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Preface

This document lists the functions, constant, macros, feature flags, and types defined in the POSIX 1003.1 standard. Each section in this document corresponds to a section in the 1003.1 standard and the implementation status of the items required by the standard are listed.

RTEMS supports a number of POSIX process, user, and group oriented routines in what is referred to as a "SUSP" (Single-User, Single Process) manner. RTEMS supports a single process, multithreaded POSIX 1003.1b environment. In a pure world, there would be no reason to even include routines like `getpid()` when there can only be one process. But providing routines like `getpid()` and making them work in a sensible fashion for an embedded environment while not returning ENOSYS (for not implemented) makes it significantly easier to port code from a UNIX environment without modifying it.
Chapter 1: General

1 General

1.1 Scope

1.2 Normative References

1.3 Conformance

NGROUPS_MAX, Feature Flag,
_POSIXASYNCHRONOUSIO, Feature Flag,
_POSIXCHOWNRESTRICTED, Feature Flag,
_POSIXFSYNC, Feature Flag,
_POSIXJOBCONTROL, Feature Flag,
_POSIXMAPPEDFILES, Feature Flag,
_POSIXMEMLOCK, Feature Flag,
_POSIXMEMLOCK RANGE, Feature Flag,
_POSIXMEMORYPROTECTION, Feature Flag,
_POSIXMESSAGEPASSING, Feature Flag,
_POSIXPRIORITIZEDIO, Feature Flag,
_POSIXPRIORITY_SCHEDULING, Feature Flag,
_POSIXREALTIMESIGNALS, Feature Flag,
_POSIXSEMAPHORES, Feature Flag,
_POSIXSHARED_MEMORYOBJECTS, Feature Flag,
_POSIXSYNCHRONIZEDIO, Feature Flag,
_POSIXTIMERS, Feature Flag,
_POSIXTHREADPRIOINHERIT, Feature Flag,
_POSIXTHREADPRIOITY_SCHEDULING, Feature Flag,
_POSIXTHREADS, Feature Flag,
_POSIXTHREADSAFE_FUNCTIONS, Feature Flag,
2 Terminology and General Requirements

2.1 Conventions

2.2 Definitions

2.3 General Concepts

2.4 Error Numbers

E2BIG, Constant, Implemented
EACCES, Constant, Implemented
EAGAIN, Constant, Implemented
EBADF, Constant, Implemented
EBADMSG, Constant, Implemented
EBUSY, Constant, Implemented
ECANCELED, Constant, Unimplemented
ECHILD, Constant, Implemented
EDEADLK, Constant, Implemented
EDOM, Constant, Implemented
EEXIST, Constant, Implemented
EFAULT, Constant, Implemented
EINTR, Constant, Implemented
EINVAL, Constant, Implemented
EINVAL, Constant, Implemented
EIO, Constant, Implemented
ENAMETOOLONG, Constant, Implemented
ENFILE, Constant, Implemented
ENOEXEC, Constant, Implemented
ENOENT, Constant, Implemented
ENOLCK, Constant, Implemented
ENOMEM, Constant, Implemented
ENOSPC, Constant, Implemented
ENOSYS, Constant, Implemented
ENOTDIR, Constant, Implemented
ENOTEMPTY, Constant, Implemented
ENOTSUP, Constant, Implemented
ENOTTY, Constant, Implemented
ENXIO, Constant, Implemented
EPERM, Constant, Implemented
2.5 Primitive System Types

dev_t, Type, Implemented
gid_t, Type, Implemented
ino_t, Type, Implemented
mode_t, Type, Implemented
nlink_t, Type, Implemented
off_t, Type, Implemented
pid_t, Type, Implemented
pthread_t, Type, Implemented
pthread_attr_t, Type, Implemented
pthread_mutex_t, Type, Implemented
pthread_mutex_attr_t, Type, Implemented
pthread_cond_t, Type, Implemented
pthread_cond_attr_t, Type, Implemented
pthread_key_t, Type, Implemented
pthread_once_t, Type, Implemented
size_t, Type, Implemented
ssize_t, Type, Implemented
time_t, Type, Implemented
uid_t, Type, Implemented

NOTE: time_t is not listed in this section but is used by many functions.

2.6 Environment Description

2.7 C Language Definitions

2.7.1 Symbols From the C Standard

NULL, Constant, Implemented

2.7.2 POSIX.1 Symbols

_POSIX_C_SOURCE, Feature Flag,

2.8 Numerical Limits

2.9 C Language Limits

CHAR_BIT, Constant, Implemented
CHAR_MAX, Constant, Implemented
CHAR_MIN, Constant, Implemented
INT_MAX, Constant, Implemented
INT_MIN, Constant, Implemented
LONG_MAX, Constant, Implemented
LONG_MIN, Constant, Implemented
MB_LEN_MAX, Constant, Implemented
SCHAR_MAX, Constant, Implemented
SCHAR_MIN, Constant, Implemented
SHRT_MAX, Constant, Implemented
SHRT_MIN, Constant, Implemented
UCHAR_MAX, Constant, Implemented
UINT_MAX, Constant, Implemented
ULONG_MAX, Constant, Implemented
USHRT_MAX, Constant, Implemented

NOTE: These are implemented in GCC’s limits.h file.

2.9.1 Minimum Values

_POSIX_AIO_LISTIO_MAX, Constant, Implemented
_POSIX_AIO_MAX, Constant, Implemented
_POSIX_ARG_MAX, Constant, Implemented
_POSIX_CHILD_MAX, Constant, Implemented
_POSIX_DELAYTIMER_MAX, Constant, Implemented
_POSIX_LINK_MAX, Constant, Implemented
_POSIX_LOGIN_NAME_MAX, Constant, Implemented
_POSIX_MAX_CANON, Constant, Implemented
_POSIX_MAX_INPUT, Constant, Implemented
_POSIX_MQ_OPEN_MAX, Constant, Implemented
_POSIX_MQ_PRIO_MAX, Constant, Implemented
_POSIX_NAME_MAX, Constant, Implemented
_POSIX_NGROUPS_MAX, Constant, Implemented
_POSIX_OPEN_MAX, Constant, Implemented
_POSIX_PATH_MAX, Constant, Implemented
_POSIX_PIPE_BUF, Constant, Implemented
_POSIX_RTSIG_MAX, Constant, Implemented
_POSIX_SEM_NSEMS_MAX, Constant, Implemented
_POSIX_SEM_VALUE_MAX, Constant, Implemented
_POSIX_SIGQUEUE_MAX, Constant, Implemented
_POSIX_SSIZE_MAX, Constant, Implemented
_POSIX_STREAM_MAX, Constant, Implemented
_POSIX_THREAD_DESTRUCTOR_ITERATIONS, Constant, Implemented
_POSIX_THREAD_KEYS_MAX, Constant, Implemented
_POSIX_THREAD_THREADS_MAX, Constant, Implemented
_POSIX_TTY_NAME_MAX, Constant, Implemented
_POSIX_TIME_MAX, Constant, Implemented
_POSIX_TZNAME_MAX, Constant, Implemented
2.9.2 Run-Time Increasable Values

_POSIX_NGROUPS_MAX, Constant, Implemented

2.9.3 Run-Time Invariant Values (Possible Indeterminate)

AIO_LISTIO_MAX, Constant, Implemented
AIO_MAX, Constant, Implemented
AIO_PRIO_DELTA_MAX, Constant, Implemented
ARG_MAX, Constant, Implemented
CHILD_MAX, Constant, Implemented
DELAYTIMER_MAX, Constant, Implemented
LOGIN_NAME_MAX, Constant, Implemented
MQ_OPEN_MAX, Constant, Implemented
OPEN_MAX, Constant, Implemented
PAGESIZE, Constant, Implemented
PTHREAD_DESTRUCTOR_ITERATIONS, Constant, Implemented
PTHREAD_KEYS_MAX, Constant, Implemented
PTHREAD_STACK_MIN, Constant, Implemented
PTHREAD_THREADS_MIN, Constant, Implemented
RTSIGN_MAX, Constant, Implemented
SEM_NSEMS_MAX, Constant, Implemented
SEM_VALUE_MAX, Constant, Implemented
SIGQUEUE_MAX, Constant, Implemented
STREAM_MAX, Constant, Implemented
TIMER_MAX, Constant, Implemented
TTY_NAME_MAX, Constant, Implemented
TZNAME_MAX, Constant, Implemented

2.9.4 Pathname Variable Values

LINK_MAX, Constant, Implemented
MAX_CANON, Constant, Implemented
MAX_INPUT, Constant, Implemented
NAME_MAX, Constant, Implemented
PATH_MAX, Constant, Implemented
PIPE_BUF, Constant, Implemented

2.9.5 Invariant Values

SSIZE_MAX, Constant, Implemented

2.9.6 Maximum Values

_POSIX_CLOCKRES_MIN, Constant, Implemented

2.10 Symbolic Constants

2.10.1 Symbolic Constants for the access Function

R_OK, Constant, Implemented
W_OK, Constant, Implemented
X_OK, Constant, Implemented
F_OK, Constant, Implemented

2.10.2 Symbolic Constants for the lseek Function
SEEK_SET, Constant, Implemented
SEEK_CUR, Constant, Implemented
SEEK_END, Constant, Implemented

2.10.3 Compile-Time Symbolic Constants for Portability Specifications
_POSIX_ASYNCHRONOUS_IO, Feature Flag,
_POSIX_FSYNC, Feature Flag,
_POSIX_JOB_CONTROL, Feature Flag,
_POSIX_MAPPED_FILES, Feature Flag,
_POSIX_MEMLOCK, Feature Flag,
_POSIX_MEMLOCK_RANGE, Feature Flag,
_POSIX_MEMORY_PROTECTION, Feature Flag,
_POSIX_MESSAGE_PASSING, Feature Flag,
_POSIX_PRIORITIZED_IO, Feature Flag,
_POSIX_PRIORITY_SCHEDULING, Feature Flag,
_POSIX_REALTIME_SIGNALS, Feature Flag,
_POSIX_SAVED_IDS, Feature Flag,
_POSIX_SEMAPHORES, Feature Flag,
_POSIX_SHARED_MEMORY_OBJECTS, Feature Flag,
_POSIX_SYNCHRONIZED_IO, Feature Flag,
_POSIX_THREADS, Feature Flag,
_POSIX_THREAD_ATTR_STACKADDR, Feature Flag,
_POSIX_THREAD_ATTR_STACKSIZE, Feature Flag,
_POSIX_THREAD_PRIORITY_SCHEDULING, Feature Flag,
_POSIX_THREAD_PRIO_INHERIT, Feature Flag,
_POSIX_THREAD_PRIO_CEILING, Feature Flag,
_POSIX_THREAD_PROCESS_SHARED, Feature Flag,
_POSIX_THREAD_SAFE_FUNCTIONS, Feature Flag,
_POSIX_TIMERS, Feature Flag,
_POSIX_VERSION, Feature Flag,

2.10.4 Execution-Time Symbolic Constants for Portability Specifications
_POSIX_ASYNC_IO, Feature Flag,
_POSIX_CHOWN_RESTRICTED, Feature Flag,
_POSIX_NO_TRUNC, Feature Flag,
_POSIX_PRIO_IO, Feature Flag,
_POSIX_SYNC_IO, Feature Flag,
_POSIX_VDISABLE, Feature Flag,
3 Process Primitives

3.1 Process Creation and Execution

3.1.1 Process Creation
fork(), Function, Unimplementable, Requires Processes

3.1.2 Execute a File
excl(), Function, Unimplementable, Requires Processes
execv(), Function, Unimplementable, Requires Processes
execle(), Function, Unimplementable, Requires Processes
execve(), Function, Unimplementable, Requires Processes
execvp(), Function, Unimplementable, Requires Processes
execlp(), Function, Unimplementable, Requires Processes

3.1.3 Register Fork Handlers
pthread_atfork(), Function, Unimplementable, Requires Processes

3.2 Process Termination

3.2.1 Wait for Process Termination
wait(), Function, Unimplementable, Requires Processes
waitpid(), Function, Unimplementable, Requires Processes
WNOHANG, Constant, Unimplementable, Requires Processes
WUNTRACED, Constant, Unimplementable, Requires Processes
WIFEXITED(), Function, Unimplementable, Requires Processes
WEXITSTATUS(), Function, Unimplementable, Requires Processes
WIFSIGNALED(), Function, Unimplementable, Requires Processes
WTERMSIG(), Function, Unimplementable, Requires Processes
WIFSTOPPED(), Function, Unimplementable, Requires Processes
WSTOPSIG(), Function, Unimplementable, Requires Processes

3.2.2 Terminate a Process
_exit(), Function, Implemented

3.3 Signals

3.3.1 Signal Concepts

3.3.1.1 Signal Names
sigset_t, Type, Implemented
SIG_DFL, Constant, Implemented
SIG_IGN, Constant, Implemented
SIG_ERR, Constant, Implemented
SIGABRT, Constant, Implemented
SIGALRM, Constant, Implemented
SIGFPE, Constant, Implemented
SIGHUP, Constant, Implemented
SIGILL, Constant, Implemented
SIGINT, Constant, Implemented
SIGKILL, Constant, Implemented
SIGPIPE, Constant, Implemented
SIGQUIT, Constant, Implemented
SIGSEGV, Constant, Implemented
SIGTERM, Constant, Implemented
SIGUSR1, Constant, Implemented
SIGUSR2, Constant, Implemented
SIGCHLD, Constant, Unimplemented
SIGCONT, Constant, Unimplemented
SIGSTOP, Constant, Unimplemented
SIGTSTP, Constant, Unimplemented
SIGTTIN, Constant, Unimplemented
SIGTTOU, Constant, Unimplemented
SIGBUS, Constant, Implemented
SIGRTMIN, Constant, Implemented
SIGRTMAX, Constant, Implemented

NOTE: SIG_ERR is technically an extension to the C Library which is not documented anywhere else according to the index.

3.3.1.2 Signal Generation and Delivery

struct sigevent, Type, Implemented
union sigval, Type, Implemented
SIGEV_NONE, Constant, Implemented
SIGEV_SIGNAL, Constant, Implemented
SIGEV_THREAD, Constant, Implemented

3.3.1.3 Signal Actions

siginfo_t, Type, Implemented
SI_USER, Constant, Implemented
SI_QUEUE, Constant, Implemented
SI_TIMER, Constant, Implemented
SI_ASYNCIO, Constant, Implemented
SI_MESGQ, Constant, Implemented

3.3.2 Send a Signal to a Process

kill(), Function, Implemented

3.3.3 Manipulate Signal Sets

sigemptyset(), Function, Implemented
sigfillset(), Function, Implemented
sigaddset(), Function, Implemented
3.3.4 Examine and Change Signal Action

sigaction(), Function, Implemented
sigaction, Type, Implemented
SA_NOCLDSTOP, Constant, Implemented
SA_SIGINFO, Constant, Implemented

3.3.5 Examine and Change Blocked Signals

pthread_sigmask(), Function, Implemented
sigprocmask(), Function, Implemented
SIG_BLOCK, Constant, Implemented
SIG_UNBLOCK, Constant, Implemented
SIG_SETMASK, Constant, Implemented

3.3.6 Examine Pending Signals

sigpending(), Function, Implemented

3.3.7 Wait for a Signal

sigsuspend(), Function, Implemented

3.3.8 Synchronously Accept a Signal

sigwait(), Function, Implemented
sigwaitinfo(), Function, Implemented
sigtimedwait(), Function, Implemented

3.3.9 Queue a Signal to a Process

sigqueue(), Function, Implemented

3.3.10 Send a Signal to a Thread

pthread_kill(), Function, Implemented

3.4 Timer Operations

3.4.1 Schedule Alarm

alarm(), Function, Implemented

3.4.2 Suspend Process Execution

pause(), Function, Implemented

3.4.3 Delay Process Execution

sleep(), Function, Implemented
4 Process Environment

4.1 Process Identification

4.1.1 Get Process and Parent Process IDs
    getpid(), Function, Implemented, SUSP Functionality
    getppid(), Function, Implemented, SUSP Functionality

4.2 User Identification

4.2.1 Get Real User Effective User Real Group and Effective Group IDs
    getuid(), Function, Implemented, SUSP Functionality
    geteuid(), Function, Implemented, SUSP Functionality
    getgid(), Function, Implemented, SUSP Functionality
    getegid(), Function, Implemented, SUSP Functionality

4.2.2 Set User and Group IDs
    setuid(), Function, Implemented, SUSP Functionality
    setgid(), Function, Implemented, SUSP Functionality

4.2.3 Get Supplementary Group IDs
    getgroups(), Function, Implemented, SUSP Functionality

4.2.4 Get User Name
    getlogin(), Function, Implemented, SUSP Functionality
    getlogin_r(), Function, Implemented, SUSP Functionality

4.3 Process Groups

4.3.1 Get Process Group ID
    getpgrp(), Function, Implemented, SUSP Functionality

4.3.2 Create Session and Set Process Group ID
    setsid(), Function, Implemented, SUSP Functionality

4.3.3 Set Process Group ID for Job Control
    setpgid(), Function, Dummy Implementation

4.4 System Identification

4.4.1 Get System Name
    struct utsname, Type, Implemented
    uname(), Function, Implemented
4.5 Time

4.5.1 Get System Time

time(), Function, Implemented

4.5.2 Get Process Times

struct tms, Type, Implemented
times(), Function, Implemented

NOTE: times always returns 0 for tms.stime, tms.cutime, and tms.cstime fields of the struct tms returned.

4.6 Environment Variables

4.6.1 Environment Access

getenv(), Function, Implemented

4.7 Terminal Identification

4.7.1 Generate Terminal Pathname

ctermid(), Function, Implemented

4.7.2 Determine Terminal Device Name

ttyname(), Function, Implemented, untested
ttyname_r(), Function, Implemented, untested
isatty(), Function, Implemented

4.8 Configurable System Variables

4.8.1 Get Configurable System Variables

sysconf(), Function, Dummy Implementation
_SC_AIO_LISTIO_MAX, Constant, Implemented
_SC_AIO_MAX, Constant, Implemented
_SC_AIO_PRIO_DELTA_MAX, Constant, Implemented
_SC_ARG_MAX, Constant, Implemented
_SC_CHILD_MAX, Constant, Implemented
_SC_CLK_TCK, Constant, Implemented
CLK_TCK, Constant, Implemented
_SC_DELAYTIMER_MAX, Constant, Implemented
_SC_GETGR_R_SIZE_MAX, Constant, Implemented
_SC_GETPW_R_SIZE_MAX, Constant, Implemented
_SC_LOGIN_NAME_MAX, Constant, Implemented
_SC_MQ_OPEN_MAX, Constant, Implemented
_SC_MQ_PRIO_MAX, Constant, Implemented
_SC_NGROUPS_MAX, Constant, Implemented
_SC_OPEN_MAX, Constant, Implemented
_SC_PAGESIZE, Constant, Implemented
_SC_RTSIG_MAX, Constant, Implemented
_SC_SEM_NSEMS_MAX, Constant, Implemented
_SC_SEM_VALUE_MAX, Constant, Implemented
_SC_SIGQUEUE_MAX, Constant, Implemented
_SC_STREAM_MAX, Constant, Implemented
_SC_THREAD_DESTRUCTOR_ITERATIONS, Constant, Implemented
_SC_THREAD_KEYS_MAX, Constant, Implemented
_SC_THREAD_STACK_MIN, Constant, Implemented
_SC_THREAD_THREADS_MAX, Constant, Implemented
_SC_TIMER_MAX, Constant, Implemented
_SC_TTY_NAME_MAX, Constant, Implemented
_SC_TZNAME_MAX, Constant, Implemented
_SCASYNCHRONOUS_IO, Constant, Implemented
_SC_FSYNC, Constant, Implemented
_SC_JOB_CONTROL, Constant, Implemented
_SC_MAPPED_FILES, Constant, Implemented
_SC_MEMLOCK, Constant, Implemented
_SC_MEMLOCK_RANGE, Constant, Implemented
_SC_MEMORY_PROTECTION, Constant, Implemented
_SC_MESSAGE_PASSING, Constant, Implemented
_SC_PRIORITIZED_IO, Constant, Implemented
_SC_PRIORITY_SCHEDULING, Constant, Unimplemented
_SC_REALTIME_SIGNALS, Constant, Implemented
_SC_SAVED_IDS, Constant, Implemented
_SC_SEMAPHORES, Constant, Implemented
_SC_SHARED_MEMORY_OBJECTS, Constant, Implemented
_SC_SYNCHRONIZED_IO, Constant, Implemented
_SC_TIMERS, Constant, Implemented
_SC_THREADS, Constant, Implemented
_SC_THREAD_ATTR_STACKADDR, Constant, Implemented
_SC_THREAD_ATTR_STACKSIZE, Constant, Implemented
_SC_THREAD_PRIORITY_SCHEDULING, Constant, Implemented
_SC_THREAD_PRIO_INHERIT, Constant, Implemented
_SC_THREAD_PRIO_PROTECT, Constant, Unimplemented
_SC_THREAD_PROCESS_SHARED, Constant, Implemented
_SC_THREAD_SAFE_FUNCTIONS, Constant, Implemented
_SC_VERSION, Constant, Implemented
5 Files and Directories

5.1 Directories

5.1.1 Format of Directory Entries

5.1.2 Directory Operations

- struct dirent, Type, Implemented
- opendir(), Function, Implemented
- readdir(), Function, Implemented
- readdir_r(), Function, Implemented
- rewinddir(), Function, Implemented
- closedir(), Function, Implemented

5.2 Working Directory

5.2.1 Change Current Working Directory

- chdir(), Function, Implemented

5.2.2 Get Working Directory Pathname

- getcwd(), Function, Implemented

5.3 General File Creation

5.3.1 Open a File

- open(), Function, Implemented
- O_RDONLY, Constant, Implemented
- O_WRONLY, Constant, Implemented
- O_RDWR, Constant, Implemented
- O_APPEND, Constant, Implemented
- O_CREAT, Constant, Implemented
- O_DSYNC, Constant, Unimplemented
- O_EXCL, Constant, Implemented
- O_TRUNC, Constant, Implemented
- O_SYNC, Constant, Implemented

NOTE: In the newlib fcntl.h, O_SYNC is defined only if _POSIX_SOURCE is not defined. This seems wrong.

5.3.2 Create a New File or Rewrite an Existing One

- creat(), Function, Implemented
5.3.3 Set File Creation Mask
   umask(), Function, Implemented

5.3.4 Link to a File
   link(), Function, Implemented

5.4 Special File Creation
5.4.1 Make a Directory
   mkdir(), Function, Implemented

5.4.2 Make a FIFO Special File
   mkfifo(), Function, Untested Implementation
   NOTE: mkfifo() is implemented but no filesystem supports FIFOs.

5.5 File Removal
5.5.1 Remove Directory Entries
   unlink(), Function, Implemented

5.5.2 Remove a Directory
   rmdir(), Function, Implemented

5.5.3 Rename a File
   rename(), Function, Implemented

5.6 File Characteristics
5.6.1 File Characteristics Header and Data Structure
   struct stat, Type, Implemented

5.6.1.1 <sys/stat.h> File Types
   S_ISBLK(), Function, Implemented
   S_ISCHR(), Function, Implemented
   S_ISDIR(), Function, Implemented
   S_ISFIFO(), Function, Implemented
   S_ISREG(), Function, Implemented
   S_TYPEISMQ(), Function, Unimplemented
   S_TYPEISSEM(), Function, Unimplemented
   S_TYPEISSHM(), Function, Unimplemented
5.6.1.2 `<sys/stat.h>` File Modes

- S_IRWXU, Constant, Implemented
- S_IRUSR, Constant, Implemented
- S_IWUSR, Constant, Implemented
- S_IXUSR, Constant, Implemented
- S_IRWXG, Constant, Implemented
- S_IROTH, Constant, Implemented
- S_IWOTH, Constant, Implemented
- S_IXOTH, Constant, Implemented
- S_ISUID, Constant, Implemented
- S_ISGID, Constant, Implemented

5.6.1.3 `<sys/stat.h>` Time Entries

5.6.2 Get File Status

- stat(), Function, Implemented
- fstat(), Function, Implemented

5.6.3 Check File Accessibility

- access(), Function, Implemented

5.6.4 Change File Modes

- chmod(), Function, Implemented
- fchmod(), Function, Implemented

5.6.5 Change Owner and Group of a File

- chown(), Function, Implemented

5.6.6 Set File Access and Modification Times

- struct utimbuf, Type, Implemented
- utime(), Function, Implemented

5.6.7 Truncate a File to a Specified Length

- ftruncate(), Function, Implemented

5.7 Configurable Pathname Variable

5.7.1 Get Configurable Pathname Variables

- pathconf(), Function, Implemented
- *_PC_LINK_MAX*, Constant, Implemented
- *_PC_MAX_CANON*, Constant, Implemented
_PC_MAX_INPUT, Constant, Implemented
_PC_MAX_INPUT, Constant, Implemented
_PC_NAME_MAX, Constant, Implemented
_PC_PATH_MAX, Constant, Implemented
_PC_PIPE_BUF, Constant, Implemented
_PC_ASYNC_IO, Constant, Implemented
_PC_CHOWN_RESTRICTED, Constant, Implemented
_PC_NO_TRUNC, Constant, Implemented
_PC_PRIO_IO, Constant, Implemented
_PC_SYNC_IO, Constant, Implemented
_PC_VDISABLE, Constant, Implemented

NOTE: The newlib unistd.h and sys/unistd.h are installed and the include search patch is used to get the right one. There are conflicts between the newlib unistd.h and RTEMS' version.
6 Input and Output Primitives

6.1 Pipes

6.1.1 Create an Inter-Process Channel

pipe(), Function, Dummy Implementation

NOTE: pipe() returns ENOSYS.

6.2 File Descriptor Manipulation

6.2.1 Duplicate an Open File Descriptor

dup(), Function, Implemented
dup2(), Function, Implemented

6.3 File Descriptor Deassignment

6.3.1 Close a File

close(), Function, Implemented

6.4 Input and Output

6.4.1 Read from a File

read(), Function, Implemented

6.4.2 Write to a File

write(), Function, Implemented

6.5 Control Operations on Files

6.5.1 Data Definitions for File Control Operations

6.5.2 File Control

struct flock, Type, Implemented
fcntl(), Function, Implemented
F_DUPFD, Constant, Implemented
F_GETFD, Constant, Implemented
F_GETLK, Constant, Implemented
F_SETFD, Constant, Implemented
F_GETFL, Constant, Implemented
F_SETFL, Constant, Implemented
F_SETLK, Constant, Implemented
F_SETLKW, Constant, Implemented
FD_CLOEXEC, Constant, Implemented
F_RDLCK, Constant, Implemented
F_UNLCK, Constant, Implemented
F_WRLCK, Constant, Implemented
O_ACCMODE, Constant, Implemented

NOTE: A number of constants are used by both `open` and `fcntl`. `O_CREAT`, `O EXCL`, `O NOCTTY`, `O_TRUNC`, `O APPEND`, `O_DSYNC`, `O_NONBLOCK`, `O_RSYNC`, `O_SYNC`, `O_RDONLY`, `O_RDWR`, and `O_WRONLY` are also included in another section. See Section 5.3.1 [Open a File], page 19.

6.5.3 Reposition Read/Write File Offset

- `lseek()`, Function, Implemented
- `SEEK_SET`, Constant, Implemented
- `SEEK_CUR`, Constant, Implemented
- `SEEK_END`, Constant, Implemented

6.6 File Synchronization

6.6.1 Synchronize the State of a File

- `fsync()`, Function, Implemented

6.6.2 Synchronize the Data of a File

- `fdatasync()`, Function, Implemented

6.7 Asynchronous Input and Output

6.7.1 Data Definitions for Asynchronous Input and Output

6.7.1.1 Asynchronous I/O Control Block

- `struct aiocb`, Type, Untested Implementation

6.7.1.2 Asynchronous I/O Manifest Constants

- `AIO_CANCELED`, Constant, Implemented
- `AIO_NOTCANCELED`, Constant, Implemented
- `AIO_ALLDONE`, Constant, Implemented
- `LIO_WAIT`, Constant, Implemented
- `LIO_NOWAIT`, Constant, Implemented
- `LIO_READ`, Constant, Implemented
- `LIO_WRITE`, Constant, Implemented
- `LIO_NOP`, Constant, Implemented

6.7.2 Asynchronous Read

- `aio_read()`, Function, Dummy Implementation

6.7.3 Asynchronous Write

- `aio_write()`, Function, Dummy Implementation

6.7.4 List Directed I/O

- `lio_listio()`, Function, Dummy Implementation
6.7.5 Retrieve Error Status of Asynchronous I/O Operation
   aio_error(), Function, Dummy Implementation

6.7.6 Retrieve Return Status of Asynchronous I/O Operation
   aio_return(), Function, Dummy Implementation

6.7.7 Cancel Asynchronous I/O Request
   aio_cancel(), Function, Dummy Implementation

6.7.8 Wait for Asynchronous I/O Request
   aio_suspend(), Function, Dummy Implementation

6.7.9 Asynchronous File Synchronization
   aio_fsync(), Function, Dummy Implementation
7 Device- and Class-Specific Functions

7.1 General Terminal Interface

7.1.1 Interface Characteristics

7.1.1.1 Opening a Terminal Device File

7.1.1.2 Process Groups (TTY)

7.1.1.3 The Controlling Terminal

7.1.1.4 Terminal Access Control

7.1.1.5 Input Processing and Reading Data

7.1.1.6 Canonical Mode Input Processing

7.1.1.7 Noncanonical Mode Input Processing

- Case A - MIN > 0 and TIME > 0
- Case B - MIN > 0 and TIME = 0
- Case C - MIN = 0 and TIME > 0
- Case D - MIN = 0 and TIME = 0

7.1.1.8 Writing Data and Output Processing

7.1.1.9 Special Characters

- INTR, Constant, Implemented
- QUIT, Constant, Implemented
- ERASE, Constant, Implemented
- KILL, Constant, Implemented
- EOF, Constant, Implemented
- NL, Constant, Implemented
- EOL, Constant, Implemented
- SUSP, Constant, Implemented
- STOP, Constant, Implemented
- START, Constant, Implemented
- CR, Constant, Implemented

7.1.1.10 Modem Disconnect

7.1.1.11 Closing a Terminal Device File

7.1.2 Parameters That Can Be Set

7.1.2.1 termios Structure

- tcflag_t, Type, Implemented
- cc_t, Type, Implemented
- struct termios, Type, Implemented
7.1.2.2 Input Modes
BRKINT, Constant, Implemented
ICRNL, Constant, Implemented
IGNBREAK, Constant, Unimplemented
IGNCR, Constant, Implemented
IGNPAR, Constant, Implemented
INLCR, Constant, Implemented
INPCK, Constant, Implemented
ISTRIP, Constant, Implemented
IXOFF, Constant, Implemented
IXON, Constant, Implemented
PARMRK, Constant, Implemented

7.1.2.3 Output Modes
OPOST, Constant, Implemented

7.1.2.4 Control Modes
CLOCAL, Constant, Implemented
CREAD, Constant, Implemented
CSIZE, Constant, Implemented
CS5, Constant, Implemented
CS6, Constant, Implemented
CS7, Constant, Implemented
CS8, Constant, Implemented
CSTOPB, Constant, Implemented
HUPCL, Constant, Implemented
PARENB, Constant, Implemented
PARODD, Constant, Implemented

7.1.2.5 Local Modes
ECHO, Constant, Implemented
ECHOE, Constant, Implemented
ECHOK, Constant, Implemented
ECHONL, Constant, Implemented
ICANON, Constant, Implemented
IEXTEN, Constant, Implemented
ISIG, Constant, Implemented
NOFLSH, Constant, Implemented
TOSTOP, Constant, Implemented

7.1.2.6 Special Control Characters
VEOF, Constant, Implemented
VEOL, Constant, Implemented
VERASE, Constant, Implemented
VINTR, Constant, Implemented
VKILL, Constant, Implemented
VQUIT, Constant, Implemented
VSUSP, Constant, Implemented
VSTART, Constant, Implemented
VSTOP, Constant, Implemented
VMIN, Constant, Implemented
VTIME, Constant, Implemented

7.1.3 Baud Rate Values
B0, Constant, Implemented
B50, Constant, Implemented
B75, Constant, Implemented
B110, Constant, Implemented
B134, Constant, Implemented
B150, Constant, Implemented
B200, Constant, Implemented
B300, Constant, Implemented
B600, Constant, Implemented
B1200, Constant, Implemented
B1800, Constant, Implemented
B2400, Constant, Implemented
B4800, Constant, Implemented
B9600, Constant, Implemented
B19200, Constant, Implemented
B38400, Constant, Implemented

7.1.3.1 Baud Rate Functions
cfgetospeed(), Function, Implemented
cfsetospeed(), Function, Implemented
cfgetispeed(), Function, Implemented
cfsetispeed(), Function, Implemented
TCIFLUSH, Constant, Implemented
TCOFLUSH, Constant, Implemented
TCIOFLUSH, Constant, Implemented
TCOFF, Constant, Implemented
TCOFF, Constant, Implemented
TCOON, Constant, Implemented
TCOON, Constant, Implemented

7.2 General Terminal Interface Control Functions

7.2.1 Get and Set State
tcgetattr(), Function, Implemented
tcsetattr(), Function, Implemented

7.2.2 Line Control Functions
tcsendbreak(), Function, Dummy Implementation
tcdrain(), Function, Implemented
tcflush(), Function, Dummy Implementation
tcflow(), Function, Dummy Implementation

7.2.3 Get Foreground Process Group ID

tcgetprgrp(), Function, Implemented, SUSP

7.2.4 Set Foreground Process Group ID

tcsetprgrp(), Function, Dummy Implementation
8 Language-Specific Services for the C Programming Language

8.1 Referenced C Language Routines

ANSI C Section 4.2 — Diagnostics

assert(), Function, Implemented

ANSI C Section 4.3 — Character Handling

isalnum(), Function, Implemented
isalpha(), Function, Implemented
iscntrl(), Function, Implemented
isdigit(), Function, Implemented
isgraph(), Function, Implemented
islower(), Function, Implemented
isprint(), Function, Implemented
ispunct(), Function, Implemented
isspace(), Function, Implemented
isupper(), Function, Implemented
isxdigit(), Function, Implemented
tolower(), Function, Implemented
toupper(), Function, Implemented

ANSI C Section 4.4 — Localization

setlocale(), Function, Implemented

ANSI C Section 4.5 — Mathematics

acos(), Function, Implemented
asin(), Function, Implemented
atan(), Function, Implemented
atan2(), Function, Implemented
cos(), Function, Implemented
sin(), Function, Implemented	an(), Function, Implemented
cosh(), Function, Implemented
sinh(), Function, Implemented
tanh(), Function, Implemented
exp(), Function, Implemented
frexp(), Function, Implemented
ldexp(), Function, Implemented
log(), Function, Implemented
log10(), Function, Implemented
modf(), Function, Implemented
pow(), Function, Implemented
sqrt(), Function, Implemented
ceil(), Function, Implemented
fabs(), Function, Implemented
floor(), Function, Implemented
fmod(), Function, Implemented

ANSI C Section 4.6 — Non-Local Jumps

setjmp(), Function, Implemented
longjmp(), Function, Implemented

ANSI C Section 4.9 — Input/Output

FILE, Type, Implemented
clearerr(), Function, Implemented
close(), Function, Implemented
feof(), Function, Implemented
ferror(), Function, Implemented
fflush(), Function, Implemented
fgetc(), Function, Implemented
fgets(), Function, Implemented
fopen(), Function, Implemented
fputc(), Function, Implemented
fputs(), Function, Implemented
fread(), Function, Implemented
freopen(), Function, Implemented
fsetpos(), Function, Implemented
ftell(), Function, Implemented
fwrite(), Function, Implemented
getchar(), Function, Implemented
gets(), Function, Implemented
perror(), Function, Implemented
printf(), Function, Implemented
fprintf(), Function, Implemented
sprintf(), Function, Implemented
putc(), Function, Implemented
putchar(), Function, Implemented
puts(), Function, Implemented
rename(), Function, Implemented
remove(), Function, Implemented
rewind(), Function, Implemented
scanf(), Function, Implemented
fscanf(), Function, Implemented
sscanf(), Function, Implemented
setbuf(), Function, Implemented
tmpfile(), Function, Implemented
tmpnam(), Function, Implemented
ungetc(), Function, Implemented

NOTE: rename is also included in another section. Section 5.5.3 [ Rename a File ], page 20.

ANSI C Section 4.10 — General Utilities
abs(), Function, Implemented
atof(), Function, Implemented
atoi(), Function, Implemented
atol(), Function, Implemented
rand(), Function, Implemented
srand(), Function, Implemented
calloc(), Function, Implemented
free(), Function, Implemented
malloc(), Function, Implemented
realloc(), Function, Implemented
abort(), Function, Implemented
exit(), Function, Implemented
bsearch(), Function, Implemented
qsort(), Function, Implemented
NOTE: getenv is also included in another section. Section 4.6.1 [Environment Access], page 16.

ANSI C Section 4.11 — String Handling
strcpy(), Function, Implemented
strncpy(), Function, Implemented
strcat(), Function, Implemented
strncat(), Function, Implemented
strcmp(), Function, Implemented
strncmp(), Function, Implemented
strchr(), Function, Implemented
strcspn(), Function, Implemented
strpbrk(), Function, Implemented
strrchr(), Function, Implemented
strspn(), Function, Implemented
strstr(), Function, Implemented
strtok(), Function, Implemented
strlen(), Function, Implemented
NOTE: RTEMS has no notion of time zones.
NOTE: time is also included in another section. Section 4.5.1 [Get System Time], page 16.

From Surrounding Text
EXIT_SUCCESS, Constant, Implemented
EXIT_FAILURE, Constant, Implemented

8.1.1 Extensions to Time Functions

8.1.2 Extensions to setlocale Function
   LC_CTYPE, Constant, Implemented
   LC_COLLATE, Constant, Implemented
   LC_TIME, Constant, Implemented
   LC_NUMERIC, Constant, Implemented
   LC_MONETARY, Constant, Implemented
   LC_ALL, Constant, Implemented

8.2 C Language Input/Output Functions

8.2.1 Map a Stream Pointer to a File Descriptor
   fileno(), Function, Implemented
   STDIN_FILENO, Constant, Implemented
   STDOUT_FILENO, Constant, Implemented
   STDERR_FILENO, Constant, Implemented

8.2.2 Open a Stream on a File Descriptor
   fdopen(), Function, Implemented

8.2.3 Interactions of Other FILE-Type C Functions

8.2.4 Operations on Files - the remove Function

8.2.5 Temporary File Name - the tmpnam Function

8.2.6 Stdio Locking Functions
   flockfile(), Function, Unimplemented
   ftrylockfile(), Function, Unimplemented
   funlockfile(), Function, Unimplemented

8.2.7 Stdio With Explicit Client Locking
   getc_unlocked(), Function, Unimplemented
   getchar_unlocked(), Function, Unimplemented
   putc_unlocked(), Function, Unimplemented
   putchar_unlocked(), Function, Unimplemented

8.3 Other C Language Functions

8.3.1 Nonlocal Jumps
   sigjmp_buf, Type, Implemented
   sigsetjmp(), Function, Implemented
   siglongjmp(), Function, Implemented
8.3.2 Set Time Zone
   tzset(), Function, Unimplemented

8.3.3 Find String Token
   strtok_r(), Function, Implemented

8.3.4 ASCII Time Representation
   asctime_r(), Function, Implemented

8.3.5 Current Time Representation
   ctime_r(), Function, Implemented

8.3.6 Coordinated Universal Time
   gmtime_r(), Function, Implemented

8.3.7 Local Time
   localtime_r(), Function, Implemented

8.3.8 Pseudo-Random Sequence Generation Functions
   rand_r(), Function, Implemented
9 System Databases

9.1 System Databases Section

9.2 Database Access

9.2.1 Group Database Access

- struct group, Type, Implemented
- getgrgid(), Function, Implemented
- getgrgid_r(), Function, Implemented
- getgrname(), Function, Implemented
- getgrnam_r(), Function, Implemented

NOTE: Creates /etc/group if none exists.

9.2.2 User Database Access

- struct passwd, Type, Implemented
- getpwuid(), Function, Implemented
- getpwuid_r(), Function, Implemented
- getpwnam(), Function, Implemented
- getpwnam_r(), Function, Implemented

NOTE: Creates /etc/passwd if none exists.
10 Data Interchange Format

10.1 Archive/Interchange File Format

10.1.1 Extended tar Format

- tar format, Type, Unimplemented
- TMAGIC, Constant, Unimplemented
- TMAGLEN, Constant, Unimplemented
- TVERSION, Constant, Unimplemented
- TVERSLEN, Constant, Unimplemented
- TGTYPE, Constant, Unimplemented
- AREGTYPE, Constant, Unimplemented
- LNKTYPE, Constant, Unimplemented
- SYMTYPE, Constant, Unimplemented
- CHRTYPE, Constant, Unimplemented
- BLKTYPE, Constant, Unimplemented
- DIRTYPE, Constant, Unimplemented
- FIFOTYPE, Constant, Unimplemented
- CONTTYPE, Constant, Unimplemented
- TSUID, Constant, Unimplemented
- TSGID, Constant, Unimplemented
- TSVTX, Constant, Unimplemented
- TUREAD, Constant, Unimplemented
- TUWRITE, Constant, Unimplemented
- TUEXEC, Constant, Unimplemented
- TGREAD, Constant, Unimplemented
- TGWRITE, Constant, Unimplemented
- TGEXEC, Constant, Unimplemented
- TOREAD, Constant, Unimplemented
- TOWRITE, Constant, Unimplemented
- TOEXEC, Constant, Unimplemented

NOTE: Requires `<tar.h>` which is not in newlib.

10.1.2 Extended cpio Format

- cpio format, Type, Unimplemented
- C_IRUSER, Constant, Unimplemented
- C_IWUSER, Constant, Unimplemented
- C_IXUSER, Constant, Unimplemented
- C_IRGRP, Constant, Unimplemented
- C_IWGRP, Constant, Unimplemented
- C_IXGRP, Constant, Unimplemented
- C_IROTH, Constant, Unimplemented
- C_IWOTH, Constant, Unimplemented
- C_IXOTH, Constant, Unimplemented
- C_ISUID, Constant, Unimplemented
C_ISGID, Constant, Unimplemented
C_ISVTX, Constant, Unimplemented

NOTE: POSIX does not require a header file or structure. RedHat Linux 5.0 does not have a `<cpio.h>` although Solaris 2.6 does.

10.1.3 Multiple Volumes
11 Synchronization

11.1 Semaphore Characteristics
NOTE: Semaphores are implemented but only unnamed semaphores are currently tested.

sem_t, Type, Implemented

11.2 Semaphore Functions

11.2.1 Initialize an Unnamed Semaphore
sem_init(), Function, Implemented
SEM_FAILED, Constant, Implemented

11.2.2 Destroy an Unnamed Semaphore
sem_destroy(), Function, Implemented

11.2.3 Initialize/Open a Named Semaphore
sem_open(), Function, Implemented

11.2.4 Close a Named Semaphore
sem_close(), Function, Implemented

11.2.5 Remove a Named Semaphore
sem_unlink(), Function, Implemented

11.2.6 Lock a Semaphore
sem_wait(), Function, Implemented
sem_trywait(), Function, Implemented

11.2.7 Unlock a Semaphore
sem_post(), Function, Implemented

11.2.8 Get the Value of a Semaphore
sem_getvalue(), Function, Implemented

11.3 Mutexes

11.3.1 Mutex Initialization Attributes
pthread_mutexattr_init(), Function, Implemented
pthread_mutexattr_destroy(), Function, Implemented
pthread_mutexattr_getpshared(), Function, Implemented
pthread_mutexattr_setpshared(), Function, Implemented
PTHREAD_PROCESS_SHARED, Constant, Implemented
PTHREAD_PROCESS_PRIVATE, Constant, Implemented
11.3.2 Initializing and Destroying a Mutex

 pthread_mutex_init(), Function, Implemented
 pthread_mutex_destroy(), Function, Implemented
 PTHREAD_MUTEX_INITIALIZER, Constant, Implemented

11.3.3 Locking and Unlocking a Mutex

 pthread_mutex_lock(), Function, Implemented
 pthread_mutex_trylock(), Function, Implemented
 pthread_mutex_unlock(), Function, Implemented

11.4 Condition Variables

11.4.1 Condition Variable Initialization Attributes

 pthread_condattr_init(), Function, Implemented
 pthread_condattr_destroy(), Function, Implemented
 pthread_condattr_getpshared(), Function, Implemented
 pthread_condattr_setpshared(), Function, Implemented

11.4.2 Initialization and Destroying Condition Variables

 pthread_cond_init(), Function, Implemented
 pthread_cond_destroy(), Function, Implemented
 PTHREAD_COND_INITIALIZER, Constant, Implemented

11.4.3 Broadcasting and Signaling a Condition

 pthread_cond_signal(), Function, Implemented
 pthread_cond_broadcast(), Function, Implemented

11.4.4 Waiting on a Condition

 pthread_cond_wait(), Function, Implemented
 pthread_cond_timedwait(), Function, Implemented
12 Memory Management

12.1 Memory Locking Functions

12.1.1 Lock/Unlock the Address Space of a Process

- `mlockall()`, Function, Unimplemented
- `munlockall()`, Function, Unimplemented
- `MCL_CURRENT`, Constant, Unimplemented
- `MCL_FUTURE`, Constant, Unimplemented

12.1.2 Lock/Unlock a Rand of Process Address Space

- `mlock()`, Function, Unimplemented
- `munlock()`, Function, Unimplemented

12.2 Memory Mapping Functions

12.2.1 Map Process Addresses to a Memory Object

- `mmap()`, Function, Unimplemented
- `PROT_READ`, Constant, Unimplemented
- `PROT_WRITE`, Constant, Unimplemented
- `PROT_EXEC`, Constant, Unimplemented
- `PROT_NONE`, Constant, Unimplemented
- `MAP_SHARED`, Constant, Unimplemented
- `MAP_PRIVATE`, Constant, Unimplemented
- `MAP_FIXED`, Constant, Unimplemented

12.2.2 Unmap Previously Mapped Addresses

- `munmap()`, Function, Unimplemented

12.2.3 Change Memory Protection

- `mprotect()`, Function, Unimplemented

12.2.4 Memory Object Synchronization

- `msync()`, Function, Unimplemented, Unimplemented
- `MS_ASYNC`, Constant, Unimplemented
- `MS_SYNC`, Constant, Unimplemented
- `MS_INVALIDATE`, Constant, Unimplemented

12.3 Shared Memory Functions

12.3.1 Open a Shared Memory Object

- `shm_open()`, Function, Unimplemented

12.3.2 Remove a Shared Memory Object

- `shm_unlink()`, Function, Unimplemented
13 Execution Scheduling

13.1 Scheduling Parameters
struct sched_param, Type, Implemented

13.2 Scheduling Policies
SCHED_FIFO, Constant, Implemented
SCHED_RR, Constant, Implemented
SCHED_OTHER, Constant, Implemented
NOTE: RTEMS adds SCHED_SPORADIC.

13.2.1 SCHED_FIFO

13.2.2 SCHED_RR

13.2.3 SCHED_OTHER

13.3 Process Scheduling Functions

13.3.1 Set Scheduling Parameters
sched_setparam(), Function, Dummy Implementation

13.3.2 Get Scheduling Parameters
sched_getparam(), Function, Dummy Implementation

13.3.3 Set Scheduling Policy and Scheduling Parameters
sched_setscheduler(), Function, Dummy Implementation

13.3.4 Get Scheduling Policy
sched_getscheduler(), Function, Dummy Implementation

13.3.5 Yield Processor
sched_yield(), Function, Implemented

13.3.6 Get Scheduling Parameter Limits
sched_get_priority_max(), Function, Implemented
sched_get_priority_min(), Function, Implemented
sched_get_priority_rr_get_interval(), Function, Implemented
13.4 Thread Scheduling

13.4.1 Thread Scheduling Attributes
- PTHREAD_SCOPE_PROCESS, Constant, Implemented
- PTHREAD_SCOPE_SYSTEM, Constant, Implemented

13.4.2 Scheduling Contention Scope

13.4.3 Scheduling Allocation Domain

13.4.4 Scheduling Documentation

13.5 Thread Scheduling Functions

13.5.1 Thread Creation Scheduling Attributes
- pthread_attr_setscope(), Function, Implemented
- pthread_attr_getscope(), Function, Implemented
- pthread_attr_setinheritsched(), Function, Implemented
- pthread_attr_getinheritsched(), Function, Implemented
- pthread_attr_setschedpolicy(), Function, Implemented
- pthread_attr_getschedpolicy(), Function, Implemented
- PTHREAD_INHERIT_SCHED, Constant, Implemented
- PTHREAD_EXPLICIT_SCHED, Constant, Implemented

13.5.2 Dynamic Thread Scheduling Parameters Access
- pthread_setschedparam(), Function, Implemented
- pthread_getschedparam(), Function, Implemented

13.6 Synchronization Scheduling

13.6.1 Mutex Initialization Scheduling Attributes
- pthread_mutexattr_setprotocol(), Function, Implemented
- pthread_mutexattr_getprotocol(), Function, Implemented
- pthread_mutexattr_setprioceiling(), Function, Implemented
- pthread_mutexattr_getprioceiling(), Function, Implemented
- PTHREAD_PRIO_NONE, Constant, Implemented
- PTHREAD_PRIO_INHERIT, Constant, Implemented
- PTHREAD_PRIO_PROTECT, Constant, Implemented

13.6.2 Change the Priority Ceiling of a Mutex
- pthread_mutex_setprioceiling(), Function, Implemented
- pthread_mutex_getprioceiling(), Function, Implemented
14 Clocks and Timers

14.1 Data Definitions for Clocks and Timers

14.1.1 Time Value Specification Structures

struct timespec, Type, Implemented
struct itimerspec, Type, Implemented

14.1.2 Timer Event Notification Control Block

14.1.3 Type Definitions

clockid_t, Type, Implemented
timerid_t, Type, Implemented

14.1.4 Timer Event Notification Manifest Constants

CLOCK_REALTIME, Constant, Implemented
TIMER_ABSTIME, Constant, Implemented

14.2 Clock and Timer Functions

14.2.1 Clocks

clock_settime(), Function, Partial Implementation
clock_gettime(), Function, Partial Implementation
clock_getres(), Function, Implemented

14.2.2 Create a Per-Process Timer

timer_create(), Function, Implemented

14.2.3 Delete a Per-Process Timer

timer_delete(), Function, Implemented

14.2.4 Per-Process Timers

timer_settime(), Function, Implemented
timer_gettime(), Function, Implemented
timer_getoverrun(), Function, Implemented

14.2.5 High Resolution Sleep

nanosleep(), Function, Implemented
15 Message Passing

15.1 Data Definitions for Message Queues

15.1.1 Data Structures
NOTE: Semaphores are implemented but only unnamed semaphores are currently tested.

mqd_t, Type, Implemented
struct mq_attr, Type, Implemented

15.2 Message Passing Functions

15.2.1 Open a Message Queue
mq_open(), Function, Implemented

15.2.2 Close a Message Queue
mq_close(), Function, Implemented

15.2.3 Remove a Message Queue
mq_unlink(), Function, Implemented

15.2.4 Send a Message to a Message Queue
mq_send(), Function, Implemented

15.2.5 Receive a Message From a Message Queue
mq_receive(), Function, Implemented

15.2.6 Notify Process That a Message is Available on a Queue
mq_notify(), Function, Implemented

15.2.7 Set Message Queue Attributes
mq_setattr(), Function, Implemented

15.2.8 Get Message Queue Attributes
mq_getattr(), Function, Implemented
16 Thread Management

16.1 Threads

16.2 Thread Functions

16.2.1 Thread Creation Attributes
- pthread_attr_init(), Function, Implemented
- pthread_attr_destroy(), Function, Implemented
- pthread_attr_setstacksize(), Function, Implemented
- pthread_attr_getstacksize(), Function, Implemented
- pthread_attr_setstackaddr(), Function, Implemented
- pthread_attr_getstackaddr(), Function, Implemented
- pthread_attr_setdetachstate(), Function, Implemented
- pthread_attr_getdetachstate(), Function, Implemented
- PTHREAD_CREATE_JOINABLE, Constant, Implemented
- PTHREAD_CREATE_DETACHED, Constant, Implemented

16.2.2 Thread Creation
- pthread_create(), Function, Implemented

16.2.3 Wait for Thread Termination
- pthread_join(), Function, Implemented

16.2.4 Detaching a Thread
- pthread_detach(), Function, Implemented

16.2.5 Thread Termination
- pthread_exit(), Function, Implemented

16.2.6 Get Thread ID
- pthread_self(), Function, Implemented

16.2.7 Compare Thread IDs
- pthread_equal(), Function, Implemented

16.2.8 Dynamic Package Initialization
- pthread_once(), Function, Implemented
- PTHREAD_ONCE_INIT, Constant, Implemented
17 Thread-Specific Data

17.1 Thread-Specific Data Functions

17.1.1 Thread-Specific Data Key Creation
    pthread_key_create(), Function, Implemented

17.1.2 Thread-Specific Data Management
    pthread_key_setspecific(), Function, Implemented
    pthread_key_getspecific(), Function, Implemented

17.1.3 Thread-Specific Data Key Deletion
    pthread_key_delete(), Function, Implemented
18 Thread Cancellation

18.1 Thread Cancellation Overview

18.1.1 Cancelability States

- PTHREAD_CANCEL_DISABLE, Constant, Implemented
- PTHREAD_CANCEL_ENABLE, Constant, Implemented
- PTHREAD_CANCEL_ASYNCHRONOUS, Constant, Implemented
- PTHREAD_CANCEL_DEFERRED, Constant, Implemented

18.1.2 Cancellation Points

18.1.3 Thread Cancellation Cleanup Handlers

- PTHREAD_CANCELED, Constant, Unimplemented

18.1.4 Async-Cancel Safety

18.2 Thread Cancellation Functions

18.2.1 Canceling Execution of a Thread

- pthread_cancel(), Function, Implemented

18.2.2 Setting Cancelability State

- pthread_setcancelstate(), Function, Implemented
- pthread_setcanceltype(), Function, Implemented
- pthread_testcancel(), Function, Implemented

18.2.3 Establishing Cancellation Handlers

- pthread_cleanup_push(), Function, Implemented
- pthread_cleanup_pop(), Function, Implemented

18.3 Language-Independent Cancellation Functionality

18.3.1 Requesting Cancellation

18.3.2 Associating Cleanup Code With Scopes

18.3.3 Controlling Cancellation Within Scopes

18.3.4 Defined Cancellation Sequence

18.3.5 List of Cancellation Points
19 Compliance Summary

19.1 General Chapter

Functions:
   Total Number : 0
   Implemented  : 0
   Unimplemented: 0
   Unimplementable : 0
   Partial : 0
   Dummy : 0
   Untested : 0

Data Types:
   Total Number : 0
   Implemented  : 0
   Unimplemented: 0
   Unimplementable : 0
   Partial : 0
   Dummy : 0
   Untested : 0

Feature Flags:
   Total Number : 21
   Implemented  : 0
   Unimplemented: 0
   Unimplementable : 0
   Partial : 0
   Dummy : 0
   Untested : 0

FEATURE FLAG COUNTS DO NOT ADD UP!!

Constants:
   Total Number : 0
   Implemented  : 0
   Unimplemented: 0
   Unimplementable : 0
   Partial : 0
   Dummy : 0
   Untested : 0
19.2 Terminology and General Requirements Chapter

Functions:
  Total Number : 0
  Implemented : 0
  Unimplemented : 0
  Unimplementable : 0
  Partial : 0
  Dummy : 0
  Untested : 0

Data Types:
  Total Number : 19
  Implemented : 19
  Unimplemented : 0
  Unimplementable : 0
  Partial : 0
  Dummy : 0
  Untested : 0

Feature Flags:
  Total Number : 32
  Implemented : 0
  Unimplemented : 0
  Unimplementable : 0
  Partial : 0
  Dummy : 0
  Untested : 0

FEATURE FLAG COUNTS DO NOT ADD UP!!

Constants:
  Total Number : 126
  Implemented : 124
  Unimplemented : 2
  Unimplementable : 0
  Partial : 0
  Dummy : 0
  Untested : 0
19.3 Process Primitives Chapter

Functions:

- Total Number: 36
- Implemented: 20
- Unimplemented: 0
- Unimplementable: 16
- Partial: 0
- Dummy: 0
- Untested: 0

Data Types:

- Total Number: 5
- Implemented: 5
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Feature Flags:

- Total Number: 0
- Implemented: 0
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Constants:

- Total Number: 40
- Implemented: 32
- Unimplemented: 6
- Unimplementable: 2
- Partial: 0
- Dummy: 0
- Untested: 0
19.4 Process Environment Chapter

Functions:

Total Number : 23
Implemented   : 21
Unimplemented : 0
Unimplementable: 0
Partial       : 0
Dummy         : 2
Untested      : 0

Data Types:

Total Number : 2
Implemented   : 2
Unimplemented : 0
Unimplementable: 0
Partial       : 0
Dummy         : 0
Untested      : 0

Feature Flags:

Total Number : 0
Implemented   : 0
Unimplemented : 0
Unimplementable: 0
Partial       : 0
Dummy         : 0
Untested      : 0

Constants:

Total Number : 53
Implemented   : 51
Unimplemented : 2
Unimplementable: 0
Partial       : 0
Dummy         : 0
Untested      : 0
19.5 Files and Directories Chapter

Functions:
- Total Number: 35
- Implemented: 30
- Unimplemented: 3
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 1

FUNCTION COUNTS DO NOT ADD UP!!

Data Types:
- Total Number: 3
- Implemented: 3
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Feature Flags:
- Total Number: 0
- Implemented: 0
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Constants:
- Total Number: 39
- Implemented: 37
- Unimplemented: 2
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0
19.6 Input and Output Primitives Chapter

Functions:
- Total Number: 19
- Implemented: 9
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 9
- Untested: 0

FUNCTION COUNTS DO NOT ADD UP!!

Data Types:
- Total Number: 2
- Implemented: 1
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 1

Feature Flags:
- Total Number: 0
- Implemented: 0
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Constants:
- Total Number: 24
- Implemented: 24
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0
19.7 Device- and Class-Specific Functions Chapter

Functions:
- Total Number: 12
- Implemented: 8
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 4
- Untested: 0

Data Types:
- Total Number: 3
- Implemented: 3
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Feature Flags:
- Total Number: 0
- Implemented: 0
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Constants:
- Total Number: 77
- Implemented: 76
- Unimplemented: 1
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0
19.8 Language-Specific Services for the C Programming Language Chapter

Functions:
- Total Number : 125
- Implemented : 117
- Unimplemented : 8
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Data Types:
- Total Number : 2
- Implemented : 2
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Feature Flags:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Constants:
- Total Number : 11
- Implemented : 11
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0
19.9 System Databases Chapter

Functions:
- Total Number : 8
- Implemented : 8
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Data Types:
- Total Number : 2
- Implemented : 2
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Feature Flags:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Constants:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0
19.10 Data Interchange Format Chapter

Functions:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Data Types:
Total Number : 2
Implemented : 0
Unimplemented : 2
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 37
Implemented : 0
Unimplemented : 37
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.11 Synchronization Chapter

Functions:
- Total Number : 28
- Implemented : 28
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Data Types:
- Total Number : 1
- Implemented : 1
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Feature Flags:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Constants:
- Total Number : 5
- Implemented : 5
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0
19.12 Memory Management Chapter

Functions:
- Total Number : 10
- Implemented : 0
- Unimplemented : 10
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Data Types:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Feature Flags:
- Total Number : 0
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Constants:
- Total Number : 12
- Implemented : 0
- Unimplemented : 12
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0
19.13 Execution Scheduling Chapter

Functions:
- Total Number: 24
- Implemented: 20
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 4
- Untested: 0

Data Types:
- Total Number: 1
- Implemented: 1
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Feature Flags:
- Total Number: 0
- Implemented: 0
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0

Constants:
- Total Number: 10
- Implemented: 10
- Unimplemented: 0
- Unimplementable: 0
- Partial: 0
- Dummy: 0
- Untested: 0
19.14 Clocks and Timers Chapter

Functions:
Total Number : 9
Implemented : 7
Unimplemented : 0
Unimplementable : 0
Partial : 2
Dummy : 0
Untested : 0

Data Types:
Total Number : 4
Implemented : 4
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 2
Implemented : 2
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.15 Message Passing Chapter

Functions:
Total Number : 8
Implemented : 8
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Data Types:
Total Number : 2
Implemented : 2
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.16 Thread Management Chapter

Functions:
Total Number : 15
Implemented : 15
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Data Types:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 3
Implemented : 3
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.17 Thread-Specific Data Chapter

Functions:
Total Number : 4
Implemented : 4
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Data Types:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.18 Thread Cancellation Chapter

Functions:
Total Number : 6
Implemented : 6
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Data Types:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Feature Flags:
Total Number : 0
Implemented : 0
Unimplemented : 0
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0

Constants:
Total Number : 5
Implemented : 4
Unimplemented : 1
Unimplementable : 0
Partial : 0
Dummy : 0
Untested : 0
19.19 Overall Summary

Functions:
- Total Number : 362
- Implemented : 301
- Unimplemented : 21
- Unimplementable : 16
- Partial : 2
- Dummy : 19
- Untested : 1

FUNCTION COUNTS DO NOT ADD UP!!

Data Types:
- Total Number : 48
- Implemented : 45
- Unimplemented : 2
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 1

FEATURE FLAG COUNTS DO NOT ADD UP!!

Feature Flags:
- Total Number : 53
- Implemented : 0
- Unimplemented : 0
- Unimplementable : 0
- Partial : 0
- Dummy : 0
- Untested : 0

Constants:
- Total Number : 444
- Implemented : 379
- Unimplemented : 63
- Unimplementable : 2
- Partial : 0
- Dummy : 0
- Untested : 0
Command and Variable Index

There are currently no Command and Variable Index entries.
Concept Index

There are currently no Concept Index entries.