.

— 2 – There was insufficient memory to perform the API.

— 3 – The specified repertoire is invalid.

8.4.4.3 int freerepertoire(repertoire rep)

The "freerepertoire" API frees the memory occupied by the repertoire "rep". It returns 0 if the operation is successful, and 1 otherwise.

8.4.4.4 int enc2repertoire(encoding enc,repertoire rep)

The "enc2repertoire" API generates a repertoire object with a repertoire corresponding to the character repertoire of the encoding "enc". If the API is successful, it returns the repertoire object in "rep". It has the same return values as the "newrepertoire" API.

8.4.5 Locale data type

8.4.5.1 General

The "locale" data type is a pointer to a struct with a number of variables capable of holding information sufficient to service all language-dependent internationalization services. The "locale" data type has provisions to affect groups of functionalities in categories, which are:

1 NULL

2 LC_ALL

3 LC_IDENTIFICATION

4 LC_COLLATE

5 LC_CTYPE

6 LC_MONETARY

7 LC_NUMERIC

8 LC_TIME

9 LC_MESSAGES

10 LC_XLITERATE

11 LC_NAME

12 LC_ADDRESS

13 LC_TELEPHONE

The category LC_ALL denotes all of the other non-void categories.

The category NULL denotes a void category.

The "locale" data type includes the following variables (which are further described in this document:)

LC_MONETARY values:

int_curr_symb: string. currency_symbol: string. mon_deccimal_point: string. mon_thousands_sep: string. mon_grouping: string positive_sign: string. negative_sign: string. int_frac_digits: integer. frac_digits: integer. p_cs_precedes: integer p_sep_by_space: integer. n_cs_precedes: integer n_sep_by_space: integer p_sign_posn: integer n_sign_posn: integer

LC_NUMERIC values:

decimal_point: string thousands_sep: string grouping: array of integers

LC_TIME values:

abday: array (1,7) of string day: array (1,7) of string abmon: array (1,13) of string mon: array (1,13) of string d_t_fmt: string d_fmt: string t_fmt: string am_pm: string t_fmt_ampm: string era: string era_year: string era_d_fmt: string alt_digits: array (1,100) of string

LC_MESSAGES values:

yesexpr: string noexpr: string

8.4.5.2 int newlocale(int category_mask, const string localename,locale lc)

The "newlocale" API creates a locale struct with all the necessary information to perform the language-sensitive operations of internationalization APIs accepting an argument of the type "locale". If the API is successful, all categories of the locale object are created and initialized. Any categories in the locale identified by "localename" are initalized to the i18n locale.

The "localename" is an implementation-defined value with the following characteristics:

— An initial string of "std/" refers to the locales registered in the international cultural register, ISO/IEC 15897.

If the specified locale is valid and supported, the "newlocale" API allocates memory for the new object and returns a pointer to the object in "lc". It is the application's responsibility to free this memory with a call to the "freelocale" API when the object is no longer needed. If the API fails for any reason, the contents of "lc" is undefined.

The "newlocale" API returns one of the following values.

— 0 – LC_SUCCESS – The API call was successful.

— 1 – LC_INCOMPLETE – The specified locale has been created, but the locale object contains one or more categories that were initialized to the i18n locale because the "localename" did not identify a value for that category.

— 2 – LC_NOTSUPPORTED – The locale is not supported by the current system.

— 3 – LC_NOMEMORY – there was insufficient memory to perform the API.

— 4 – LC_INVALID – The specified locale is invalid.

8.4.5.3 int freelocale(locale lc)

The "freelocale" API frees the memory occupied by the locale "lc". It returns 0 if the operation is succesful, and 1 otherwise.

8.4.5.4 int modifylocale(const int category,const string localename,locale lc)

The "modifylocale" API modifies the values of the locale object "lc" parameter relating to the category "category" and with values as specified in "localename". "category" takes values as defined in subclause 5.1 and "localename" is defined as for the "newlocale" API. The return value is as for the "newlocale" API.

8.4.5.5 int intlocaleinfo(const int category,const string keywordname,locale lc)

The "intlocaleinfo" API gets the integer value of the keyword "keywordname" of the locale object "lc" relating to the category "category". "category" takes values as defined in subclause 5.1. The return value is the integer value of the keyword.

8.4.5.6 string stringlocaleinfo(const int category,const string keywordname,locale lc)

The "stringlocaleinfo" API gets the string value of the keyword "keywordname" of the locale object "lc" relating to the category "category". "category" takes values as defined in subclause 5.1. The return value is the string value of the keyword.

8.4.6 Character handling

8.4.6.1 General

The character handling APIs behave according to the LC_CTYPE category of the locale parameter for the individual APIs.

8.4.6.2 int istype_l(wchar_t c,const string c_type,const locale lc)

The "istype" API returns 1 if the character "c" is in the type "c_type", else 0.

"c_type" can have the following values:

alnum, alpha, cntrl, digit, graph, lower, print, punct, space, blank, upper, xdigit

8.4.6.3 int tolowers_l(string s1,const string s2,const locale lc)

The "tolowers" API returns in string "s1" all characters in the string "s2" converted to the corresponding lowercase characters with conversion rules given by the locale "lc". The API returns the number of resulting characters in "s1".

8.4.6.4 int touppers_l(string s1,const string s2,const locale lc)

The "touppers" API returns in string "s1" all characters in the string "s2" converted to the corresponding uppercase characters with conversion rules given by the locale "lc". The API returns the number of resulting charactes in "s1".

8.4.6.5 int stringtrans(transtype, maxlen,string s1,const string s2, rep)

The "stringtrans" API transforms string "s2" into string "s1" given the transformation specifications as noted below.

Values for the "transtype" parameter are:

— 1 – as for the "tolowers" API;

— 2 – as for the "touppers" API;

— 3 – transliterate the string "s2" into the string "s1" (for example using for each character the first "transform" specification of ISO/IEC TR 14652) that is using the repertoire of "rep" and has at most "maxlen" characters as the transliteration. If the "s1" string is to be exceeded, or there is no valid transliteration, the API returns -1. Otherwise it returns the resulting number of characters of "s1".

8.4.7 String comparison

8.4.7.1 General

The string comparison APIs behave according to the LC_COLLATE category of the locale parameter for the individual APIs.

8.4.7.2 int strcoll_l(const string s1,const string s2,locale lc) int strncoll_l(const string s1,const string s2, n,locale lc)

The "strcoll_l" API compares the two strings "s1" and "s2" with regards to the collating specifications of the locale "lc".

The "strncoll_l" API compares at most "n" characters of the two strings "s1" and "s2" with regards to the collating specifications of the locale "lc".

Both the "strcoll_l" and "strncoll_l" APIs returns -1 if "s1" < "s2", 0 if "s1" == "s2" and 1 if "s1" > "s2".

8.4.7.3 int strxfrm_l(const string s1,const string s2,locale lc)

The "stringxfrm" API converts the character string "s2" using the locale "lc" and to the precision in "precision"as defined in subclause 7.2, to an internal representation in "s1" suitable for comparison via a binary comparison API (in C this may be strcmp()).

8.4.7.4 int stringcoll(const string s1,const string s2,int precision,locale lc) and int stringncoll(const string s1,const string s2,int precision,int n,locale lc)

The "stringcoll" API compares the two strings "s1" and "s2" with regards to the collating specifications of the locale "lc" and to the precision in "precision".

The "stringncoll" API compares at most "n" characters of the two strings "s1" and "s2" with regards to the collating specifications of the locale "lc" and to the precision in "precision".

The "precision" indicates to what level of preciseness the string comparison is done. "precision" can have the following values:

— 0 – all levels;

— 1 – only to level 1 – CASE_AND_ACCENT_INSENSITITVE;

— 2 – only to level 2 – CASE_INSENSITIVE;

— 3 – only to level 3 – IGNORE_SPECIALS;

— 4 – only to level 4 – EXACT_MATCHING.

Both the "stringcoll" and "stringncoll" APIs returns -1 if "s1" < "s2", 0 if "s1" == "s2" and 1 if "s1" > "s2".

8.4.7.5 int stringxfrm(const string s1,const string s2,int precision,locale lc)

The "stringxfrm" API converts the character string "s2" using the locale "lc" and to the precision in "precision" as defined in subclause 7.2, to an internal representation in "s1" suitable for comparison via a binary comparison API (in C this may be strcmp()).

8.4.8 Message formatting

8.4.8.1 General

The message formatting APIs behave according to the LC_MESSAGES category of the locale parameter for the individual APIs.

8.4.8.2 string dngettext_l(const string msgtag, const int n, const string textdomain, locale lc)

The "dngettext_l" API attempts to retrieve the message with the tag "msgtag" in the current LC-MESSAGES part of the "lc" locale with respect to the "textdomain" set of messages., and the message according to the number n used to determine the plural form. If not found or the locale is invalid and no "msgtag" is found in the default locale, then "msgtag" is returned.

The LANGUAGE environment variable is examined first to determine the message catalogs to be used. The value of the LANGUAGE environment variable is a list of locale names separated by colon (:) character. If the LANGUAGE environment variable is defined, each locale name is tried in the specified

order and if a message catalog containing the requested message is found, the message is returned. If the LANGUAGE environment variable is defined but failed to locate a message catalog, the msgid string will be returned.

If the LANGUAGE environment variable is not defined, LC_ALL, LC_xxx and LANG environment variables are examined to locate the message catalog, following the convention used by the setlocale() function.

The pathname used to locate the message catalog is dirname/locale/category/domainname.mo, where dirname is the directory specified by bindtextdomain(), locale is a locale name determined by the definition of environment variables, category is LC_MESSAGES if stringget() is called, otherwise LC_xxx where the name is the same as the locale category name specified by the category argument of dcgettext() or dcngettext(). domainname is the name of the domain specified by textdomain() or the domainname argument of dgettext(), dngettext(), dcgettext() or dcngettext().

For gettext() and ngettext(), the domain used is set by the last valid call to textdomain(). If a valid call to textdomain() has not been made, the default domain (called messages) is used.

For dgettext(), dngettext(), dcgettext() and dcngettext(), the domain used is specified by the domainname argument. The domainname argument is equivalent in syntax and meaning to the domainname argument to textdomain(), except that the selection of the domain is valid only for the duration of the dgettext(), dngettext(), dcgettext() or dcngettext() function call.

The dcgettext() and dcngettext() functions require additional argument category for retrieving message string for other than LC_MESSAGES category. Available value for the category argument are LC_CTYPE, LC_COLLATE, LC_MESSAGES, LC_MONETARY, LC_NUMERIC and LC_TIME (the call of dcgettext(domainname, msgid, LC_MESSAGES) is equivalent to dgettext(domainname, msgid)). Note that LC_ALLshall not be used.

The textdomain() function sets or queries the name of the current domain of the active LC_MESSAGES locale category. The domainname argument is a null-terminated string that can contain only the characters allowed in legal filenames.

The domainname argument is the unique name of a domain on the system. If there are multiple versions of the same domain on one system, namespace collisions can be avoided by using bindtextdomain(). If textdomain() is not called, a default domain is selected. The setting of domain made by the last valid call to textdomain() remains valid across subsequent calls to setlocale(), and gettext().

The domainname argument is applied to the currently active LC_MESSAGES locale.

The current setting of the domain can be queried without affecting the current state of the domain by calling textdomain() with domainname set to the null pointer. Calling textdomain() with a domainname argument of a null string sets the domain to the default domain (messages).

The bindtextdomain() function binds the path predicate for a message domain domainname to the value contained in dirname. If domainname is a non-empty string and has not been bound previously, bindtextdomain() binds domainname with dirname.

If domainname is a non-empty string and has been bound previously, bindtextdomain() replaces the old binding with dirname. The dirname argument can be an absolute or relative pathname being resolved when gettext(), ngettext(), dgettext(), dngettext(), dcgettext(), or dcngettext() are called. If domainname is a null pointer or an empty string, bindtextdomain() returns null pointer. If bindtextdomain() is not called, implementation-defined default directory is used.

The bind_textdomain_codeset() function can be used to specify the output codeset for message catalogs

for domain domainname. The codeset argument must be a valid codeset name which can be used for the iconv_open() function, or a null pointer.

If the codeset argument is the null pointer, bind_textdomain_codeset() returns the currently selected codeset for the domain with the name domainname. It returns null pointer if no codeset has yet been selected.

The bind_textdomain_codeset() function can be used several times. If used multiple times, with the same domainname argument, the later call overrides the settings made by the earlier one.

The bind_textdomain_codeset() function returns a pointer to a string containing the name of the selected codeset. The string is allocated internally in the function and must not be changed by the user.

RETURN VALUE

The gettext(), dgettext() and dcgettext() functions return the message string if the search succeeds, otherwise return the msgid string.

The ngettext(), dngettext() and dcngettext() functions return the message string if the search succeeds. If the search fails, msgid1 is returned if n == 1, otherwise msgid2 is returned.

The textdomain() function returns the currently selected domain. If it fails, null pointer will be returned.

The bindtextdomain() function returns the directory pathname currently bound to the domain. If it fails, null pointer will be returned.

The bind_textdomain_codeset() function returns the currently selected codeset name. It returns null pointer if no codeset has yet been selected.

ERRORS

The gettext(), dgettext(), dcgettext(), ngettext(), dngettext() and dcngettext() will not modify the external variable errno.

The textdomain(), bindtextdomain() and bind_textdomain_codeset() functions may fail if:

[ENOMEM]

Insufficient memory available.

8.4.9 Conversion between string and other data types

8.4.9.1 int string2int_l(string s,locale lc)

The "string2int_l" API converts a string to an integer, with respect to the locale "lc".

8.4.9.2 string int2string_l(int i,locale lc)

The "int2string_l" API creates a string with the necessary length and returns the string with an integer formatted in characters, according to the locale "lc". If there is not enough memory to create a new string, the API returns the void string.

8.4.9.3 double string2real_l(string s,locale lc)

The "string2real_l" API converts a string to a real value, using information about thousands and decimal separators from the locale "lc". If there is not enough memory to create a new string, the API returns the void string.

8.4.9.4 string real2string_l(double r,locale lc)

The "real2string_l" API formats a real value into a string, with decimal and thousands separators as given in the "lc" locale. Returns a string with the necessary length, or if memory is not available it returns the empty string.

8.4.9.5 int bytes2string_e(string s,char* p,int len,encoding enc)

The "bytes2string_e" API converts "len" octets from the multibyte value "p" in the encoding "enc" to the string "s", and with the conversion input_state as recorded in "enc". The conversion stops earlier in two cases: if the next character to be stored in the string "s" would exceed the length of "s", or if there is a sequence not corresponding to a recognizable character in the input sequence of octets, possibly after calling an application-defined "get_symbolic_char" API.

If the API stops without having converted "len" octets, the API returns the negative to the number of octets converted. Otherwise it returns the number of internal characters converted (ie. the last index in the string "s" for characters converted).

8.4.9.6 int string2bytes_e(char* p,string s,int len,encoding enc)

The "string2bytes_e" API converts a string "s" into a sequence of corresponding octets of "p" in the encoding "enc", and beginning in the output_state recorded in "enc". The conversion continues up to the lenght of the string "s". The conversion stops earlier in two cases: when a code is reached that does not correspond to a valid representation in the sequence of octets, and either no "invalid_char" value or "put_symbolic_char" API is defined, or the application defined "put_symbolic_char" API returns with a value 2; or the next octet would exceed the limit of "len" total octets to be stored in the multibyte "p" variable.

The API returns the negative index of the character in question if the conversion stops because it could not convert a character in the string to octets. Otherwise it returns the number of octets in the resulting sequence of octets.

8.4.9.7 int time2string_l(string s,const string format,const struct tm *timeptr,locale lc)

The "time2string_l" API returns a string "s" formatted according to the format in "format" of the time value in "timeptr", according to the local conventions in the locale "lc". The "format" string is specified in ISO/IEC/IEEE 9945 (with extensions as described in this document) as the "d_t_fmt" specification.

8.4.9.8 int string2time_l(const struct tm *time,string s,locale lc)

The "string2time_l" API returns a binary time in "time", scanned from the string "s" according to the locale conventions in the locale "lc".

NOTE This specification needs more work. The C++ standard is the only standard having provisions for this but is very weak on the subject.

