INTERNATIONAL STANDARD ISO/IEC/IEEE 9945:2009
TECHNICAL CORRIGENDUM 1

Published 2013-08-15

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Information technology — Portable Operating System Interface (POSIX®) Base Specifications, Issue 7

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Spécifications de base de l'interface pour la portabilité des systèmes (POSIX®), Issue 7

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 9945:2009 was prepared by The Open Group and the Portable Applications Standards Committee of the Computer Society of the IEEE (as IEEE Std 1003.1-2008/Cor 1-2013). It was adopted by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*, in parallel with its approval by the ISO/IEC national bodies, under the “fast-track procedure” defined in the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

ICS 35.060 **Ref. No. ISO/IEC/IEEE 9945:2009/Cor.1:2013(E)**

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ISO/IEC/IEEE 9945:2009/Cor.1:2013(E)
(Corrigendum to
IEEE Std 1003.1-2008)

The Open Group Technical Standard
Base Specifications, Issue 7

IEEE Standard for Information Technology—Portable Operating System Interface (POSIX®)

Base Specifications, Issue 7—Technical Corrigendum 1

Sponsor

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IEEE Computer Society

and
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Approved 6 February 2013

IEEE-SA Standards Board

Approved 25 October 2012

The Open Group

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Abstract: This Technical Corrigendum addresses problems discovered since the approval of IEEE Std 1003.1™ -2008.

Keywords: application program interface (API), argument, asynchronous, basic regular expression (BRE), batch job, batch system, built-in utility, byte, child, command language interpreter, CPU, extended regular expression (ERE), FIFO, file access control mechanism, IEEE 1003.1™, input/output (I/O), job control, network, portable operating system interface (POSIX®)

The Institute of Electrical and Electronics Engineers, Inc.
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PDF: ISBN 978-0-7381-8265-0 STD698161

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Introduction

This introduction is not part of IEEE Std 1003.1™-2008/Cor1-2013 IEEE Standard for Information Technology—Portable Operating System Interface (POSIX®) Base Specifications, Issue 7—Technical Corrigendum 1.

This Technical Corrigendum addresses issues raised in defect reports and interpretation requests submitted up to 17 May 2011 that meet all of the following criteria: (a) They are in the scope of the approved 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 standard, or add consistency between the standard and overriding standards, or address security-related problems.

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IEEE Standard for Information Technology—Portable Operating System Interface (POSIX®)

Base Specifications, Issue 7—Technical Corrigendum 1

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NOTE: The editing instructions contained in this corrigendum define how to merge the material contained therein into the existing base standard to form the comprehensive standard.

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1. Changes to Base Definitions

This section contains the set of changes to the text of the Base Definitions.

[*Note to reviewers: References to defect reports are provided to aid reviewers.*]

Change Number: Frontmatter/TC1/D5/0001 [246]

On Page: ix Line: 0 Section: Typographical Conventions

In the table of conventions, first column, change from:

Filename

to:

Filename, Pathname

Rationale: Austin Group Defect Report(s) applied: 246.
See http://austingroupbugs.net/view.php?id=246

Change Number: Frontmatter/TC1/D5/0002 [341]

On Page: ix Line: none Section: Typographical Conventions

Change:

'\'

in Note 2 to:

'\''

Rationale: Austin Group Defect Report(s) applied: 341.
See http://austingroupbugs.net/view.php?id=341

Change Number: XBD/TC1/D5/0001 [68]

On Page: 9 Line: 247 Section: 1.7.1 Codes

Change from:

[MX]IEC 60559 Floating-Point
The functionality described is optional. The functionality described is also an extension to the ISO C standard.

Where applicable, functions are marked with the MX margin legend in the SYNOPSIS section. Where additional semantics apply to a function, the material is identified by use of the MX margin legend.[/MX]

to:

[MX]IEC 60559 Floating-Point
The functionality described is optional. The functionality described is mandated by the ISO C standard only for implementations that define __STDC_IEC_559__.[/MX]

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[MXX]IEC 60559 Floating-Point Extension
The functionality described is part of the IEC 60559 Floating-Point option, but is an extension to the ISO C standard.[/MXX]

Rationale: Austin Group Defect Report(s) applied: 68.
See http://austingroupbugs.net/view.php?id=68

Change Number: XBD/TC1/D5/0002 [291]

On Page: 21 Line: 730 Section: 2.1.5.1 Subprofiling Considerations

Change from:

filename argument

to:

pathname argument

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0003 [82]

On Page: 24 Line: 830,839 Section: 2.1.5.2 XSI Option Groups

Add to the list of options (in alphabetical order):

_POSIX_THREAD_ROBUST_PRIO_INHERIT
_POSIX_THREAD_ROBUST_PRIO_PROTECT

Rationale: Austin Group Defect Report(s) applied: 82.
See http://austingroupbugs.net/view.php?id=82

Change Number: XBD/TC1/D5/0004 [291]

On Page: 54 Line: 1647 Section: 3.136 Dot

Change from:

In the context of naming files, the filename consisting of a single dot character ('.').

to:

In the context of naming files, the filename consisting of a single <period> character ('.').

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0005 [291]

On Page: 55 Line: 1650 Section: 3.137 Dot-Dot

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Change from:

The filename consisting solely of two dot characters ("..").

to:

The filename consisting solely of two <period> characters ("..").

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0006 [371,425]

On Page: 60 Line: 1763 Section: 3.166 File Descriptor

Change from:

The value of a file descriptor is from zero to {OPEN_MAX}. A process can have no more than {OPEN_MAX} file descriptors open simultaneously.

to:

The value of a newly-created file descriptor is from zero to {OPEN_MAX}-1. A file descriptor can have a value greater than or equal to {OPEN_MAX} if the value of {OPEN_MAX} has decreased (see sysconf()) since the file descriptor was opened.

Rationale: Austin Group Defect Report(s) applied: 371,425.
See http://austingroupbugs.net/view.php?id=371
See http://austingroupbugs.net/view.php?id=425

Change Number: XBD/TC1/D5/0007 [291]

On Page: 60 Line: 1782 Section: 3.170 Filename

Change from:

A name consisting of 1 to {NAME_MAX} bytes used to name a file. The characters composing the name may be selected from the set of all character values excluding the <slash> character and the null byte. The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a "pathname component".

to:

A sequence of bytes consisting of 1 to {NAME_MAX} bytes used to name a file. The bytes composing the name shall not contain the <NUL> or <slash> characters. In the context of a pathname, each filename shall be followed by a <slash> or a <NUL> character; elsewhere, a filename followed by a <NUL> character forms a string (but not necessarily a character string). The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a "pathname component". See also XBD Section 3.266 Pathname.

Rationale: Austin Group Defect Report(s) applied: 291.
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Change Number: XBD/TC1/D5/0008 [291]

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On Page: 60 Line: 1786 Section: 3.170

After Section 3.170, add a new section and then renumber existing sections:

3.1xx Filename String

A string consisting of a filename followed by a <NUL> character.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0009 [291]

On Page: 75 Line: 2145 Section: 3.266 Pathname

Change from:

A character string that is used to identify a file. In the context of POSIX.1-2008, a pathname may be limited to {PATH_MAX} bytes, including the terminating null byte. It has an optional beginning <slash>, followed by zero or more filenames separated by <slash> characters. A pathname may optionally contain one or more trailing <slash> characters. Multiple successive <slash> characters are considered to be the same as one <slash>, except for the case of exactly two leading <slash> characters.

to:

A string that is used to identify a file. In the context of <current version>, a pathname may be limited to {PATH_MAX} bytes, including the terminating null byte. It has optional beginning <slash> characters, followed by zero or more filenames separated by <slash> characters. A pathname can optionally contain one or more trailing <slash> characters. Multiple successive <slash> characters are considered to be the same as one <slash>, except for the case of exactly two leading <slash> characters.

Note: If a pathname consists of only bytes corresponding to characters from the portable filename character set (see XBD Section 3.276), <slash> characters, and a single terminating <NUL> character, the pathname will be usable as a character string in all supported locales; otherwise, the pathname might only be a string (rather than a character string). Additionally, since the single-byte encoding of the <slash> character is required to be the same across all locales and to not occur within a multi-byte character, references to a <slash> character within a pathname are well-defined even when the pathname is not a character string. However, this property does not necessarily hold for the remaining characters within the portable filename character set.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0010 [291]

On Page: 77 Line: 2193 Section: 3.275

After Section 3.275, add a new section and then renumber existing

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sections:

3.2xx Portable Filename

A filename consisting only of characters from the portable filename character set.

Note: Applications should avoid using filenames that have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0011 [291]

On Page: 77 Line: 2199 Section: 3.276 Portable Filename Character Set

Add a sentence at the end of the section:

See also XBD Section 3.266 Pathname.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0012 [181]

On Page: 97 Line: 2670 Section: 3.396 Thread

Change from:

Each thread has its own thread ID, scheduling priority and policy, errno value, thread-specific key/value bindings, and the required system resources to support a flow of control.

to:

Each thread has its own thread ID, scheduling priority and policy, errno value, floating point environment, thread-specific key/value bindings, and the required system resources to support a flow of control.

Rationale: Austin Group Defect Report(s) applied: 181.
See http://austingroupbugs.net/view.php?id=181

Change Number: XBD/TC1/D5/0013 [186]

On Page: 98 Line: 2685 Section: 3.399 Thread-Safe

Change from:

A function that may be safely invoked concurrently by multiple threads.

to:

A thread-safe function can be safely invoked concurrently with other calls to the same function, or with calls to any other thread-safe functions, by multiple threads.

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Rationale: Austin Group Defect Report(s) applied: 186.
See http://austingroupbugs.net/view.php?id=186

Change Number: XBD/TC1/D5/0014 [135]

On Page: 108 Line: 2900 Section: 4.4 File Access Permissions

Delete the last paragraph in the section:

POSIX.1-2008 does not provide a way to open a directory for searching. It is unspecified whether directory search permission is granted based on the file access modes of the directory's file descriptor or on the mode of the directory at the time the directory is searched.

Rationale: Austin Group Defect Report(s) applied: 135.
See http://austingroupbugs.net/view.php?id=135
Text is removed that predated the addition of the O_SEARCH flag.

Change Number: XBD/TC1/D5/0015 [291]

On Page: 109 Line: 2915 Section: 4.7 Filename Portability

Change from:

Portable filenames shall not have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

to:

Note: Applications should avoid using filenames that have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0016 [83]

On Page: 112 Line: 3040 Section: 4.12 Pathname Resolution

Change from:

A pathname that begins with two successive <slash> characters may be interpreted in an implementation-defined manner, although ...

to:

If a pathname begins with two successive <slash> characters, the first component following the leading <slash> characters may be interpreted in an implementation-defined manner, although ...

Rationale: Austin Group Defect Report(s) applied: 83.
See http://austingroupbugs.net/view.php?id=83

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Change Number: XBD/TC1/D5/0017 [340]

On Page: 121 Line: 3303 Section: 5 File Format Notation

Change from:

Escape Sequences represent non-graphic characters.

to:

Escape Sequences represent non-graphic characters and the escape character (<backslash>).

Rationale: Austin Group Defect Report(s) applied: 340.
See http://austingroupbugs.net/view.php?id=340

Change Number: XBD/TC1/D5/0018 [302]

On Page: 127 Line: 3583 Section: 6.1 Portable Character Set

Change from:

... if an application accesses any pair of locales where the character encodings differ, or accesses data from an application running in a locale which has different encodings from the application's current locale, the results are unspecified.

to:

... if an application uses any pair of locales where the character encodings differ, or accesses data from an application using a locale which has different encodings from the locales used by the application, the results are unspecified.

Rationale: Austin Group Defect Report(s) applied: 302.
See http://austingroupbugs.net/view.php?id=302

Change Number: XBD/TC1/D5/0019 [291]

On Page: 128 Line: 3589 Section: 6.1 Portable Character Set

After L3589 insert a new bullet:

* The encoded values associated with <slash> and <period> shall be invariant across all locales supported by the implementation.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0020 [216]

On Page: 128 Line: 3596 Section: 6.2 Character Encoding

Change from:

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The POSIX locale contains the characters in Table 6-1 (on page 125), ...

to:

The POSIX locale contains the characters in Table 6-1 (on page 125)
and Table 6-2 (on page 130), ...

Rationale: Austin Group Defect Report(s) applied: 216.
See http://austingroupbugs.net/view.php?id=216

Change Number: XBD/TC1/D5/0021 [291]

On Page: 128 Line: 3619 Section: 6.2 Character Encoding

Add a sentence:

Likewise, the byte values used to encode <period> and <slash> shall not occur as part of any other character in any locale.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0022 [216]

On Page: 129 Line: 3661 Section: 6.4 Character Set Description File

Change from:

... the symbolic names and their corresponding encoding values shall be included in the file.

to:

... the symbolic names and their corresponding encoding values shall be included in the file. The encoding values shall each be represented in a single byte.

Rationale: Austin Group Defect Report(s) applied: 216.
See http://austingroupbugs.net/view.php?id=216

Change Number: XBD/TC1/D5/0023 [302]

On Page: 135 Line: 3820-3822 Section: 7.1 General

Change from:

The behavior of some of the C-language functions defined in the System Interfaces volume of POSIX.1-2008 shall also be modified based on the current locale, as defined by the last call to setlocale().

to:

The behavior of some of the C-language functions defined in the System Interfaces volume of POSIX.1-2008 shall also be modified based on a locale selection. The locale to be used by these functions can be selected in the following ways:

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1. For functions such as isalnum_l() that take a locale object as an argument, a locale object can be obtained from newlocale() or duplocale() and passed to the function.

2. For functions that do not take a locale object as an argument, the current locale for the thread can be set by calling uselocale() or the global locale for the process can be set by calling setlocale(). Such functions shall use the current locale of the calling thread if one has been set for that thread; otherwise, they shall use the global locale.

Rationale: Austin Group Defect Report(s) applied: 302.
See http://austingroupbugs.net/view.php?id=302
These changes were overlooked during the revision when per-thread locales were added.

Change Number: XBD/TC1/D5/0024 [302]

On Page: 135 Line: 3839 Section: 7.1 General

Change from:

Applications can select the desired locale by invoking the setlocale() function (or equivalent) with the appropriate value. If the function is invoked with an empty string, such as:

setlocale(LC_ALL, "");

the value of the corresponding environment variable is used.

to:

Applications can select the desired locale by calling the newlocale() or setlocale() function with the appropriate value. If the function is invoked with an empty string, such as:

newlocale(LC_ALL_MASK, "", (locale_t)0);

or:

setlocale(LC_ALL, "");

the value of the corresponding environment variable is used.

Rationale: Austin Group Defect Report(s) applied: 302.
See http://austingroupbugs.net/view.php?id=302
These changes were overlooked during the revision when per-thread locales were added.

Change Number: XBD/TC1/D5/0025 [22,427]

On Page: 164 Line: 5141-5146 Section: 7.3.6 LC_MESSAGES

On L5142 in the description of the yesexpr keyword, change from:

... the acceptable affirmative response ...

to:

... acceptable affirmative responses ...

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On L5144-5145 in the description of the noexpr keyword, change from:

... the acceptable negative response ...

to:

... acceptable negative responses ...

Rationale: Austin Group Defect Report(s) applied: 22,427.
See http://austingroupbugs.net/view.php?id=22
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0026 [167]

On Page: 173 Line: 5476 Section: 8.1 Environment Variable Definition

Change from:

... manipulating the environ variable ...

to:

... assigning a new value to the environ variable ...

Rationale: Austin Group Defect Report(s) applied: 167.
See http://austingroupbugs.net/view.php?id=167

Change Number: XBD/TC1/D5/0027 [167]

On Page: 173 Line: 5478 Section: 8.1 Environment Variable Definition

Add a new paragraph after L5478:

If the application modifies the pointers to which environ points, the behavior of all interfaces described in the System Interfaces volume of POSIX.1-2008 is undefined.

Rationale: Austin Group Defect Report(s) applied: 167.
See http://austingroupbugs.net/view.php?id=167

Change Number: XBD/TC1/D5/0028 [291]

On Page: 175 Line: 5566 Section: 8.2 Internationalization Variables

In the description of NLSPATH, change from:

filename

to:

pathname

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

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Change Number: XBD/TC1/D5/0029 [302]

On Page: 177 Line: 5636 Section: 8.2 Internationalization Variables

Change from:

At runtime, these values are bound to the locale of a process by calling the setlocale() function.

to:

These environment variables are used by the newlocale() and setlocale() functions, and by the standard utilities.

Rationale: Austin Group Defect Report(s) applied: 302.
See http://austingroupbugs.net/view.php?id=302

Change Number: XBD/TC1/D5/0030 [139]

On Page: 178 Line: 5674 Section: 8.3 Other Environment Variables

In the description of the PATH variable, change from:

When a non-zero-length prefix is applied to this filename, a <slash> shall be inserted between the prefix and the filename.

to:

When a non-zero-length prefix is applied to this filename, a <slash> shall be inserted between the prefix and the filename if the prefix did not end in <slash>.

Rationale: Austin Group Defect Report(s) applied: 139.
See http://austingroupbugs.net/view.php?id=139
This change is for consistency with the previous change to CDPATH made in Interpretation 1003.1-2001 #199

Change Number: XBD/TC1/D5/0031 [84]

On Page: 178 Line: 5687 Section: 8.3 Other Environment Variables

At the end of the PATH variable, add a new paragraph:

Since colon is a separator in this context, directory names that might be used in PATH should not include a colon character.

Rationale: Austin Group Defect Report(s) applied: 84.
See http://austingroupbugs.net/view.php?id=84

Change Number: XBD/TC1/D5/0032 [305,427]

On Page: 186 Line: 5995 Section: 9.3.5 RE Bracket Expression

At L5995, add a new paragraph:

8. If a bracket expression contains at least three list elements, where

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the first and last list element are the same single-character element of <period>, <equals-sign>, or <colon>, then it is unspecified whether the bracket expression will be treated as a collating symbol, equivalence class, or character class, respectively; treated as a matching list expression; or rejected as an error.

Rationale: Austin Group Defect Report(s) applied: 305,427.
See http://austingroupbugs.net/view.php?id=305
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0033 [134]

On Page: 197 Line: 6402 Section: 10.1 Directory Structure and Files

Change from:

/dev/null An infinite data source and data sink. ...

to:

/dev/null An empty data source and infinite data sink. ...

Rationale: Austin Group Defect Report(s) applied: 134.
See http://austingroupbugs.net/view.php?id=134
Improve the description of /dev/null.

Change Number: XBD/TC1/D5/0034 [79]

On Page: 201 Line: 6531-6542 Section: 11.1.4 Terminal Access Control

On L6531 change from:

... if the reading process is ignoring or blocking the SIGTTIN signal, ...

to:

... if the reading process is ignoring the SIGTTIN signal or the reading thread is blocking the SIGTTIN signal, ...

On L6539 change from:

... and the process is ignoring or blocking the SIGTTOU signal, ...

to:

... and the process is ignoring the SIGTTOU signal or the writing thread is blocking the SIGTTOU signal, ...

On L6540 change from:

If TOSTOP is set, and the process group of the writing process is orphaned, and the writing process is not ignoring or blocking the SIGTTOU signal, ...

to:

If TOSTOP is set, the process group of the writing process is orphaned, the writing process is not ignoring the SIGTTOU signal, and the writing thread is not blocking the SIGTTOU signal, ...

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Rationale: Austin Group Defect Report(s) applied: 79.
See http://austingroupbugs.net/view.php?id=79

Change Number: XBD/TC1/D5/0035 [271]

On Page: 205 Line: 6710 Section: 11.1.11 Closing A Terminal Device File

Change from:

The last process to close a terminal device file shall cause any output to be sent to the device and any input to be discarded.

to:

The last process to close a terminal device file shall cause any output to be sent to the device and shall cause any input to be discarded.

Rationale: Austin Group Defect Report(s) applied: 271.
See http://austingroupbugs.net/view.php?id=271
The text can mean two things:
1. "any output to be sent" and "any input" shall be discarded.
2. "any output" will be sent and "any input" shall be discarded.

Change Number: XBD/TC1/D5/0036 [79]

On Page: 211 Line: 6962 Section: 11.2.5 Local Modes

Change from:

Processes that are blocking or ignoring SIGTTOU signals are excepted and allowed to produce output, and the SIGTTOU signal shall not be sent.

to:

If the writing process is ignoring the SIGTTOU signal or the writing thread is blocking the SIGTTOU signal, the process is allowed to produce output, and the SIGTTOU signal shall not be sent.

Rationale: Austin Group Defect Report(s) applied: 79.
See http://austingroupbugs.net/view.php?id=79

Change Number: XBD/TC1/D5/0037 [171]

On Page: 216 Line: 7120 Section: 12.2 Utility Syntax Guidelines

In Guideline 5 change from:

Options without option-arguments should be accepted when grouped behind one '-' delimiter.

to:

One or more options without option-arguments, followed by at most one option that takes an option-argument, should be accepted when grouped behind one '-' delimiter.

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Rationale: Austin Group Defect Report(s) applied: 171.
See http://austingroupbugs.net/view.php?id=171

Change Number: XBD/TC1/D5/0038 [98]

On Page: 220 Line: 7234 Section: <aio.h>

In the DESCRIPTION section, add FSC|SIO shading to the declaration of aio_fsync().

Rationale: Austin Group Defect Report(s) applied: 98.
See http://austingroupbugs.net/view.php?id=98

Change Number: XBD/TC1/D5/0039 [291]

On Page: 231 Line: 7575 Section: <dirent.h>

In the DESCRIPTION section, change from:

d_name[] Name of entry.

to:

d_name[] Filename string of entry.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0040 [291]

On Page: 231 Line: 7577 Section: <dirent.h>

In the DESCRIPTION section, change from:

The character array d_name is of unspecified size, but the number of bytes preceding the terminating null byte shall not exceed {NAME_MAX}.

to:

The array d_name is of unspecified size, but shall contain a filename of at most {NAME_MAX} bytes followed by a terminating null byte.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0041 [291]

On Page: 232 Line: 7612 Section: <dirent.h>

In the RATIONALE section, change from:

... number of characters provided matches (or only slightly exceeds) the length of the filename.

to:

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... number of bytes provided matches (or only slightly exceeds) the length of the filename string.

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0042 [206]

On Page: 232 Line: 7629 Section: <dirent.h>

In the CHANGE HISTORY section, change from:

... fopendir() ...

to:

... fdopendir() ...

Rationale: Austin Group Defect Report(s) applied: 206.
See http://austingroupbugs.net/view.php?id=206

Change Number: XBD/TC1/D5/0043 [324]

On Page: 236 Line: 7739 Section: <errno.h>

In the DESCRIPTION section, change from:

[ENOTDIR] Not a directory.

to:

[ENOTDIR] Not a directory or a symbolic link to a directory.

Rationale: Austin Group Defect Report(s) applied: 324.
See http://austingroupbugs.net/view.php?id=324

Change Number: XBD/TC1/D5/0044 [274]

On Page: 239 Line: 7848 Section: <fcntl.h>

In the DESCRIPTION section, after:

The <fcntl.h> header shall define the following symbolic constants for use as the file access modes for open(), openat(), and fcntl().

add:

The values shall be unique, except that O_EXEC and O_SEARCH may have equal values.

Rationale: Austin Group Defect Report(s) applied: 274.
See http://austingroupbugs.net/view.php?id=274

Change Number: XBD/TC1/D5/0045 [78,432]

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On Page: 240 Line: 7874-7879 Section: <fcntl.h>

In the DESCRIPTION section, delete L7874 to L7875.

The <fcntl.h> header shall define the following symbolic constants as values for the flag used by open() and openat():

In the DESCRIPTION section, move L7876 to L7879:

O_CLOEXEC The FD_CLOEXEC flag associated with the new descriptor shall be set to close the file descriptor upon execution of an exec family function.

O_DIRECTORY Fail if not a directory.
O_NOFOLLOW Do not follow symbolic links.

into the section at L7829 to L7834, so that it reads:

The <fcntl.h> header shall define the following symbolic constants as file creation flags for use in the oflag value to open() and openat(). The values shall be bitwise-distinct and shall be suitable for use in #if preprocessing directives.

O_CLOEXEC The FD_CLOEXEC flag associated with the new descriptor shall be set to close the file descriptor upon execution of an exec family function.

O_CREAT Create file if it does not exist.

O_DIRECTORY Fail if not a directory.

O_EXCL Exclusive use flag.

O_NOCTTY Do not assign controlling terminal.

O_NOFOLLOW Do not follow symbolic links.

O_TRUNC Truncate flag.

Rationale: Austin Group Defect Report(s) applied: 78,432.
See http://austingroupbugs.net/view.php?id=78
See http://austingroupbugs.net/view.php?id=432

Change Number: XBD/TC1/D5/0046 [346]

On Page: 249 Line: 8198 Section: <float.h>

In the DESCRIPTION section, add a paragraph within the *_MAX_EXP bullet:

[CX]Additionally, FLT_MAX_EXP shall be at least as large as FLT_MANT_DIG, DBL_MAX_EXP shall be at least as large as DBL_MANT_DIG, and LDBL_MAX_EXP shall be at least as large as LDBL_MANT_DIG; which has the effect that FLT_MAX, DBL_MAX, and LDBL_MAX are integral.[/CX]

Rationale: Austin Group Defect Report(s) applied: 346.
See http://austingroupbugs.net/view.php?id=346

Change Number: XBD/TC1/D5/0047 [346]

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On Page: 250 Line: 8224 Section: <float.h>

In the RATIONALE section, change from:

None.

to:

All known hardware floating-point formats satisfy the property that the exponent range is larger than the number of mantissa digits. The ISO C standard permits a floating-point format where this property is not true, such that the largest finite value would not be integral; however, it is unlikely that there will ever be hardware support for such a floating-point format, and it introduces boundary cases that portable programs should not have to be concerned with (for example, a non-integral DBL_MAX means that ceil() would have to worry about overflow). Therefore, this standard imposes an additional requirement that the largest representable finite value is integral.

Rationale: Austin Group Defect Report(s) applied: 346.
See http://austingroupbugs.net/view.php?id=346

Change Number: XBD/TC1/D5/0048 [403]

On Page: 254 Line: 8333 Section: <ftw.h>

In the DESCRIPTION section, change from:

FTW_F File.

to:

FTW_F Non-directory file.

Rationale: Austin Group Defect Report(s) applied: 403.
See http://austingroupbugs.net/view.php?id=403

Change Number: XBD/TC1/D5/0049 [24]

On Page: 258 Line: 8441-8442 Section: <grp.h>

In the DESCRIPTION, add XSI shading to endgrent() and getgrent().

Rationale: Austin Group Defect Report(s) applied: 24.
See http://austingroupbugs.net/view.php?id=24

Change Number: XBD/TC1/D5/0050 [211]

On Page: 261 Line: 8510- Section: <inttypes.h>

In the DESCRIPTION section change from:

The <inttypes.h> header shall define at least the following type:

imaxdiv_t Structure type that is the type of the value returned by the imaxdiv() function.

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to:

The <inttypes.h> header shall define at least the following types:

imaxdiv_t Structure type that is the type of the value returned by the imaxdiv() function.

[CX]wchar_t As described in <stddef.h>.[/CX]

Rationale: Austin Group Defect Report(s) applied: 211.
See http://austingroupbugs.net/view.php?id=211

Change Number: XBD/TC1/D5/0051 [107]

On Page: 264 Line: 8623 Section: <langinfo.h>

In the DESCRIPTION section, replace <nl/types.h> with <nl_types.h>.

Rationale: Austin Group Defect Report(s) applied: 107.
See http://austingroupbugs.net/view.php?id=107
Corrected an editorial error in referencing <nl_types.h>.

Change Number: XBD/TC1/D5/0052 [108]

On Page: 268 Line: 8756 Section: <limits.h>

In the DESCRIPTION section, change from:

Many of the symbols listed here are not defined by the ISO/IEC 9899: 1999 standard. Such symbols are not shown as CX shaded.

to:

(Shading block as follows on L8756-8757)

Many of the symbols listed here are not defined by the ISO/IEC 9899: 1999 standard. Such symbols are not shown as CX shaded, except under the heading "Numerical Limits".

Rationale: Austin Group Defect Report(s) applied: 108.
See http://austingroupbugs.net/view.php?id=108

Change Number: XBD/TC1/D5/0053 [291]

On Page: 272 Line: 8933 Section: <limits.h>

In the DESCRIPTION (<limits.h> {NAME_MAX}) change from:

... bytes in a filename (not including the terminating null).

to:

... bytes in a filename (not including the terminating null of a filename string).

Rationale: Austin Group Defect Report(s) applied: 291.

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See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0054 [182,427]

On Page: 274 Line: 9020 Section: <limits.h>

In the DESCRIPTION section, Minimum Values, change from:

A conforming implementation shall provide values at least this large.

to:

For each of these limits, a conforming implementation shall provide a value at least this large or shall have no limit.

Rationale: Austin Group Defect Report(s) applied: 182,427.
See http://austingroupbugs.net/view.php?id=182
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0055 [291]

On Page: 275 Line: 9060 Section: <limits.h>

In the DESCRIPTION ({_POSIX_NAME_MAX}), change from:

... bytes in a filename (not including the terminating null).

to:

... bytes in a filename (not including the terminating null of a filename string).

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0056 [371]

On Page: 275 Line: 9066 Section: <limits.h>

In the DESCRIPTION section, change from:

Maximum number of files that one process can have open at any one time.

to:

A value one greater than the maximum value that the system may assign to a newly-created file descriptor.

Rationale: Austin Group Defect Report(s) applied: 371.
See http://austingroupbugs.net/view.php?id=371

Change Number: XBD/TC1/D5/0057 [291]

On Page: 277 Line: 9182 Section: <limits.h>

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In the DESCRIPTION ({_XOPEN_NAME_MAX}), change from:

... bytes in a filename (not including the terminating null).

to:

... bytes in a filename (not including the terminating null of a filename string).

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0058 [108]

On Page: 278 Line: 9218 Section: <limits.h>

In the DESCRIPTION section, add CX shading to:

LONG_BIT (P278 L9218-9220)
WORD_BIT (P279 L9260-9262)
SSIZE_MAX (P279 L9242-9244)

Rationale: Austin Group Defect Report(s) applied: 108.
See http://austingroupbugs.net/view.php?id=108

Change Number: XBD/TC1/D5/0059 [291]

On Page: 280 Line: 9311 Section: <limits.h>

In the RATIONALE section, change "filenames" to "pathnames".

Rationale: Austin Group Defect Report(s) applied: 291.
See http://austingroupbugs.net/view.php?id=291

Change Number: XBD/TC1/D5/0060 [301,427]

On Page: 284 Line: 9450 Section: <locale.h>

In the DESCRIPTION section change from:

... a special object descriptor used by the uselocale() function.

to:

... a special object descriptor used by the duplocale() and uselocale() functions.

Rationale: Austin Group Defect Report(s) applied: 301,427.
See http://austingroupbugs.net/view.php?id=301
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0061 [355]

On Page: 303 Line: 10141 Section: <netinet/in.h>

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In the DESCRIPTION section, change from:

Values of this type shall be cast by applications to struct sockaddr
for use with socket functions.

to:

Pointers to this type shall be cast by applications to struct sockaddr *
for use with socket functions.

Rationale: Austin Group Defect Report(s) applied: 355.
See http://austingroupbugs.net/view.php?id=355

Change Number: XBD/TC1/D5/0062 [208]

On Page: 328 Line: 10963 Section: <signal.h>

In the DESCRIPTION section, change the margin marker notation for the
SIG_HOLD macro from:

OB CX

to:

OB XSI

Rationale: Austin Group Defect Report(s) applied: 208.
See http://austingroupbugs.net/view.php?id=208
SIG_HOLD shading and margin marker notation is updated from
OB CX to OB XSI as it is used with the sigset function which is an
XSI function.

Change Number: XBD/TC1/D5/0063 [80]

On Page: 330 Line: 11032 Section: <signal.h>

In the DESCRIPTION section, in the table of signals, change the shading
on SIGPROF from OB XSR to OB XSI.

Rationale: Austin Group Defect Report(s) applied: 80.
See http://austingroupbugs.net/view.php?id=80

Change Number: XBD/TC1/D5/0064 [157]

On Page: 331 Line: 11055 Section: <signal.h>

In the DESCRIPTION section, change the shading margin marker from XSI
to CX on the following text:

The storage occupied by sa_handler and sa_sigaction may overlap, and a
conforming application shall not use both simultaneously.

Rationale: Austin Group Defect Report(s) applied: 157.
See http://austingroupbugs.net/view.php?id=157

Change Number: XBD/TC1/D5/0065 [291,427]

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On Page: 351 Line: 11796 Section: <stdio.h>

In the DESCRIPTION section, at P351 L11796 (XBD <stdio.h> FILENAME_MAX), change from "filename string" to "pathname".

Rationale: Austin Group Defect Report(s) applied: 291,427.
See http://austingroupbugs.net/view.php?id=291
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0066 [197]

On Page: 356 Line: 11992 Section: <stdlib.h>

In the DESCRIPTION section, add the CX margin marker and shading to the getsubopt() function prototype.

Rationale: Austin Group Defect Report(s) applied: 197.
See http://austingroupbugs.net/view.php?id=197
The getsubopt() function is an extension to the ISO C standard.

Change Number: XBD/TC1/D5/0067 [355]

On Page: 382 Line: 12813-12817 Section: <sys/socket.h>

In the DESCRIPTION section, change from:

When a sockaddr_storage structure is cast as a sockaddr structure, the ss_family field of the sockaddr_storage structure shall map onto the sa_family field of the sockaddr structure. When a sockaddr_storage structure is cast as a protocol-specific address structure, the ss_family field shall map onto a field of that structure that is of type sa_family_t and that identifies the protocol's address family.

to:

When a pointer to a sockaddr_storage structure is cast as a pointer to a sockaddr structure, the ss_family field of the sockaddr_storage structure shall map onto the sa_family field of the sockaddr structure. When a pointer to a sockaddr_storage structure is cast as a pointer to a protocol-specific address structure, the ss_family field shall map onto a field of that structure that is of type sa_family_t and that identifies the protocol's address family.

Rationale: Austin Group Defect Report(s) applied: 355.
See http://austingroupbugs.net/view.php?id=355

Change Number: XBD/TC1/D5/0068 [207]

On Page: 388 Line: 13042 Section: <sys/stat.h>

In the DESCRIPTION section, add the XSI margin marker, and shade blkcnt_t and blksize_t.

Rationale: Austin Group Defect Report(s) applied: 207.
See http://austingroupbugs.net/view.php?id=207

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Add notation to show that blkcnt_t and blksize_t are XSI extensions.

Change Number: XBD/TC1/D5/0069 [210]

On Page: 398 Line: 13360f Section: <sys/types.h>

In the DESCRIPTION section, remove the XSI margin marker and shading from fsblkcnt_t and fsfilcnt_t.

Rationale: Austin Group Defect Report(s) applied: 210.
See http://austingroupbugs.net/view.php?id=210
The statvfs structure, where fsblkcnt_t and fsfilcnt_t are used, is now in base.

Change Number: XBD/TC1/D5/0070 [28]

On Page: 399 Line: 13389 Section: <sys/types.h>

In the DESCRIPTION section, change from:

<blank name> Also used to identify a trace stream attributes object

to:

trace_attr_t Used to identify a trace stream attributes object

(The existing OB TRC shading should apply to the whole line.)

Rationale: Austin Group Defect Report(s) applied: 28.
See http://austingroupbugs.net/view.php?id=28

Change Number: XBD/TC1/D5/0071 [376]

On Page: 399 Line: 13415 Section: <sys/types.h>

In the DESCRIPTION section, between L13415 and 13416, add a bullet:

* dev_t shall be an integer type.

Rationale: Austin Group Defect Report(s) applied: 376.
See http://austingroupbugs.net/view.php?id=376

Change Number: XBD/TC1/D5/0072 [210]

On Page: 399 Line: 13417 Section: <sys/types.h>

In the DESCRIPTION section, remove the XSI margin marker and shading from fsblkcnt_t and fsfilcnt_t.

Rationale: Austin Group Defect Report(s) applied: 210.
See http://austingroupbugs.net/view.php?id=210
The statvfs structure, where fsblkcnt_t and fsfilcnt_t are used, is now in base.

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Change Number: XBD/TC1/D5/0073 [327]

On Page: 399 Line: 13420 Section: <sys/types.h>

In the DESCRIPTION section, change from:

time_t and clock_t shall be integer or real-floating types.

to:

clock_t shall be an integer or real-floating type. [CX]time_t shall be an integer type.[/CX]

Rationale: Austin Group Defect Report(s) applied: 327.
See http://austingroupbugs.net/view.php?id=327

Change Number: XBD/TC1/D5/0074 [355]

On Page: 403 Line: 13517 Section: <sys/un.h>

In the DESCRIPTION section, change from:

Values of this type shall be cast by applications to struct sockaddr for use with socket functions.

to:

Pointers to this type shall be cast by applications to struct sockaddr * for use with socket functions.

Rationale: Austin Group Defect Report(s) applied: 355.
See http://austingroupbugs.net/view.php?id=355

Change Number: XBD/TC1/D5/0075 [357,427]

On Page: 418 Line: 13996 Section: <tgmath.h>

In the DESCRIPTION section, in the table at L13996-13997, scalbln() should sort before scalbn().

Rationale: Austin Group Defect Report(s) applied: 357,427.
See http://austingroupbugs.net/view.php?id=357
See http://austingroupbugs.net/view.php?id=427

Change Number: XBD/TC1/D5/0076 [212]

On Page: 422 Line: 14153 Section: <time.h>

In the DESCRIPTION section, add the CX margin marker notation and shading to L14153-14155. (The <time.h> header.... TIMER_ABSTIME ...)

Rationale: Austin Group Defect Report(s) applied: 212.
See http://austingroupbugs.net/view.php?id=212

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Change Number: XBD/TC1/D5/0077 [212]

On Page: 422 Line: 14159 Section: <time.h>

In the DESCRIPTION section, change from:

... a progrm defines ...

to:

... a program defines ...

Rationale: Austin Group Defect Report(s) applied: 212.
See http://austingroupbugs.net/view.php?id=212
This is an editorial correction.

Change Number: XBD/TC1/D5/0078 [311]

On Page: 430 Line: 14446 Section: <unistd.h>

In the DESCRIPTION section, after:

For implementations conforming to POSIX.1-2008, the value shall be 200809L.

add (to the same paragraph):

For profile implementations that define _POSIX_SUBPROFILE (see Section 2.1.5.1) in <unistd.h>, _POSIX2_VERSION may be left undefined or be defined with the value -1 to indicate that the Shell and Utilities volume is not supported. In this case a call to sysconf(_SC_2_VERSION) shall return either 200809L or -1 indicating that the Shell and Utilities volume is or is not, respectively, supported at runtime.

At L14455 after:

The following symbolic constants, if defined in <unistd.h>, shall have a value of -1, 0, or greater, unless otherwise specified below.

add:

For profile implementations that define _POSIX_SUBPROFILE (see Section 2.1.5.1) in <unistd.h>, constants described below as always having a value greater than zero need not be defined and, if defined, may have a value of -1, 0, or greater.

Rationale: Austin Group Defect Report(s) applied: 311.
See http://austingroupbugs.net/view.php?id=311

Change Number: XBD/TC1/D5/0079 [209]

On Page: 439-440 Line: 14870-14875 Section: <unistd.h>

In the DESCRIPTION section, add the XSI margin marker and shading for L14870 to 14875 (symbolic constants F_LOCK ... F_ULOCK).

Rationale: Austin Group Defect Report(s) applied: 209.
See http://austingroupbugs.net/view.php?id=209

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Change Number: XBD/TC1/D5/0080 [360]

On Page: 443 Line: 15048 Section: <unistd.h>

In the DESCRIPTION section, delete L15048 (ctermid() declaration in XBD <unistd.h>).

At L15124 (<unistd.h>), add a sentence:

Implementations may also include the ctermid() prototype as defined in <stdio.h>.

Tag the entire paragraph starting on L15124 including the above new sentence with the OB margin marking.

Rationale: Austin Group Defect Report(s) applied: 360.
See http://austingroupbugs.net/view.php?id=360
Some implementations have had a declaration for ctermid() and this should still be allowed in Issue 7. Having ctermid() and pthread_atfork() prototypes in <unistd.h>, however, are namespace pollution issues that should be corrected in the next revision.

Change Number: XBD/TC1/D5/0081 [380]

On Page: 455 Line: 15531-15532 Section: <wchar.h>

In the DESCRIPTION section,in the wcpcpy() and wcpncpy() prototype declarations change from:

restrict*

to:

*restrict

Rationale: Austin Group Defect Report(s) applied: 380.
See http://austingroupbugs.net/view.php?id=380

2. Changes to System Interfaces

This section contains the set of changes to the text of the System Interfaces.

[*Note to reviewers: References to defect reports are provided to aid reviewers.*]

Change Number: XSH/TC1/D5/0001 [316]

On Page: 477 Line: 16210 Section: 2.3 Error Numbers

Change from:

The ERRORS section on each reference page specifies which error conditions shall be detected by all implementations ("shall fail") and which may be optionally detected by an implementation ("may fail"). If no error condition is detected, the action requested shall be successful.

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to:

The ERRORS section on each reference page specifies which error conditions shall be detected by all implementations ("shall fail") and which may be optionally detected by an implementation ("may fail"). If no error condition is detected, the action requested shall be successful. If an error condition is detected, the action requested may have been partially performed, unless otherwise stated.

Rationale: Austin Group Defect Report(s) applied: 316.
See http://austingroupbugs.net/view.php?id=316

Change Number: XSH/TC1/D5/0002 [146]

On Page: 482 Line: 16419 Section: 2.3 Error Numbers

For the [ENOTDIR] description, change from:

[ENOTDIR] Not a directory. A component of the specified pathname exists, but it is not a directory, when a directory was expected.

to:

[ENOTDIR] Not a directory. A component of the specified pathname exists, but it is not a directory, when a directory was expected; or an attempt was made to create a non-directory file, and the specified pathname contains at least one non-<slash> character and ends with one or more trailing <slash> characters.

Rationale: Austin Group Defect Report(s) applied: 146.
See http://austingroupbugs.net/view.php?id=146

Change Number: XSH/TC1/D5/0003 [112]

On Page: 482 Line: 16430 Section: 2.3 Error Numbers

Change from:

[ENOTSUP] Not supported. The implementation does not support this feature of the Realtime Option Group.

to:

[ENOTSUP] Not supported. The implementation does not support the requested feature or value.

Rationale: Austin Group Defect Report(s) applied: 112.
See http://austingroupbugs.net/view.php?id=112

Change Number: XSH/TC1/D5/0004 [77]

On Page: 485 Line: 16549 Section: 2.4.1 Signal Generation and Delivery

Change from:

When any stop signal (SIGSTOP, SIGTSTP, SIGTTIN, SIGTTOU) is generated for a process, any pending SIGCONT signals for that process shall be

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discarded. Conversely, when SIGCONT is generated for a process, all pending stop signals for that process shall be discarded. When SIGCONT is generated for a process that is stopped, the process shall be continued, even if the SIGCONT signal is blocked or ignored. If SIGCONT is blocked and not ignored, it shall remain pending until it is either unblocked or a stop signal is generated for the process.

to:

When any stop signal (SIGSTOP, SIGTSTP, SIGTTIN, SIGTTOU) is generated for a process or thread, all pending SIGCONT signals for that process or any of the threads within that process shall be discarded. Conversely, when SIGCONT is generated for a process or thread, all pending stop signals for that process or any of the threads within that process shall be discarded. When SIGCONT is generated for a process that is stopped, the process shall be continued, even if the SIGCONT signal is ignored by the process or is blocked by all threads within the process and there are no threads in a call to a sigwait() function selecting SIGCONT. If SIGCONT is blocked by all threads within the process, there are no threads in a call to a sigwait() function selecting SIGCONT, and SIGCONT is not ignored by the process, the SIGCONT signal shall remain pending on the process until it is either unblocked by a thread or a thread calls a sigwait() function selecting SIGCONT, or a stop signal is generated for the process or any of the threads within the process.

Rationale: Austin Group Defect Report(s) applied: 77.
See http://austingroupbugs.net/view.php?id=77

Change Number: XSH/TC1/D5/0005 [66]

On Page: 489 Line: 16717 Section: 2.4.3 Signal Actions

In the section "Pointer to a Function", change from:

When signal-catching functions are invoked asynchronously with process execution, the behavior of some of the functions defined by this volume of POSIX.1-200x is unspecified if they are called from a signal-catching function.

to:

If the process is multi-threaded, or if the process is single threaded and a signal handler is executed other than as the result of:

* The process calling abort(), raise(), kill(), pthread_kill(), or sigqueue() to generate a signal that is not blocked

* A pending signal being unblocked and being delivered before the call that unblocked it returns

the behavior is undefined if the signal handler refers to any object other than errno with static storage duration other than by assigning a value to an object declared as volatile sig_atomic_t, or if the signal handler calls any function defined in this standard other than one of the functions listed in the following table.

Rationale: Austin Group Defect Report(s) applied: 66.
See http://austingroupbugs.net/view.php?id=66

Change Number: XSH/TC1/D5/0006 [102]

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On Page: 489 Line: 16722 Section: 2.4.3 Signal Actions

Add pthread_self() and pthread_kill() to the list of async-signal-safe functions.

Rationale: Austin Group Defect Report(s) applied: 102.
See http://austingroupbugs.net/view.php?id=102

Change Number: XSH/TC1/D5/0007 [103]

On Page: 489 Line: 16722 Section: 2.4.3 Signal Actions

Add pthread_sigmask() to the list of async-signal-safe functions.

Rationale: Austin Group Defect Report(s) applied: 103.
See http://austingroupbugs.net/view.php?id=103

Change Number: XSH/TC1/D5/0008 [234]

On Page: 489 Line: 16750 Section: 2.4.3 Signal Actions

In the table of functions that shall be async-signal-safe, add fchdir() to the list.

Rationale: Austin Group Defect Report(s) applied: 234.
See http://austingroupbugs.net/view.php?id=234

Change Number: XSH/TC1/D5/0009 [312]

On Page: 492 Line: 16878 Section: 2.5.1 Interaction of File Descriptors and Standard I/O Streams

Delete the text:

Otherwise, the result is undefined.

Rationale: Austin Group Defect Report(s) applied: 312.
See http://austingroupbugs.net/view.php?id=312
Since L16842-16843 cover both handles, it is clear that the statements on L16878 and L16893 are redundant (as well as contradictory).

Change Number: XSH/TC1/D5/0010 [312]

On Page: 493 Line: 16893 Section: 2.5.1 Interaction of File Descriptors and Standard I/O Streams

Delete the text:

If the rules above are not followed, the result is unspecified.

Rationale: Austin Group Defect Report(s) applied: 312.
See http://austingroupbugs.net/view.php?id=312
Since L16842-16843 cover both handles, it is clear that the

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statements on L16878 and L16893 are redundant (as well as contradictory).

Change Number: XSH/TC1/D5/0011 [345,428]

On Page: 497 Line: 17067 Section: 2.7.1 IPC General Description

Add a new paragraph:

In addition to the ipc_perm structure, each associated data structure includes several time_t fields for recording timestamps of particular operations. When an operation is described as setting a timestamp to the current time, that particular timestamp member of the associated data structure shall be set to the largest time_t value which is not greater than the current time.

Rationale: Austin Group Defect Report(s) applied: 345,428.
See http://austingroupbugs.net/view.php?id=345
See http://austingroupbugs.net/view.php?id=428

Change Number: XSH/TC1/D5/0012 [109,429]

On Page: 507 Line: 17490 Section: 2.9.1 Thread-Safety

Add mblen() and mbtowc() in alphabetic order to the list of functions that need not be thread-safe in the table on P507 L17490-17510; remove wcstombs() from the same table.

On L17511, change from:

The wcrtomb() and wcsrtombs() functions need not be thread-safe if passed a NULL ps argument.

to:

The mbrlen(), mbrtowc(), mbsnrtowcs(), mbsrtowcs(), wcrtomb(), wcsnrtombs(), and wcsrtombs() functions need not be thread-safe if passed a NULL ps argument.

Rationale: Austin Group Defect Report(s) applied: 109,429.
See http://austingroupbugs.net/view.php?id=109
See http://austingroupbugs.net/view.php?id=429

Change Number: XSH/TC1/D5/0013 [89]

On Page: 508 Line: 17536-17542 Section: 2.9.3 Thread Mutexes

On L17536-L17538, change from:

* It returns successfully from [...] with m as the mutex argument.

to:

* It calls [...] with m as the mutex argument and the call returns zero or EOWNERDEAD.

On L17538 (after the 3rd bullet item) add a new bullet item:

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* It calls pthread_mutex_setprioceiling() with m as the mutex argument and the call returns [EOWNERDEAD].

On L17539-17542 (last 2 bullet items), change from:

* It returns (successfully or not) from pthread_cond_wait() with m as the mutex argument (except as explicitly indicated otherwise for certain errors).

* It returns (successfully or not) from pthread_cond_timedwait() with m as the mutex argument (except as explicitly indicated otherwise for certain errors).

to:

* It calls pthread_cond_wait() with m as the mutex argument and the call returns zero or certain error numbers (see pthread_cond_timedwait()).

* It calls pthread_cond_timedwait() with m as the mutex argument and the call returns zero or certain error numbers (see pthread_cond_timedwait()).

Rationale: Austin Group Defect Report(s) applied: 89.
See http://austingroupbugs.net/view.php?id=89

Change Number: XSH/TC1/D5/0014 [410]

On Page: 514 Line: 17760 Section: 2.9.5.2 Cancellation Points

Add strerror_l() to the list, between strerror() and strerror_r().

Add strftime_l() to the list, between strftime() and symlink().

Rationale: Austin Group Defect Report(s) applied: 410.
See http://austingroupbugs.net/view.php?id=410

Change Number: XSH/TC1/D5/0015 [376]

On Page: 540 Line: 18820 Section: 2.12.1 Defined Types

In the table, change from:

dev_t Arithmetic type used for device numbers.

to:

dev_t Integer type used for device numbers.

Rationale: Austin Group Defect Report(s) applied: 376.
See http://austingroupbugs.net/view.php?id=376

Change Number: XSH/TC1/D5/0016 [327]

On Page: 541 Line: 18867 Section: 2.12.1 Defined Types

Change from:

time_t Integer or real-floating type used for time in seconds, as defined

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in the ISO C standard.

to:

time_t Integer type used for time in seconds, as defined in the ISO C standard.

Rationale: Austin Group Defect Report(s) applied: 327.
See http://austingroupbugs.net/view.php?id=327

Change Number: XSH/TC1/D5/0017 [74]

On Page: 541 Line: 18881-18886 Section: 2.12.3 Pointer Types

Delete Section 2.12.3:

2.12.3 Pointer Types

All function pointer types shall have the same representation as the type pointer to void. Conversion of a function pointer to void * shall not alter the representation. A void * value resulting from such a conversion can be converted back to the original function pointer type, using an explicit cast, without loss of information.

Note: The ISO C standard does not require this, but it is required for POSIX conformance.

Rationale: Austin Group Defect Report(s) applied: 74.
See http://austingroupbugs.net/view.php?id=74

Change Number: XSH/TC1/D5/0018 [464]

On Page: 559 Line: 19380 Section: accept()

In the DESCRIPTION section, change from:

address_len Points to a socklen_t structure ...

to:

address_len Either a null pointer, if address is a null pointer, or a pointer to a socklen_t object ...

Rationale: Austin Group Defect Report(s) applied: 464.
See http://austingroupbugs.net/view.php?id=464

Change Number: XSH/TC1/D5/0019 [461]

On Page: 561 Line: 19464 Section: access()

In the DESCRIPTION section, change from:

... the current working directory is used ...

to:

... the current working directory shall be used ...

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Rationale: Austin Group Defect Report(s) applied: 461.
See http://austingroupbugs.net/view.php?id=461

Change Number: XSH/TC1/D5/0020 [324]

On Page: 561 Line: 19482 Section: access()

In the ERRORS section, for the [ENOTDIR] error, change from:

A component of the path prefix is not a directory, ...

to:

A component of the path prefix names an existing file that is neither a directory nor a symbolic link to a directory, ...

Rationale: Austin Group Defect Report(s) applied: 324.
See http://austingroupbugs.net/view.php?id=324
This is an editorial issue clarifying the intent of the standard.

Change Number: XSH/TC1/D5/0021 [278]

On Page: 562 Line: 19491 access()

In the ERRORS section, add (after the [EBADF] error):

[ENOTDIR] The path argument is not an absolute path and fd is a file descriptor associated with a non-directory file.

Rationale: Austin Group Defect Report(s) applied: 278.
See http://austingroupbugs.net/view.php?id=278

Change Number: XSH/TC1/D5/0022 [278]

On Page: 562 Line: 19504 Section: access()

In the ERRORS section, delete:

[ENOTDIR] The path argument is not an absolute path and fd is neither AT_FDCWD nor a file descriptor associated with a directory.

Rationale: Austin Group Defect Report(s) applied: 278.
See http://austingroupbugs.net/view.php?id=278

Change Number: XSH/TC1/D5/0023 [291]

On Page: 562 Line: 19512-19513 Section: access()

In the EXAMPLES section, change both instances of "filename" to "pathname".

Rationale: Austin Group Defect Report(s) applied: 291.
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Change Number: XSH/TC1/D5/0024 [320]

On Page: 564 Line: 19589 Section: acos()

Change:

... and either a NaN (if supported), or an implementation-defined value shall be returned.

to:

... and a NaN shall be returned.

Rationale: Austin Group Defect Report(s) applied: 320.
See http://austingroupbugs.net/view.php?id=320

Change Number: XSH/TC1/D5/0025 [320]

On Page: 566 Line: 19645 Section: acosh()

In the RETURN VALUE section, change from:

... and either a NaN (if supported), or an implementation-defined value shall be returned.

to:

... and a NaN shall be returned.

Rationale: Austin Group Defect Report(s) applied: 320.
See http://austingroupbugs.net/view.php?id=320

Change Number: XSH/TC1/D5/0026 [98]

On Page: 573 Line: 19785 Section: aio_fsync()

In the SYNOPSIS section, shade the synopsis and add the margin code FSC|SIO.

On L19788, in the DESCRIPTION section, change from:

The aio_fsync() function shall asynchronously force all I/O operations associated with the file indicated by the file descriptor aio_fildes member of the aiocb structure referenced by the aiocbp argument and queued at the time of the call to aio_fsync() to the synchronized I/O completion state.

to:

The aio_fsync() function shall asynchronously perform a file synchronization operation, as specified by the op argument, for I/O operations associated with the file indicated by the file descriptor aio_fildes member of the aiocb structure referenced by the aiocbp argument and queued at the time of the call to aio_fsync().

On L19793, in the DESCRIPTION section, add SIO shading to:

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If op is O_DSYNC, all currently queued I/O operations shall be completed as if by a call to fdatasync(); that is, as defined for synchronized I/O data integrity completion.

On L19794, in the DESCRIPTION section, add FSC shading to:

If op is O_SYNC, all currently queued I/O operations shall be completed as if by a call to fsync();

and add FSC SIO shading to:

... that is, as defined for synchronized I/O file integrity completion.

On L19797, in the DESCRIPTION section, change from:

... operation queued by aio_fsync() fails, then, as for fsync() and fdatasync(), outstanding I/O operations are not guaranteed to have been completed.

to:

... operation queued by aio_fsync() fails, then outstanding I/O operations are not guaranteed to have been completed.

On L19825, in the ERRORS section, add SIO shading to:

[EINVAL] This implementation does not support synchronized I/O for this file.

and add another [EINVAL] error after it, shaded FSC:

[EINVAL] The aio_fildes member of the aiocb structure refers to a file on which an fsync() operation is not possible.

Rationale: Austin Group Defect Report(s) applied: 98.
See http://austingroupbugs.net/view.php?id=98

Change Number: XSH/TC1/D5/0027 [98]

On Page: 574 Line: 19826 Section: aio_fsync()

In the ERRORS section, change from:

[EINVAL] A value of op other than O_DSYNC or O_SYNC was specified.

to:

[EINVAL] A value of op other than O_DSYNC or O_SYNC was specified, or O_DSYNC was specified and the implementation does not provide runtime support for the Synchronized Input and Output option, or O_SYNC was specified and the implementation does not provide runtime support for the File Synchronization option.

On L19829, in the ERRORS section, change from:

The error is returned in the error status for the asynchronous fsync() operation.

to:

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