INTERNATIONAL STANDARD ISO/IEC 9945-1:2003
TECHNICAL CORRIGENDUM 1

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Information technology — Portable Operating System Interface (POSIX®) —

Part 1: Base Definitions

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Interface pour la portabilité des systèmes (POSIX) —

Partie 1: Définitions de base

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 9945-1:2003 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces.*

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1 Scope

This technical corrigendum addresses issues raised in defect reports and interpretation requests submitted up to 14 August 2003, and that meet all of the following criteria:
a. They are in the scope of the approved International Standard.
b. They contain no new APIs (functions/utilities), however, they may add enumeration symbols, non-function # defines, and reserve additional namespaces.
c. They address contradictions between different parts of the International Standard, or add consistency between it and overriding International Standards, or address security-related problems.

2 Changes to ISO/IEC 9945-1

Change Number: XBD/TC1/1 [XBD ERN 20]
On Page: xli Line: "ISO/IEC 8859" Section: Referenced Documents
Add after line starting "Part 10":
"Part 11: Latin/Thai Alphabet"
Add after line starting "Part 15":
"Part 16: Latin Alphabet No. 10"

Change Number: XBD/TC1/2 [XSH ERN 4,XBD ERN 3]
On Page: 25 Line: 932-935 Section: Conformance
Change from:
"If _POSIX_PRIORITIZED_IO is supported, then asynchronous I/O operations performed by aio_read(), aio_write(), and lio_listio() shall be submitted at a priority equal to the scheduling priority of the process minus aiocbp->aio_reqprio."
To:
"If _POSIX_PRIORITIZED_IO is supported, then asynchronous I/O operations performed by aio_read(), aio_write(), and lio_listio() shall be submitted at a priority equal to the scheduling priority equal to a base scheduling priority minus aiocbp->aio_reqprio. If Thread Priority Scheduling is not supported then the base scheduling priority is that of the calling process, otherwise the base scheduling priority is that of the calling thread."
Rationale:
The previous wording did not take threads into account.

Change Number: XBD/TC1/3 [XBD ERN 4]
On Page: 48 Line: 1631-1635 Section: 3.93 Child Process
Change From:
"3.93 Child Process

A new process created (by fork(), posix_spawn(), or posix_spawnp()) by a given process. A child process remains the child of the creating process as long as both processes continue to exist. Note: The fork(), posix_spawn(), and posix_spawnp() functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."

To:
"3.93 Child Process

A new process created (by fork(), posix_spawn(), posix_spawnp(), or vfork()) by a given process. A child process remains the child of the creating process as long as both processes continue to exist. Note: The fork(), posix_spawn(), posix_spawnp() and vfork() functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."

Change Number: XBD/TC1/4 [XBD ERN 30]
On Page: 61 Line: 2005-2006 Section: 3.187 Group Database
Change From:

"A system database of implementation-defined format that contains at least the following information for each group ID:"

To:

"A system database that contains at least the following information for each group ID:"

Change Number: XBD/TC1/5 [XBD ERN 7]
On Page: 76 Line: 2433,2440 Section: 3.295 Process Lifetime
In the Section 3.295 Process Lifetime
Change From:
"After a process is created with a fork() function, it is considered active."
To:
"After a process is created by fork(), posix_spawn(), posix_spawnp() or vfork(), it is considered active."
Change From:
"Note: The fork(), wait(), waitid(), and waitpid() functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."
To:
"Note: The fork(), posix_spawn(), posix_spawnp(), vfork(), wait(), waitid(), and waitpid () functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."

Change Number: XBD/TC1/6 [XBD ERN 5]
On Page: 76 Line: 2448-2454 Section: 3.297 Process Termination
Change From:
"There are two kinds of process termination:
1. Normal termination occurs by a return from main() or when requested with the exit() or _exit() functions.
2. Abnormal termination occurs when requested by the abort() function or when some signals are received.
Note: The _exit(), abort(), and exit() functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."
To:
"There are two kinds of process termination:
1. Normal termination occurs by a return from main(), when requested with the exit(), _exit(), or _Exit() functions; or when the last thread in the process terminates by returning from its start function, by calling the pthread_exit() function, or through cancellation.
2. Abnormal termination occurs when requested by the abort() function or when some signals are received.
Note: The _exit(), _Exit(), abort(), and exit() functions are defined in detail in the System Interfaces volume of IEEE Std 1003.1-2001."
Rationale:
The definition does not mention the "passive exit" on termination of the last thread or the _Exit() function.

Change Number: XBD/TC1/7 [XBD ERN 31,32]
On Page: 88 Line: 2778-2779 Section: 3.382 System Console
Change From:
"An implementation-defined device that receives messages sent by the syslog() function, and the fmtmsg() function when the MM_CONSOLE flat is set."
To:
"A device that receives messages sent by the syslog() function, and the fmtmsg() function when the MM_CONSOLE flag is set."

Change Number: XBD/TC1/8 [TC2d5 ERN 4]
On Page: 88 Line: 2783-2796 Section: 3.383 System Databases
Change From:
"An implementation provides two system databases.
The "group database" contains the following information for each group:
1. Group name
2. Numerical group ID
3. List of all users allowed in the group

The "user database" contains the following information for each user:
1. User name
2. Numerical user ID
3. Numerical group ID
4. Initial working directory
5. Initial user program

If the initial user program field is null, the system default is used. If the initial working directory field is null, the interpretation of that field is implementation-defined. These databases may contain other fields that are unspecified by IEEE Std 1003.1-2001."
To:
"An implementation provides two system databases, the "group database" (see also Section 3.187) and the "user database" (see also Section 3.424)."

Change Number: XBD/TC1/9 [XBD ERN 33]
On Page: 88 Line: 2802-2803 Section: 3.385 System Process
Change From:
"An implementation-defined object, other than a process executing an application, that has a process ID."
To:
"An object other than a process executing an application, that is provided by the system and has a process ID."

Change Number: XBD/TC1/10 [TC2d5 ERN 5]
On Page: 89 Line: 2805-2806 Section: 3.386 System Reboot
Change From:
"An implementation-defined sequence of events that may result in the loss of transitory data; that is, data that is not saved in permanent storage."
To:
"An unspecified sequence of events that may result in the loss of transitory data; that is, data that is not saved in permanent storage."

Change Number: XBD/TC1/11 [XBD ERN 36]
On Page: 94 Line: 2939-2940 Section: 3.424 User Database
Change From:
"A system database of implementation-defined format that contains at least the following information for each user ID:"
To:
"A system database that contains at least the following information for each user ID:"

Change Number: XBD/TC1/12 [XBD ERN 28]
On Page: 104 Line: 3222-3223 Section: 4.14
Change From:
"How any changes to the value of seconds since the Epoch are made to align to a desired relationship with the current actual time are made is implementation-defined."
To:
"How any changes to the value of seconds since the Epoch are made to align to a desired relationship with the current actual time is implementation-defined."
Rationale:
This is an editorial change.

Change Number: XBD/TC1/13 [XBD ERN 17]
On Page: 119 Line: 3758 Section: 6.3
Add to the end of the paragraph:
"This standard provides no means of defining a wide character codeset."

Change Number: XBD/TC1/14 [XBD ERN 17]
On Page: 121 Line: 3860-3862,3867-3868,3869 Section: 6.3
Change From:
"Bytes shall be treated as unsigned octets, and carry shall be propagated between the bytes as necessary to represent the range. For example, the line:"
To:
"Bytes shall be treated as unsigned octets, and carry shall be propagated between the bytes as necessary to represent the range. However, because this causes a null byte in the second or subsequent bytes of a character, such a declaration should not be specified. For example, the line:"
Change From:
<j0103> \d130\d0
<j0104> \d130\d1

To:
<j0103> \d130\d00
<j0104> \d130\d01
Change From:
"The comment is optional."
To:
"The expanded declaration of the symbol <j0103> in the above example is an invalid specification, because it contains a null byte in the second byte of a character.
The comment is optional."
Add to the end of the paragraph:
"This standard provides no means of defining a wide character codeset."

Change Number: XBD/TC1/15 [XBD ERN 24]
On Page: 121-122 Line: 3873-3885 Section: 6.4
Change From:
"WIDTH An unsigned positive integer value defining the column width see Section 3.103 (on page 49)) for the printable characters in the oded character set specified in Table 6-1 (on page 115) and Table 6-2 (on page 120)."
To:
"WIDTH A non-negative integer value defining the column width (see Section 3.103 (on page 49)) for the printable characters in the coded character set specified in Table 6-1 (on page 115) and Table 6-2 (on page 120)."
Change From:
"WIDTH_DEFAULT An unsigned positive integer value defining the default column width for any printable character not listed by one of the WIDTH keywords."
To:
"WIDTH_DEFAULT A non-negative integer value defining the default column width for any printable character not listed by one of the WIDTH keywords."
Rationale: This change allows the value zero for the width value of WIDTH and WIDTH_DEFAULT. This is required to cover some existing locales.

Change Number: XBD/TC1/16 [XBD ERN 25]
On Page: 143 Line: 4836-4839 Section: 7.3.3
On page 143 lines 4836-4839
Change From:
"p_sep_by_space An integer set to 0 if no space separates the currency_symbol from the value for a monetary quantity with a non-negative value, 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."
To:
"p_sep_by_space Set to a value indicating the separation of the currency_symbol, the sign string, and the | value for a non-negative formatted monetary quantity.
The values of p_sep_by_space, n_sep_by_space, int_p_sep_by_space, and int_n_sep_by_space are interpreted according to the following:

0 No space separates the currency symbol and value.
1 If the currency symbol and sign string are adjacent, a space separates them from the value; otherwise, a space separates the currency symbol from the value.
2 If the currency symbol and sign string are adjacent, a space separates them; otherwise, a space separates the sign string from the value."

On page 143 lines 4843-4846
Change From:
"n_sep_by_space An integer set to 0 if no space separates the currency_symbol from the value for a monetary quantity with a negative value, 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."
To:
"n_sep_by_space Set to a value indicating the separation of the currency_symbol, the sign string, and the value for a negative formatted monetary quantity."

On page 144 lines 4864-4871
Change From:
"int_p_sep_by_space An integer set to 0 if no space separates the int_curr_symbol from the value for a monetary quantity with a non-negative value, 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.
int_n_sep_by_space An integer set to 0 if no space separates the int_curr_symbol from the value for a monetary quantity with a negative value, 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."
To:
"int_p_sep_by_space Set to a value indicating the separation of the int_curr_symbol, the sign string, and the value for a non-negative internationally formatted monetary quantity.
int_n_sep_by_space Set to a value indicating the separation of the int_curr_symbol, the sign string, and the value for a negative internationally formatted monetary quantity."
Rationale:
The descriptions of p_sep_by_space, n_sep_by_space, int_p_sep_by_space, and int_n_sep_by_space need to be updated to match the description of these keywords in C99 and System Interfaces Volume, localeconv().

Change Number: XBD/TC1/17 [XBD ERN 37]
On Page: 185 Line: 6540-6541 Section: 10.2
Change From:
"The implementation shall document which terminal types it supports and which of these features and utilities are not supported by each terminal."
To:
"The implementation shall document in the system documentation which terminal types it supports and which of these features and utilities are not supported by each terminal."

Change Number: XBD/TC1/18 [XSH ERN 146]
On Page: 224 Line: 7897-7899 Section: fcntl.h
In the DESCRIPTION section
Change From:
"[ADV] int posix_fadvise(int, off_t, size_t, int);
int posix_fallocate(int, off_t, size_t);"
To:
"[ADV] int posix_fadvise(int, off_t, off_t, int);
int posix_fallocate(int, off_t, off_t);"
Rationale: The previous prototype was not large-file aware, and the standard developers felt it acceptable to make this change before implementations of the functions become widespread."

Change Number: XBD/TC1/19 [XBD ERN 12]
On Page: 259-260 Line: 9132-9169 Section: limits.h
On line 9132-9134
Change From:
"{INT_MAX}
Maximum value of an int.
Minimum Acceptable Value: 2 147 483 647"
To:
"{INT_MAX}
Maximum value of an int.
[CX]Minimum Acceptable Value: 2 147 483 647[/CX]"
On line 9156-9158
Change From:
"{UINT_MAX}
Maximum value of type unsigned.
Minimum Acceptable Value: 4 294 967 295"
To:
"{UINT_MAX}
Maximum value of type unsigned.
[CX]Minimum Acceptable Value: 4 294 967 295[/CX]"

On line 9165-9167
Change From:
"[XSI] {WORD_BIT}
Number of bits in a word or type int.
Minimum Acceptable Value: 16[/XSI]"
To:
"[XSI] {WORD_BIT}
Number of bits in a type int.
Minimum Acceptable Value: 32[/XSI]"
On Line 9168-9170
Change From:
"{INT_MIN}
Minimum value of type int.
Maximum Acceptable Value: -2 147 483 647"
To:
"{INT_MIN}
Minimum value of type int.
[CX]Maximum Acceptable Value: -2 147 483 647[/CX]"
Rationale: There was conflicting information about the size of an integer.

Change Number: XBD/TC1/20 [XBD ERN 26]
On Page: 260 Line: 9191-9193 Section: limits.h
In the DESCRIPTION section
Under "Other Invariant Values"
Remove the lines:
"XSI {CHARCLASS_NAME_MAX}
Maximum number of bytes in a character class name.
Minimum Acceptable Value: 14"
Rationale:
CHARCLASS_NAME_MAX was defined under "Runtime Increasable Values" and also "Other Invarient Values". This change corrects an integration issue with the base specifications.

Change Number: XBD/TC1/21 [XBD ERN 21]
On Page: 266 Line: 9440-9447 Section: math.h
Change From:
"The following optional macros indicate whether the fma() family of functions are fast compared with direct code:
FP_FAST_FMA
FP_FAST_FMAF
FP_FAST_FMAL
The FP_FAST_FMA macro shall be defined to indicate that the fma() function generally executes about as fast as, or faster than, a multiply and an add of double operands. The other macros have the equivalent meaning for the float and long double versions."
To:
"The following optional macros indicate whether the fma() family of functions are fast compared with direct code:
FP_FAST_FMA
FP_FAST_FMAF
FP_FAST_FMAL
If defined, the FP_FAST_FMA macro shall indicate that the fma() function generally executes about as fast as, or faster than, a multiply and an add of double operands. If undefined it is unspecified what the speed of execution is. The other macros have the equivalent meaning for the float and long double versions."

Change Number: XBD/TC1/22 [XBD ERN 15]
On Page: 281 Line: 10000 Section: netinet/in.h
Change From:
"The <netinet/in.h> header shall define the sockaddr_in structure that includes at least the following members (all in network byte order):"
To:
"The <netinet/in.h> header shall define the sockaddr_in structure that includes at least the following members listed below:"
Add after line 10004
"The sin_port and sin_addr members shall be in network byte order."
On line 10011
Change From:
"The <netinet/in.h> header shall define the sockaddr_in6 structure that includes at least the following members (all in network byte order):"
To:
"The <netinet/in.h> header shall define the sockaddr_in6 structure that includes at least the following members:"
Add after line 10017
"The sin6_port and sin6_addr members shall be in network byte order."

Change Number: XBD/TC1/23 [XBD ERN 8]
On Page: 297 Line: 10588,10600 Section: <sched.h>
In the DESCRIPTION section
Change From:
"int sched_priority Process execution scheduling priority."
To:
"int sched_priority Process [THR]or thread[/THR] execution scheduling priority."
Change From:
"Each process is controlled by an associated scheduling policy and priority."
To:
"Each process [THR]or thread[/THR] is controlled by an associated scheduling policy and priority."

Change Number: XBD/TC1/24 [XBD ERN 18]
On Page: 306 Line: 10907-10918 Section: signal.h
Change From:
"CX The <signal.h> header shall define the siginfo_t type as a structure that includes at least the following members:
[CX] int si_signo Signal number.
[XSI] int si_errno If non-zero, an errno value associated with this signal, as defined in <errno.h>.
[CX] int si_code Signal code.
[XSI] pid_t si_pid Sending process ID.
uid_t si_uid Real user ID of sending process.
void *si_addr Address of faulting instruction.
int si_status Exit value or signal.
long si_band Band event for SIGPOLL.
[RTS] union sigval si_value Signal value."
To:
"[CX] The <signal.h> header shall define the siginfo_t type as a structure that includes at least the following members:
[CX] int si_signo Signal number.
int si_code Signal code.
[XSI] int si_errno If non-zero, an errno value associated with this signal, as defined in <errno.h>.
pid_t si_pid Sending process ID.
uid_t si_uid Real user ID of sending process.
void *si_addr Address of faulting instruction.
int si_status Exit value or signal.
long si_band Band event for SIGPOLL.
[RTS] union sigval si_value Signal value."
Rationale: This is an editorial change to the shading and no normative change is intended.