

Linux Standard Base Core Specification for S390 2.0.1

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Specification Introduction

Specification Introduction

Table of Contents

Foreword	i
Introduction	ii
I. Introductory Elements.....	3
1. Scope	1
1.1. General.....	1
1.2. Module Specific Scope	1
2. Normative References	2
3. Requirements.....	5
3.1. Relevant Libraries.....	5
3.2. LSB Implementation Conformance	5
3.3. LSB Application Conformance	6
4. Definitions.....	7
5. Terminology	8
6. Documentation Conventions	9

List of Tables

2-1. Normative References	2
3-1. Standard Library Names	5

Foreword

- 1 This is version 2.0.1 of the Linux Standard Base Core Specification for S390. An implementation of this version of the
- 2 specification may not claim to be an implementation of the Linux Standard Base unless it has successfully completed
- 3 the compliance process as defined by the Free Standards Group.

Introduction

- 1 The LSB defines a binary interface for application programs that are compiled and packaged for LSB-conforming
2 implementations on many different hardware architectures. Since a binary specification shall include information
3 specific to the computer processor architecture for which it is intended, it is not possible for a single document to
4 specify the interface for all possible LSB-conforming implementations. Therefore, the LSB is a family of
5 specifications, rather than a single one.
- 6 This document should be used in conjunction with the documents it references. This document enumerates the system
7 components it includes, but descriptions of those components may be included entirely or partly in this document,
8 partly in other documents, or entirely in other reference documents. For example, the section that describes system
9 service routines includes a list of the system routines supported in this interface, formal declarations of the data
10 structures they use that are visible to applications, and a pointer to the underlying referenced specification for
11 information about the syntax and semantics of each call. Only those routines not described in standards referenced by
12 this document, or extensions to those standards, are described in the detail. Information referenced in this way is as
13 much a part of this document as is the information explicitly included here.

I. Introductory Elements

Chapter 1. Scope

1.1. General

- 1 The Linux Standard Base (LSB) defines a system interface for compiled applications and a minimal environment for
- 2 support of installation scripts. Its purpose is to enable a uniform industry standard environment for high-volume
- 3 applications conforming to the LSB.
- 4 These specifications are composed of two basic parts: A common specification ("LSB-generic") describing those parts
- 5 of the interface that remain constant across all implementations of the LSB, and an architecture-specific specification
- 6 ("LSB-arch") describing the parts of the interface that vary by processor architecture. Together, the LSB-generic and
- 7 the architecture-specific supplement for a single hardware architecture provide a complete interface specification for
- 8 compiled application programs on systems that share a common hardware architecture.
- 9 The LSB-generic document shall be used in conjunction with an architecture-specific supplement. Whenever a section
- 10 of the LSB-generic specification shall be supplemented by architecture-specific information, the LSB-generic
- 11 document includes a reference to the architecture supplement. Architecture supplements may also contain additional
- 12 information that is not referenced in the LSB-generic document.
- 13 The LSB contains both a set of Application Program Interfaces (APIs) and Application Binary Interfaces (ABIs). APIs
- 14 may appear in the source code of portable applications, while the compiled binary of that application may use the
- 15 larger set of ABIs. A conforming implementation shall provide all of the ABIs listed here. The compilation system
- 16 may replace (e.g. by macro definition) certain APIs with calls to one or more of the underlying binary interfaces, and
- 17 may insert calls to binary interfaces as needed.
- 18 The LSB is primarily a binary interface definition. Not all of the source level APIs available to applications may be
- 19 contained in this specification.

1.2. Module Specific Scope

- 20 This is the S390 architecture specific Core module of the Linux Standards Base (LSB). This module supplements the
- 21 generic LSB Core module with those interfaces that differ between architectures.
- 22 Interfaces described in this module are mandatory except where explicitly listed otherwise. Core interfaces may be
- 23 supplemented by other modules; all modules are built upon the core.

Chapter 2. Normative References

1 The specifications listed below are referenced in whole or in part by the Linux Standard Base. In this specification,
2 where only a particular section of one of these references is identified, then the normative reference is to that section
3 alone, and the rest of the referenced document is informative.

4 **Table 2-1. Normative References**

Name	Title	URL
DWARF Debugging Information Format	DWARF Debugging Information Format, Revision 2.0.0 (July 27, 1993)	http://www.eagercon.com/dwarf/dwarf-2.0.0.pdf
Enterprise Systems Architecture/390 Principles of Operation	Enterprise Systems Architecture/390 Principles of Operation	http://oss.software.ibm.com/linux390/documentation-2.2.shtml
Filesystem Hierarchy Standard	Filesystem Hierarchy Standard (FHS) 2.3	http://www.pathname.com/fhs/
IEEE Std 754-1985	IEEE Standard 754 for Binary Floating-Point Arithmetic	http://www.ieee.org/
ISO C (1999)	ISO/IEC 9899: 1999, Programming Languages --C	
ISO POSIX (2003)	ISO/IEC 9945-1:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 1: Base Definitions ISO/IEC 9945-2:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 2: System Interfaces ISO/IEC 9945-3:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 3: Shell and Utilities ISO/IEC 9945-4:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 4: Rationale	http://www.unix.org/version3/
Large File Support	Large File Support	http://www.UNIX-systems.org/version2/whatsnew/lfs20mar.html
Li18nux Globalization	LI18NUX 2000 Globalization	http://www.li18nux.org/docs/html/

Name	Title	URL
Specification	Specification, Version 1.0 with Amendment 4	LI18NUX-2000-amd4.htm
Linux Allocated Device Registry	LINUX ALLOCATED DEVICES	http://www.lanana.org/docs/device-list/devices.txt
LINUX for S/390 ELF Application Binary Interface Supplement	LINUX for S/390 ELF Application Binary Interface Supplement	http://oss.software.ibm.com/linux390/documentation-2.2.shtml
PAM	Open Software Foundation, Request For Comments: 86.0 , October 1995, V. Samar & R.Schemers (SunSoft)	http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt
RFC 1321: The MD5 Message-Digest Algorithm	IETF RFC 1321: The MD5 Message-Digest Algorithm	http://www.ietf.org/rfc/rfc1321.txt
RFC 1833: Binding Protocols for ONC RPC Version 2	IETF RFC 1833: Binding Protocols for ONC RPC Version 2	http://www.ietf.org/rfc/rfc1833.txt
RFC 1951: DEFLATE Compressed Data Format Specification	IETF RFC 1951: DEFLATE Compressed Data Format Specification version 1.3	http://www.ietf.org/rfc/rfc1951.txt
RFC 1952: GZIP File Format Specification	IETF RFC 1952: GZIP file format specification version 4.3	http://www.ietf.org/rfc/rfc1952.txt
RFC 2440: OpenPGP Message Format	IETF RFC 2440: OpenPGP Message Format	http://www.ietf.org/rfc/rfc2440.txt
SUSv2	CAE Specification, January 1997, System Interfaces and Headers (XSH),Issue 5 (ISBN: 1-85912-181-0, C606)	http://www.opengroup.org/publications/catalog/un.htm
SUSv2 Command and Utilities	The Single UNIX® Specification(SUS) Version 2, Commands and Utilities (XCU), Issue 5 (ISBN: 1-85912-191-8, C604)	http://www.opengroup.org/publications/catalog/un.htm
SVID Issue 3	American Telephone and Telegraph Company, System V Interface Definition, Issue 3 ; Morristown, NJ, UNIX Press, 1989.(ISBN 0201566524)	
SVID Issue 4	System V Interface Definition,Fourth Edition	
System V ABI	System V Application Binary Interface, Edition 4.1	http://www.caldera.com/developers/devspecs/gabi41.pdf

Name	Title	URL
System V ABI Update	System V Application Binary Interface - DRAFT - 17 December 2003	http://www.caldera.com/developers/gabi/2003-12-17/contents.html
this specification	Linux Standard Base	http://www.linuxbase.org/spec/
X/Open Curses	CAE Specification, May 1996, X/Open Curses, Issue 4, Version 2 (ISBN: 1-85912-171-3, C610), plus Corrigendum U018	http://www.opengroup.org/publications/catalog/un.htm
zlib Manual	zlib 1.2 Manual	http://www.gzip.org/zlib/

Chapter 3. Requirements

3.1. Relevant Libraries

1 The libraries listed in Table 3-1 shall be available on S390 Linux Standard Base systems, with the specified runtime
2 names. These names override or supplement the names specified in the generic LSB specification. The specified
3 program interpreter, referred to as proginterp in this table, shall be used to load the shared libraries specified by
4 DT_NEEDED entries at run time.

5 **Table 3-1. Standard Library Names**

Library	Runtime Name
libm	libm.so.6
libdl	libdl.so.2
libcrypt	libcrypt.so.1
libc	libc.so.6
libpthread	libpthread.so.0
proginterp	/lib/ld-lsb-s390.so.2
libgcc_s	libgcc_s.so.1
libz	libz.so.1
libncurses	libncurses.so.5
libutil	libutil.so.1

6
7 These libraries will be in an implementation-defined directory which the dynamic linker shall search by default.

3.2. LSB Implementation Conformance

- 8 A conforming implementation shall satisfy the following requirements:
- 9 • The implementation shall implement fully the architecture described in the hardware manual for the target
10 processor architecture.
- 11 • The implementation shall be capable of executing compiled applications having the format and using the system
12 interfaces described in this document.
- 13 • The implementation shall provide libraries containing the interfaces specified by this document, and shall provide a
14 dynamic linking mechanism that allows these interfaces to be attached to applications at runtime. All the interfaces
15 shall behave as specified in this document.
- 16 • The map of virtual memory provided by the implementation shall conform to the requirements of this document.
- 17 • The implementation's low-level behavior with respect to function call linkage, system traps, signals, and other such
18 activities shall conform to the formats described in this document.

- 19 • The implementation shall provide all of the mandatory interfaces in their entirety.
- 20 • The implementation may provide one or more of the optional interfaces. Each optional interface that is provided
21 shall be provided in its entirety. The product documentation shall state which optional interfaces are provided.
- 22 • The implementation shall provide all files and utilities specified as part of this document in the format defined here
23 and in other referenced documents. All commands and utilities shall behave as required by this document. The
24 implementation shall also provide all mandatory components of an application's runtime environment that are
25 included or referenced in this document.
- 26 • The implementation, when provided with standard data formats and values at a named interface, shall provide the
27 behavior defined for those values and data formats at that interface. However, a conforming implementation may
28 consist of components which are separately packaged and/or sold. For example, a vendor of a conforming
29 implementation might sell the hardware, operating system, and windowing system as separately packaged items.
- 30 • The implementation may provide additional interfaces with different names. It may also provide additional
31 behavior corresponding to data values outside the standard ranges, for standard named interfaces.

3.3. LSB Application Conformance

- 32 A conforming application shall satisfy the following requirements:
- 33 • Its executable files are either shell scripts or object files in the format defined for the Object File Format system
34 interface.
 - 35 • Its object files participate in dynamic linking as defined in the Program Loading and Linking System interface.
 - 36 • It employs only the instructions, traps, and other low-level facilities defined in the Low-Level System interface as
37 being for use by applications.
 - 38 • If it requires any optional interface defined in this document in order to be installed or to execute successfully, the
39 requirement for that optional interface is stated in the application's documentation.
 - 40 • It does not use any interface or data format that is not required to be provided by a conforming implementation,
41 unless:
 - 42 • If such an interface or data format is supplied by another application through direct invocation of that application
43 during execution, that application is in turn an LSB conforming application.
 - 44 • The use of that interface or data format, as well as its source, is identified in the documentation of the application.
 - 45 • It shall not use any values for a named interface that are reserved for vendor extensions.
- 46 A strictly conforming application does not require or use any interface, facility, or implementation-defined extension
47 that is not defined in this document in order to be installed or to execute successfully.

Chapter 4. Definitions

- 1 For the purposes of this document, the following definitions, as specified in the *ISO/IEC Directives, Part 2, 2001, 4th*
2 *Edition*, apply:
- 3 can
4 be able to; there is a possibility of; it is possible to
- 5 cannot
6 be unable to; there is no possibility of; it is not possible to
- 7 may
8 is permitted; is allowed; is permissible
- 9 need not
10 it is not required that; no...is required
- 11 shall
12 is to; is required to; it is required that; has to; only...is permitted; it is necessary
- 13 shall not
14 is not allowed [permitted] [acceptable] [permissible]; is required to be not; is required that...be not; is not to be
- 15 should
16 it is recommended that; ought to
- 17 should not
18 it is not recommended that; ought not to

Chapter 5. Terminology

- 1 For the purposes of this document, the following terms apply:
- 2 archLSB
 - 3 The architectural part of the LSB Specification which describes the specific parts of the interface that are
 - 4 platform specific. The archLSB is complementary to the gLSB.
- 5 Binary Standard
 - 6 The total set of interfaces that are available to be used in the compiled binary code of a conforming application.
- 7 gLSB
 - 8 The common part of the LSB Specification that describes those parts of the interface that remain constant across
 - 9 all hardware implementations of the LSB.
- 10 implementation-defined
 - 11 Describes a value or behavior that is not defined by this document but is selected by an implementor. The value or
 - 12 behavior may vary among implementations that conform to this document. An application should not rely on the
 - 13 existence of the value or behavior. An application that relies on such a value or behavior cannot be assured to be
 - 14 portable across conforming implementations. The implementor shall document such a value or behavior so that it
 - 15 can be used correctly by an application.
- 16 Shell Script
 - 17 A file that is read by an interpreter (e.g., awk). The first line of the shell script includes a reference to its
 - 18 interpreter binary.
- 19 Source Standard
 - 20 The set of interfaces that are available to be used in the source code of a conforming application.
- 21 undefined
 - 22 Describes the nature of a value or behavior not defined by this document which results from use of an invalid
 - 23 program construct or invalid data input. The value or behavior may vary among implementations that conform to
 - 24 this document. An application should not rely on the existence or validity of the value or behavior. An application
 - 25 that relies on any particular value or behavior cannot be assured to be portable across conforming
 - 26 implementations.
- 27 unspecified
 - 28 Describes the nature of a value or behavior not specified by this document which results from use of a valid
 - 29 program construct or valid data input. The value or behavior may vary among implementations that conform to
 - 30 this document. An application should not rely on the existence or validity of the value or behavior. An application
 - 31 that relies on any particular value or behavior cannot be assured to be portable across conforming
 - 32 implementations.
- 33 Other terms and definitions used in this document shall have the same meaning as defined in Chapter 3 of the Base
- 34 Definitions volume of ISO POSIX (2003).

Chapter 6. Documentation Conventions

1 Throughout this document, the following typographic conventions are used:

2 `function()`

3 the name of a function

4 **command**

5 the name of a command or utility

6 CONSTANT

7 a constant value

8 *parameter*

9 a parameter

10 variable

11 a variable

12 Throughout this specification, several tables of interfaces are presented. Each entry in these tables has the following
13 format:

14 name

15 the name of the interface

16 (symver)

17 An optional symbol version identifier, if required.

18 [refno]

19 A reference number indexing the table of referenced specifications that follows this table.

20 For example,

21 `forkpty(GLIBC_2.0) [1]`

22 refers to the interface named `forkpty` with symbol version `GLIBC_2.0` that is defined in the first of the listed
23 references below the table.

ELF Specification

Table of Contents

I. Low Level System Information.....	15
1. Machine Interface.....	1
1.1. Processor Architecture	1
1.2. Data Representation.....	1
1.2.1. Byte Ordering	1
1.2.2. Fundamental Types	1
1.2.3. Aggregates and Unions	1
1.2.4. Bit Fields	2
2. Function Calling Sequence.....	3
2.1. Registers	3
2.2. Stack Frame	3
2.3. Parameter Passing.....	3
2.4. Variable Argument Lists.....	3
2.5. Return Values	3
3. Operating System Interface	4
3.1. Virtual Address Space	4
3.1.1. Page Size	4
3.1.2. Virtual Address Assignments.....	4
3.1.3. Managing the Process Stack.....	4
3.1.4. Coding Guidelines.....	4
3.2. Processor Execution Mode	4
3.3. Exception Interface	4
4. Process Initialization	5
4.1. Registers	5
4.2. Process Stack	5
5. Coding Examples	6
5.1. Code Model Overview.....	6
5.2. Function Prolog and Epilog	6
5.3. Data Objects	6
5.4. Function Calls.....	6
5.5. Branching.....	6
5.6. Dynamic Stack Space Allocation.....	6
6. Debug Information	7
II. Object Format.....	8
7. ELF Header	9
7.1. Machine Information	9
8. Sections	10
8.1. Special Sections	10
9. Symbol Table	11
10. Relocation	12
10.1. Relocation Types	12
III. Program Loading and Dynamic Linking	13
11. Program Loading.....	14

12. Dynamic Linking.....	15
12.1. Dynamic Section.....	15
12.2. Global Offset Table	15
12.3. Shared Object Dependencies	15
12.4. Function Addresses.....	15
12.5. Procedure Linkage Table.....	15

List of Tables

8-1. ELF Special Sections.....	10
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I. Low Level System Information

Chapter 1. Machine Interface

1.1. Processor Architecture

- 1 The ESA/390 Architecture is specified by the following documents
 - 2 • LINUX for S/390 ELF Application Binary Interface Supplement
 - 3 • Enterprise Systems Architecture/390 Principles of Operation
- 4 Only the features of ESA/390 processor instruction set and the following optional instructions may be assumed to be present:
 - 6 • additional floating point facility
 - 7 • compare and move extended facility
 - 8 • immediate and relative instruction facility
 - 9 • string instruction facility
 - 10 • square-root facility
- 11 An application is responsible for determining if any additional instruction set features are available before using those additional features. If a feature is not present, then the application may not use it.
- 13 Applications may not make system calls directly. The interfaces in the C library must be used instead.
- 14 Applications conforming to this specification must provide feedback to the user if a feature that is required for correct execution of the application is not present. Applications conforming to this specification should attempt to execute in a diminished capacity if a required instruction set feature is not present.
- 17 This specification does not provide any performance guarantees of a conforming system. A system conforming to this specification may be implemented in either hardware or software.

1.2. Data Representation

- 19 LSB-conforming applications shall use the data representation as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
- 21 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.1. Byte Ordering

- 22 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.2. Fundamental Types

- 23 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.3. Aggregates and Unions

- 24 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.4. Bit Fields

- 25 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 2. Function Calling Sequence

- 1 LSB-conforming applications shall use the function calling sequence as defined in Chapter 1 of the LINUX for S/390
- 2 ELF Application Binary Interface Supplement.

2.1. Registers

- 3 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.2. Stack Frame

- 4 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.3. Parameter Passing

- 5 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.4. Variable Argument Lists

- 6 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.5. Return Values

- 7 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 3. Operating System Interface

- 1 LSB-conforming applications shall use the Operating System Interfaces as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
- 2

3.1. Virtual Address Space

- 3 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.1. Page Size

- 4 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.2. Virtual Address Assignments

- 5 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.3. Managing the Process Stack

- 6 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.4. Coding Guidelines

- 7 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.2. Processor Execution Mode

- 8 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.3. Exception Interface

- 9 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 4. Process Initialization

- 1 LSB-conforming applications shall use the Process Initialization as defined in Chapter 1 of the LINUX for S/390 ELF
- 2 Application Binary Interface Supplement.

4.1. Registers

- 3 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

4.2. Process Stack

- 4 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 5. Coding Examples

- 1 LSB-conforming applications may implement fundamental operations using the Coding Examples as defined in
- 2 Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.1. Code Model Overview

- 3 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.2. Function Prolog and Epilog

- 4 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.3. Data Objects

- 5 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.4. Function Calls

- 6 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.5. Branching

- 7 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.6. Dynamic Stack Space Allocation

- 8 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 6. Debug Information

- 1 The LSB does not currently specify the format of Debug information.

II. Object Format

- 2 LSB-conforming implementations shall support an object file , called Executable and Linking Format (ELF) as
- 3 defined by the System V ABI , System V ABI Update, LINUX for S/390 ELF Application Binary Interface
- 4 Supplement and as supplemented by the this specification and this document.

Chapter 7. ELF Header

7.1. Machine Information

- 1 LSB-conforming applications shall use the Machine Information as defined in Chapter 2 of the LINUX for S/390 ELF
- 2 Application Binary Interface Supplement.

Chapter 8. Sections

1 See chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.

8.1. Special Sections

2 The following sections are defined in the LINUX for S/390 ELF Application Binary Interface Supplement.

3 **Table 8-1. ELF Special Sections**

Name	Type	Attributes
.got	SHT_PROGBITS	SHF_ALLOC+SHF_WRITE
.plt	SHT_PROGBITS	SHF_ALLOC+SHF_EXECINSTR

4

5 .got

6 This section holds the global offset table

7 .plt

8 This section holds the Procedure Linkage Table

Chapter 9. Symbol Table

- 1 LSB-conforming applications shall use the Symbol Table as defined in Chapter 2 of the LINUX for S/390 ELF
- 2 Application Binary Interface Supplement.

Chapter 10. Relocation

- 1 LSB-conforming applications shall use Relocations as defined in Chapter 2 of the LINUX for S/390 ELF Application
- 2 Binary Interface Supplement.

10.1. Relocation Types

- 3 See chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.

III. Program Loading and Dynamic Linking

- 2 LSB-conforming implementations shall support the object file information and system actions that create running
- 3 programs as specified in the LINUX for S/390 ELF Application Binary Interface Supplement and as supplemented by
- 4 the generic LSB and this document. LSB-conforming implementations need not support tags related functionality.
- 5 LSB-conforming applications must not rely on tags related funtionatliy.

Chapter 11. Program Loading

- 1 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Chapter 12. Dynamic Linking

1 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.1. Dynamic Section

2 The following dynamic entries are defined in the LINUX for S/390 ELF Application Binary Interface Supplement.

3 DT_JMPREL

4 This entry is associated with a table of relocation entries for the procedure linkage table. This entry is mandatory
5 both for executable and shared object files

6 DT_PLTGOT

7 This entry's d_ptr member gives the address of the first byte in the procedure linkage table

12.2. Global Offset Table

8 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.3. Shared Object Dependencies

9 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.4. Function Addresses

10 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.5. Procedure Linkage Table

11 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

Linux Standard Base Specification

Table of Contents

I. Base Libraries.....	22
1. Libraries	1
1.1. Program Interpreter/Dynamic Linker	1
1.2. Interfaces for libc	1
1.2.1. RPC	1
1.2.1.1. Interfaces for RPC	1
1.2.2. System Calls.....	2
1.2.2.1. Interfaces for System Calls	2
1.2.3. Standard I/O	4
1.2.3.1. Interfaces for Standard I/O	4
1.2.4. Signal Handling.....	5
1.2.4.1. Interfaces for Signal Handling	5
1.2.5. Localization Functions	6
1.2.5.1. Interfaces for Localization Functions	6
1.2.6. Socket Interface.....	7
1.2.6.1. Interfaces for Socket Interface	7
1.2.7. Wide Characters	8
1.2.7.1. Interfaces for Wide Characters	8
1.2.8. String Functions	9
1.2.8.1. Interfaces for String Functions.....	9
1.2.9. IPC Functions.....	10
1.2.9.1. Interfaces for IPC Functions	10
1.2.10. Regular Expressions.....	11
1.2.10.1. Interfaces for Regular Expressions	11
1.2.11. Character Type Functions	11
1.2.11.1. Interfaces for Character Type Functions.....	11
1.2.12. Time Manipulation.....	12
1.2.12.1. Interfaces for Time Manipulation	12
1.2.13. Terminal Interface Functions	13
1.2.13.1. Interfaces for Terminal Interface Functions.....	13
1.2.14. System Database Interface	14
1.2.14.1. Interfaces for System Database Interface.....	14
1.2.15. Language Support	14
1.2.15.1. Interfaces for Language Support.....	14
1.2.16. Large File Support.....	15
1.2.16.1. Interfaces for Large File Support.....	15
1.2.17. Standard Library.....	15
1.2.17.1. Interfaces for Standard Library	15
1.3. Data Definitions for libc	17
1.3.1. errno.h	18
1.3.2. inttypes.h.....	18
1.3.3. limits.h.....	18
1.3.4. setjmp.h	18

1.3.5. signal.h	18
1.3.6. stddef.h	19
1.3.7. sys/ioctl.h	19
1.3.8. sys/ipc.h	19
1.3.9. sys/mman.h	20
1.3.10. sys/msg.h	20
1.3.11. sys/sem.h	20
1.3.12. sys/shm.h	21
1.3.13. sys/socket.h	21
1.3.14. sys/stat.h	21
1.3.15. sys/statvfs.h	22
1.3.16. sys/types.h	23
1.3.17. termios.h	23
1.3.18. ucontext.h	24
1.3.19. unistd.h	25
1.3.20. utmp.h	25
1.3.21. utmpx.h	26
1.4. Interfaces for libm	26
1.4.1. Math	26
1.4.1.1. Interfaces for Math	26
1.5. Interfaces for libpthread	30
1.5.1. Realtime Threads	30
1.5.1.1. Interfaces for Realtime Threads	30
1.5.2. Advanced Realtime Threads	30
1.5.2.1. Interfaces for Advanced Realtime Threads	30
1.5.3. Posix Threads	31
1.5.3.1. Interfaces for Posix Threads	31
1.6. Interfaces for libgcc_s	32
1.6.1. Unwind Library	32
1.6.1.1. Interfaces for Unwind Library	32
1.7. Interface Definitions for libgcc_s	33
_Unwind_DeleteException	33
_Unwind_Find_FDE	34
_Unwind_ForcedUnwind	35
_Unwind_GetDataRelBase	36
_Unwind_GetGR	36
_Unwind_GetIP	36
_Unwind_GetLanguageSpecificData	37
_Unwind_GetRegionStart	37
_Unwind_GetTextRelBase	37
_Unwind_RaiseException	38
_Unwind_Resume	39
_Unwind_SetGR	39
_Unwind_SetIP	39
1.8. Interfaces for libdl	39
1.8.1. Dynamic Loader	40
1.8.1.1. Interfaces for Dynamic Loader	40
1.9. Interfaces for libcrypt	40

1.9.1. Encryption.....	40
1.9.1.1. Interfaces for Encryption	40
II. Utility Libraries	42
2. Libraries	43
2.1. Interfaces for libz.....	43
2.1.1. Compression Library.....	43
2.1.1.1. Interfaces for Compression Library	43
2.2. Data Definitions for libz	43
2.3. Interfaces for libncurses.....	43
2.3.1. Curses.....	43
2.3.1.1. Interfaces for Curses	43
2.4. Data Definitions for libncurses	43
2.4.1. curses.h.....	44
2.5. Interfaces for libutil	44
2.5.1. Utility Functions.....	44
2.5.1.1. Interfaces for Utility Functions	44
A. Alphabetical Listing of Interfaces	45
A.1. libgcc_s.....	45

List of Tables

1-1. libc Definition.....	1
1-2. libc - RPC Function Interfaces	1
1-3. libc - System Calls Function Interfaces	2
1-4. libc - Standard I/O Function Interfaces	4
1-5. libc - Standard I/O Data Interfaces	5
1-6. libc - Signal Handling Function Interfaces	5
1-7. libc - Signal Handling Data Interfaces.....	6
1-8. libc - Localization Functions Function Interfaces	6
1-9. libc - Localization Functions Data Interfaces	7
1-10. libc - Socket Interface Function Interfaces	7
1-11. libc - Socket Interface Deprecated Function Interfaces.....	8
1-12. libc - Wide Characters Function Interfaces	8
1-13. libc - String Functions Function Interfaces.....	9
1-14. libc - IPC Functions Function Interfaces	10
1-15. libc - Regular Expressions Function Interfaces	11
1-16. libc - Regular Expressions Deprecated Function Interfaces	11
1-17. libc - Regular Expressions Deprecated Data Interfaces.....	11
1-18. libc - Character Type Functions Function Interfaces.....	12
1-19. libc - Time Manipulation Function Interfaces	12
1-20. libc - Time Manipulation Deprecated Function Interfaces	13
1-21. libc - Time Manipulation Data Interfaces.....	13
1-22. libc - Terminal Interface Functions Function Interfaces.....	13
1-23. libc - System Database Interface Function Interfaces.....	14
1-24. libc - Language Support Function Interfaces.....	14
1-25. libc - Large File Support Function Interfaces	15
1-26. libc - Standard Library Function Interfaces	15
1-27. libc - Standard Library Data Interfaces	17
1-28. libm Definition	26
1-29. libm - Math Function Interfaces	26
1-30. libm - Math Data Interfaces.....	30
1-31. libpthread Definition	30
1-32. libpthread - Posix Threads Function Interfaces	31
1-33. libgcc_s Definition	32
1-34. libgcc_s - Unwind Library Function Interfaces	32
1-35. libdl Definition	40
1-36. libdl - Dynamic Loader Function Interfaces	40
1-37. libcrypt Definition	40
1-38. libcrypt - Encryption Function Interfaces	40
2-1. libz Definition.....	43
2-2. libcurses Definition	43
2-3. libutil Definition	44
2-4. libutil - Utility Functions Function Interfaces	44
A-1. libgcc_s Function Interfaces	45

I. Base Libraries

Chapter 1. Libraries

- 1 An LSB-conforming implementation shall support base libraries which provide interfaces for accessing the operating system, processor and other hardware in the system.
- 3 Only those interfaces that are unique to the PowerPC 32 platform are defined here. This section should be used in conjunction with the corresponding section in the Linux Standard Base Specification.

1.1. Program Interpreter/Dynamic Linker

- 5 The LSB specifies the Program Interpreter to be /lib/ld-lsb-s390.so.2.

1.2. Interfaces for libc

- 6 Table 1-1 defines the library name and shared object name for the libc library

7 **Table 1-1. libc Definition**

Library:	libc
SONAME:	libc.so.6

- 9 The behavior of the interfaces in this library is specified by the following specifications:

Large File Support

this specification

SUSv2

ISO POSIX (2003)

SVID Issue 3

10 SVID Issue 4

1.2.1. RPC

11 1.2.1.1. Interfaces for RPC

- 12 An LSB conforming implementation shall provide the architecture specific functions for RPC specified in Table 1-2, with the full functionality as described in the referenced underlying specification.

14 **Table 1-2. libc - RPC Function Interfaces**

authnone_create(GLIBC_2.0) [1]	pmap_unset(GLIBC_2.0) [2]	svcerr_weakauth(GLIBC_2.0) [3]	xdr_float(GLIBC_2.0) [3]	xdr_u_char(GLIBC_2.0) [3]
clnt_create(GLIBC_2.0) [1]	setdomainname(GLIBC_2.0) [2]	svctcp_create(GLIBC_2.0) [2]	xdr_free(GLIBC_2.0) [3]	xdr_u_int(GLIBC_2.0) [2]
clnt_pcreateerror(GLIBC_2.0) [1]	svc_getreqset(GLIBC_2.0) [3]	svcupd_create(GLIBC_2.0) [2]	xdr_int(GLIBC_2.0) [3]	xdr_u_long(GLIBC_2.0) [3]

clnt_perrno(GLIBC_2.0) [1]	svc_register(GLIBC_2.0) [2]	xdr_accepted_reply(GLIBC_2.0) [3]	xdr_long(GLIBC_2.0) [3]	xdr_u_short(GLIBC_2.0) [3]
clnt_perror(GLIBC_2.0) [1]	svc_run(GLIBC_2.0) [2]	xdr_array(GLIBC_2.0) [3]	xdr_opaque(GLIBC_2.0) [3]	xdr_union(GLIBC_2.0) [3]
clnt_spcreateerror(GLIBC_2.0) [1]	svc_sendreply(GLIBC_2.0) [2]	xdr_bool(GLIBC_2.0) [3]	xdr_opaque_auth(GLIBC_2.0) [3]	xdr_vector(GLIBC_2.0) [3]
clnt_sperrno(GLIBC_2.0) [1]	svcerr_auth(GLIBC_2.0) [3]	xdr_bytes(GLIBC_2.0) [3]	xdr_pointer(GLIBC_2.0) [3]	xdr_void(GLIBC_2.0) [3]
clnt_sprror(GLIBC_2.0) [1]	svcerr_decode(GLIBC_2.0) [3]	xdr_callhdr(GLIBC_2.0) [3]	xdr_reference(GLIBC_2.0) [3]	xdr_wrapstring(GLIBC_2.0) [3]
getdomainname(GLIBC_2.0) [2]	svcerr_noproc(GLIBC_2.0) [3]	xdr_callmsg(GLIBC_2.0) [3]	xdr_rejected_reply(GLIBC_2.0) [3]	xdrmem_create(GLIBC_2.0) [3]
key_decryptsession(GLIBC_2.1) [3]	svcerr_noprog(GLIBC_2.0) [3]	xdr_char(GLIBC_2.0) [3]	xdr_replymsg(GLIBC_2.0) [3]	xdrrec_create(GLIBC_2.0) [3]
pmap_getport(GLIBC_2.0) [2]	svcerr_progvers(GLIBC_2.0) [3]	xdr_double(GLIBC_2.0) [3]	xdr_short(GLIBC_2.0) [3]	xdrrec_eof(GLIBC_2.0) [3]
pmap_set(GLIBC_2.0) [2]	svcerr_systemerr(GLIBC_2.0) [3]	xdr_enum(GLIBC_2.0) [3]	xdr_string(GLIBC_2.0) [3]	

15 *Referenced Specification(s)*

16 [1]. SVID Issue 4

17 [2]. this specification

18 [3]. SVID Issue 3

1.2.2. System Calls

20 1.2.2.1. Interfaces for System Calls

21 An LSB conforming implementation shall provide the architecture specific functions for System Calls specified in
22 Table 1-3, with the full functionality as described in the referenced underlying specification.

23 **Table 1-3. libc - System Calls Function Interfaces**

__fxstat(GLIBC_2.0) [1]	fchmod(GLIBC_2.0) [2]	getwd(GLIBC_2.0) [2]	read(GLIBC_2.0) [2]	setrlimit(GLIBC_2.2) [2]
__getpgid(GLIBC_2.0) [1]	fchown(GLIBC_2.0) [2]	initgroups(GLIBC_2.0) [1]	readdir(GLIBC_2.0) [2]	setrlimit64(GLIBC_2.1) [3]
__lxstat(GLIBC_2.0) [1]	fcntl(GLIBC_2.0) [1]	ioctl(GLIBC_2.0) [1]	readdir_r(GLIBC_2.0) [2]	setsid(GLIBC_2.0) [2]
__xmknod(GLIBC_2.0) [1]	fdatasync(GLIBC_2.0) [2]	kill(GLIBC_2.0) [1]	readlink(GLIBC_2.0) [2]	setuid(GLIBC_2.0) [2]

__xstat(GLIBC_2.0) [1]	flock(GLIBC_2.0) [1]	killpg(GLIBC_2.0) [2]	readv(GLIBC_2.0) [2]	sleep(GLIBC_2.0) [2]
access(GLIBC_2.0) [2]	fork(GLIBC_2.0) [2]	lchown(GLIBC_2.0) [2]	rename(GLIBC_2.0) [2]	statvfs(GLIBC_2.1) [2]
acct(GLIBC_2.0) [1]	fstatvfs(GLIBC_2.1) [2]	link(GLIBC_2.0) [2]	rmdir(GLIBC_2.0) [2]	stime(GLIBC_2.0) [1]
alarm(GLIBC_2.0) [2]	fsync(GLIBC_2.0) [2]	lockf(GLIBC_2.0) [2]	sbrk(GLIBC_2.0) [4]	symlink(GLIBC_2.0) [2]
brk(GLIBC_2.0) [4]	ftime(GLIBC_2.0) [2]	lseek(GLIBC_2.0) [2]	sched_get_priority_max(GLIBC_2.0) [2]	sync(GLIBC_2.0) [2]
chdir(GLIBC_2.0) [2]	ftruncate(GLIBC_2.0) [2]	mkdir(GLIBC_2.0) [2]	sched_get_priority_min(GLIBC_2.0) [2]	sysconf(GLIBC_2.0) [2]
chmod(GLIBC_2.0) [2]	getcontext(GLIBC_2.1) [2]	mkfifo(GLIBC_2.0) [2]	sched_getparam(GLIBC_2.0) [2]	time(GLIBC_2.0) [2]
chown(GLIBC_2.1) [2]	getegid(GLIBC_2.0) [2]	mlock(GLIBC_2.0) [2]	sched_getscheduler(GLIBC_2.0) [2]	times(GLIBC_2.0) [2]
chroot(GLIBC_2.0) [4]	geteuid(GLIBC_2.0) [2]	mlockall(GLIBC_2.0) [2]	sched_rr_get_interval(GLIBC_2.0) [2]	truncate(GLIBC_2.0) [2]
clock(GLIBC_2.0) [2]	getgid(GLIBC_2.0) [2]	mmap(GLIBC_2.0) [2]	sched_setparam(GLIBC_2.0) [2]	ulimit(GLIBC_2.0) [2]
close(GLIBC_2.0) [2]	getgroups(GLIBC_2.0) [2]	mprotect(GLIBC_2.0) [2]	sched_setscheduler(GLIBC_2.0) [2]	umask(GLIBC_2.0) [2]
closedir(GLIBC_2.0) [2]	getitimer(GLIBC_2.0) [2]	msync(GLIBC_2.0) [2]	sched_yield(GLIBC_2.0) [2]	uname(GLIBC_2.0) [2]
creat(GLIBC_2.0) [1]	getloadavg(GLIBC_2.2) [1]	munlock(GLIBC_2.0) [2]	select(GLIBC_2.0) [2]	unlink(GLIBC_2.0) [1]
dup(GLIBC_2.0) [2]	getpagesize(GLIBC_2.0) [4]	munlockall(GLIBC_2.0) [2]	setcontext(GLIBC_2.0) [2]	utime(GLIBC_2.0) [2]
dup2(GLIBC_2.0) [2]	getpgid(GLIBC_2.0) [2]	munmap(GLIBC_2.0) [2]	setegid(GLIBC_2.0) [2]	utimes(GLIBC_2.0) [2]
execl(GLIBC_2.0) [2]	getpgrp(GLIBC_2.0) [2]	nanosleep(GLIBC_2.0) [2]	seteuid(GLIBC_2.0) [2]	vfork(GLIBC_2.0) [2]
execle(GLIBC_2.0) [2]	getpid(GLIBC_2.0) [2]	nice(GLIBC_2.0) [2]	setgid(GLIBC_2.0) [2]	wait(GLIBC_2.0) [2]
execlp(GLIBC_2.0) [2]	getppid(GLIBC_2.0) [2]	open(GLIBC_2.0) [1]	setitimer(GLIBC_2.0) [2]	wait3(GLIBC_2.0) [1]

execv(GLIBC_2.0) [2]	getpriority(GLIBC_2.0) [2]	opendir(GLIBC_2.0) [2]	setpgid(GLIBC_2.0) [2]	wait4(GLIBC_2.0) [1]
execve(GLIBC_2.0) [2]	getrlimit(GLIBC_2.2) [2]	pathconf(GLIBC_2.0) [2]	setpgrp(GLIBC_2.0) [2]	waitpid(GLIBC_2.0) [1]
execvp(GLIBC_2.0) [2]	getrusage(GLIBC_2.0) [2]	pause(GLIBC_2.0) [2]	setpriority(GLIBC_2.0) [2]	write(GLIBC_2.0) [2]
exit(GLIBC_2.0) [2]	getsid(GLIBC_2.0) [2]	pipe(GLIBC_2.0) [2]	setregid(GLIBC_2.0) [2]	writev(GLIBC_2.0) [2]
fchdir(GLIBC_2.0) [2]	getuid(GLIBC_2.0) [2]	poll(GLIBC_2.0) [2]	setreuid(GLIBC_2.0) [2]	

24 *Referenced Specification(s)*

25 [1]. this specification

26 [2]. ISO POSIX (2003)

27 [3]. Large File Support

28 [4]. SUSv2

1.2.3. Standard I/O

30 1.2.3.1. Interfaces for Standard I/O

31 An LSB conforming implementation shall provide the architecture specific functions for Standard I/O specified in
 32 Table 1-4, with the full functionality as described in the referenced underlying specification.

33 **Table 1-4. libc - Standard I/O Function Interfaces**

_IO_feof(GLIBC_2.0) [1]	fgetpos(GLIBC_2.2) [2]	fsetpos(GLIBC_2.2) [2]	putchar(GLIBC_2.0) [2]	sscanf(GLIBC_2.0) [2]
_IO_getc(GLIBC_2.0) [1]	fgets(GLIBC_2.0) [2]	ftell(GLIBC_2.0) [2]	putchar_unlocked(GLIBC_2.0) [2]	telldir(GLIBC_2.0) [2]
_IO_putc(GLIBC_2.0) [1]	fgetwc_unlocked(GLIBC_2.2) [1]	ftello(GLIBC_2.1) [2]	puts(GLIBC_2.0) [2]	tempnam(GLIBC_2.0) [2]
_IO_puts(GLIBC_2.0) [1]	fileno(GLIBC_2.0) [2]	fwrite(GLIBC_2.0) [2]	putw(GLIBC_2.0) [3]	ungetc(GLIBC_2.0) [2]
asprintf(GLIBC_2.0) [1]	flockfile(GLIBC_2.0) [2]	getc(GLIBC_2.0) [2]	remove(GLIBC_2.0) [2]	vasprintf(GLIBC_2.0) [1]
clearerr(GLIBC_2.0) [2]	fopen(GLIBC_2.1) [1]	getc_unlocked(GLIBC_2.0) [2]	rewind(GLIBC_2.0) [2]	vdprintf(GLIBC_2.0) [1]
ctermid(GLIBC_2.0) [2]	fprintf(GLIBC_2.0) [2]	getchar(GLIBC_2.0) [2]	rewinddir(GLIBC_2.0) [2]	vfprintf(GLIBC_2.0) [2]

fclose(GLIBC_2.1) [2]	fputc(GLIBC_2.0) [2]	getchar_unlocked(GLIBC_2.0) [2]	scanf(GLIBC_2.0) [2]	vprintf(GLIBC_2.0) [2]
fdopen(GLIBC_2.1) [2]	fputs(GLIBC_2.0) [2]	getw(GLIBC_2.0) [3]	seekdir(GLIBC_2.0) [2]	vsnprintf(GLIBC_2.0) [2]
feof(GLIBC_2.0) [2]	fread(GLIBC_2.0) [2]	pclose(GLIBC_2.1) [2]	setbuf(GLIBC_2.0) [2]	vsprintf(GLIBC_2.0) [2]
ferror(GLIBC_2.0) [2]	freopen(GLIBC_2.0) [1]	popen(GLIBC_2.1) [2]	setbuffer(GLIBC_2.0) [1]	
fflush(GLIBC_2.0) [2]	fscanf(GLIBC_2.0) [2]	printf(GLIBC_2.0) [2]	setvbuf(GLIBC_2.0) [2]	
fflush_unlocked(GLIBC_2.0) [1]	fseek(GLIBC_2.0) [2]	putc(GLIBC_2.0) [2]	snprintf(GLIBC_2.0) [2]	
fgetc(GLIBC_2.0) [2]	fseeko(GLIBC_2.1) [2]	putc_unlocked(GLIBC_2.0) [2]	sprintf(GLIBC_2.0) [2]	

34

35 *Referenced Specification(s)*

36 [1]. this specification

37 [2]. ISO POSIX (2003)

38 [3]. SUSv2

39 An LSB conforming implementation shall provide the architecture specific data interfaces for Standard I/O specified
40 in Table 1-5, with the full functionality as described in the referenced underlying specification.

41 **Table 1-5. libc - Standard I/O Data Interfaces**

42

stderr(GLIBC_2.0) [1]	stdin(GLIBC_2.0) [1]	stdout(GLIBC_2.0) [1]		
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43 *Referenced Specification(s)*

44 [1]. ISO POSIX (2003)

1.2.4. Signal Handling

45 **1.2.4.1. Interfaces for Signal Handling**

46 An LSB conforming implementation shall provide the architecture specific functions for Signal Handling specified in
47 Table 1-6, with the full functionality as described in the referenced underlying specification.

48 **Table 1-6. libc - Signal Handling Function Interfaces**

__libc_current_sigrtmax(GLIBC_2.1) [1]	sigaddset(GLIBC_2.0) [2]	sighold(GLIBC_2.1) [2]	sigpause(GLIBC_2.0) [2]	sigsuspend(GLIBC_2.0) [2]
__libc_current_sigrt	sigaltstack(GLIBC_2.0)	sigignore(GLIBC_2.0)	sigpending(GLIBC_2.0)	sigtimedwait(GLIBC_2.0)

min(GLIBC_2.1) [1]	2.0) [2]	.1) [2]	2.0) [2]	C_2.1) [2]
__sigsetjmp(GLIBC_2.0) [1]	sigandset(GLIBC_2.0) [1]	siginterrupt(GLIBC_2.0) [2]	sigprocmask(GLIBC_2.0) [2]	sigwait(GLIBC_2.0) [2]
__sysv_signal(GLIBC_2.0) [1]	sigblock(GLIBC_2.0) [1]	sigisemptyset(GLIBC_2.0) [1]	sigqueue(GLIBC_2.1) [2]	sigwaitinfo(GLIBC_2.1) [2]
bsd_signal(GLIBC_2.0) [2]	sigdelset(GLIBC_2.0) [2]	sigismember(GLIBC_2.0) [2]	sigrelse(GLIBC_2.1) [2]	
psignal(GLIBC_2.0) [1]	sigemptyset(GLIBC_2.0) [2]	siglongjmp(GLIBC_2.0) [2]	sigreturn(GLIBC_2.0) [1]	
raise(GLIBC_2.0) [2]	sigfillset(GLIBC_2.0) [2]	signal(GLIBC_2.0) [2]	sigset(GLIBC_2.1) [2]	
sigaction(GLIBC_2.0) [2]	siggetmask(GLIBC_2.0) [1]	sigorset(GLIBC_2.0) [1]	sigstack(GLIBC_2.0) [3]	

49

50 *Referenced Specification(s)*

51 [1]. this specification

52 [2]. ISO POSIX (2003)

53 [3]. SUSv2

54 An LSB conforming implementation shall provide the architecture specific data interfaces for Signal Handling
 55 specified in Table 1-7, with the full functionality as described in the referenced underlying specification.

56 **Table 1-7. libc - Signal Handling Data Interfaces**

_sys_siglist(GLIBC_2.1) [1]				
-----------------------------	--	--	--	--

58 *Referenced Specification(s)*

59 [1]. this specification

1.2.5. Localization Functions

60 1.2.5.1. Interfaces for Localization Functions

61 An LSB conforming implementation shall provide the architecture specific functions for Localization Functions
 62 specified in Table 1-8, with the full functionality as described in the referenced underlying specification.

63 **Table 1-8. libc - Localization Functions Function Interfaces**

bind_textdomain_codeset(GLIBC_2.2) [1]	catopen(GLIBC_2.0) [2]	dgettext(GLIBC_2.2) [1]	iconv_open(GLIBC_2.1) [2]	setlocale(GLIBC_2.0) [2]
bindtextdomain(GL_	dcgettext(GLIBC_2.	gettext(GLIBC_2.0)	localeconv(GLIBC_	textdomain(GLIBC

64 IBC_2.0) [1]	0) [1]	[1]	2.2) [2]	_2.0) [1]
catclose(GLIBC_2.0) [2]	dgettext(GLIBC_2.2) [1]	iconv(GLIBC_2.1) [2]	ngettext(GLIBC_2.2) [1]	
catgets(GLIBC_2.0) [2]	dgettext(GLIBC_2.0) [1]	iconv_close(GLIBC_2.1) [2]	nl_langinfo(GLIBC_2.0) [2]	

65 *Referenced Specification(s)*

66 [1]. this specification

67 [2]. ISO POSIX (2003)

68 An LSB conforming implementation shall provide the architecture specific data interfaces for Localization Functions
69 specified in Table 1-9, with the full functionality as described in the referenced underlying specification.

70 **Table 1-9. libc - Localization Functions Data Interfaces**

_nl_msg_cat_cntr(GLIBC_2.0) [1]				
---------------------------------	--	--	--	--

72 *Referenced Specification(s)*

73 [1]. this specification

1.2.6. Socket Interface

1.2.6.1. Interfaces for Socket Interface

74 An LSB conforming implementation shall provide the architecture specific functions for Socket Interface specified in
75 Table 1-10, with the full functionality as described in the referenced underlying specification.

77 **Table 1-10. libc - Socket Interface Function Interfaces**

78 __h_errno_location(GLIBC_2.0) [1]	gethostid(GLIBC_2.0) [2]	listen(GLIBC_2.0) [2]	sendmsg(GLIBC_2.0) [2]	socketpair(GLIBC_2.0) [2]
accept(GLIBC_2.0) [2]	gethostname(GLIBC_2.0) [2]	recv(GLIBC_2.0) [2]	sendto(GLIBC_2.0) [2]	
bind(GLIBC_2.0) [2]	getpeername(GLIBC_2.0) [2]	recvfrom(GLIBC_2.0) [2]	setsockopt(GLIBC_2.0) [1]	
bindresvport(GLIBC_2.0) [1]	getsockname(GLIBC_2.0) [2]	recvmsg(GLIBC_2.0) [2]	shutdown(GLIBC_2.0) [2]	
connect(GLIBC_2.0) [2]	getsockopt(GLIBC_2.0) [2]	send(GLIBC_2.0) [2]	socket(GLIBC_2.0) [2]	

79 *Referenced Specification(s)*

80 [1]. this specification

81 [2]. ISO POSIX (2003)

82 An LSB conforming implementation shall provide the architecture specific deprecated functions for Socket Interface
 83 specified in Table 1-11, with the full functionality as described in the referenced underlying specification.

84 These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn
 85 in future releases of this specification.

86 **Table 1-11. libc - Socket Interface Deprecated Function Interfaces**

gethostbyname_r(GLIBC_2.1.2) [1]				
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88 *Referenced Specification(s)*

89 [1]. this specification

1.2.7. Wide Characters

1.2.7.1. Interfaces for Wide Characters

91 An LSB conforming implementation shall provide the architecture specific functions for Wide Characters specified in
 92 Table 1-12, with the full functionality as described in the referenced underlying specification.

93 **Table 1-12. libc - Wide Characters Function Interfaces**

__wcstod_internal(GLIBC_2.0) [1]	mbsinit(GLIBC_2.0) [2]	vwscanf(GLIBC_2.2) [2]	wcsnlen(GLIBC_2.1) [1]	wcstoumax(GLIBC_2.1) [2]
__wcstof_internal(GLIBC_2.0) [1]	mbsnrtowcs(GLIBC_2.0) [1]	wcpncpy(GLIBC_2.0) [1]	wcsnrtombs(GLIBC_2.0) [1]	wcstouq(GLIBC_2.0) [1]
__wcstol_internal(GLIBC_2.0) [1]	mbsrtowcs(GLIBC_2.0) [2]	wcpncpy(GLIBC_2.0) [1]	wcspbrk(GLIBC_2.0) [2]	wcswcs(GLIBC_2.1) [2]
__wcstold_internal(GLIBC_2.0) [1]	mbstowcs(GLIBC_2.0) [2]	wcrtomb(GLIBC_2.0) [2]	wcsrchr(GLIBC_2.0) [2]	wcswidth(GLIBC_2.0) [2]
__wcstoul_internal(GLIBC_2.0) [1]	mbtowc(GLIBC_2.0) [2]	wcscasecmp(GLIBC_2.1) [1]	wcsrtombs(GLIBC_2.0) [2]	wcsxfrm(GLIBC_2.0) [2]
btowc(GLIBC_2.0) [2]	putwc(GLIBC_2.2) [2]	wcscat(GLIBC_2.0) [2]	wcsspn(GLIBC_2.0) [2]	wctob(GLIBC_2.0) [2]
fgetwc(GLIBC_2.2) [2]	putwchar(GLIBC_2.2) [2]	wcschr(GLIBC_2.0) [2]	wcsstr(GLIBC_2.0) [2]	wctomb(GLIBC_2.0) [2]
fgetws(GLIBC_2.2) [2]	swprintf(GLIBC_2.2) [2]	wcscmp(GLIBC_2.0) [2]	wcstod(GLIBC_2.0) [2]	wctrans(GLIBC_2.0) [2]
fputwc(GLIBC_2.2) [2]	swscanf(GLIBC_2.2) [2]	wescoll(GLIBC_2.0) [2]	wcstof(GLIBC_2.0) [2]	wctype(GLIBC_2.0) [2]
fputws(GLIBC_2.2) [2]	towctrans(GLIBC_2.0) [2]	wcscpy(GLIBC_2.0) [2]	wcstoi(max(GLIBC_2.1) [2]	wcwidth(GLIBC_2.0) [2]

fwide(GLIBC_2.2) [2]	towlower(GLIBC_2.0) [2]	wcscspn(GLIBC_2.0) [2]	wcstok(GLIBC_2.0) [2]	wmemchr(GLIBC_2.0) [2]
fwprintf(GLIBC_2.2) [2]	towupper(GLIBC_2.0) [2]	wcsdup(GLIBC_2.0) [1]	wcstol(GLIBC_2.0) [2]	wmemcmp(GLIBC_2.0) [2]
fwscanf(GLIBC_2.2) [2]	ungetwc(GLIBC_2.2) [2]	wcsftime(GLIBC_2.2) [2]	wcstold(GLIBC_2.0) [2]	wmemcpy(GLIBC_2.0) [2]
getwc(GLIBC_2.2) [2]	vfwprintf(GLIBC_2.2) [2]	wcslen(GLIBC_2.0) [2]	wcstoll(GLIBC_2.1) [2]	wmemmove(GLIBC_2.0) [2]
getwchar(GLIBC_2.2) [2]	vfwscanf(GLIBC_2.2) [2]	wcsncasecmp(GLIBC_2.1) [1]	wcstombs(GLIBC_2.0) [2]	wmemset(GLIBC_2.0) [2]
mblen(GLIBC_2.0) [2]	vswprintf(GLIBC_2.2) [2]	wcsncat(GLIBC_2.0) [2]	wcstoq(GLIBC_2.0) [1]	wprintf(GLIBC_2.2) [2]
mbrlen(GLIBC_2.0) [2]	vswscanf(GLIBC_2.2) [2]	wcsncmp(GLIBC_2.0) [2]	wcstoul(GLIBC_2.0) [2]	wscanf(GLIBC_2.2) [2]
mbrtowc(GLIBC_2.0) [2]	vwprintf(GLIBC_2.2) [2]	wcsncpy(GLIBC_2.0) [2]	wcstoull(GLIBC_2.1) [2]	

94

95 *Referenced Specification(s)*

96 [1]. this specification

97 [2]. ISO POSIX (2003)

1.2.8. String Functions

1.2.8.1. Interfaces for String Functions

99 An LSB conforming implementation shall provide the architecture specific functions for String Functions specified in
100 Table 1-13, with the full functionality as described in the referenced underlying specification.

101 **Table 1-13. libc - String Functions Function Interfaces**

__mempcpy(GLIBC_2.0) [1]	bzero(GLIBC_2.0) [2]	strcasestr(GLIBC_2.1) [1]	strncasecmp(GLIBC_2.0) [2]	strtoimax(GLIBC_2.1) [2]
__rawmemchr(GLIBC_2.1) [1]	ffs(GLIBC_2.0) [2]	strcat(GLIBC_2.0) [2]	strncat(GLIBC_2.0) [2]	strtok(GLIBC_2.0) [2]
__stpcpy(GLIBC_2.0) [1]	index(GLIBC_2.0) [2]	strchr(GLIBC_2.0) [2]	strncmp(GLIBC_2.0) [2]	strtok_r(GLIBC_2.0) [2]
__strdup(GLIBC_2.0) [1]	memccpy(GLIBC_2.0) [2]	strcmp(GLIBC_2.0) [2]	strncpy(GLIBC_2.0) [2]	strtold(GLIBC_2.0) [2]
__strtod_internal(GLIBC_2.0) [1]	memchr(GLIBC_2.0) [2]	strcoll(GLIBC_2.0) [2]	strndup(GLIBC_2.0) [1]	strtoll(GLIBC_2.0) [2]
__ strtod _internal(G	memcmp(GLIBC_2.0)	strcpy(GLIBC_2.0)	strnlen(GLIBC_2.0)	strtoq(GLIBC_2.0)

LIBC_2.0) [1]	.0) [2]	[2]	[1]	[1]
__strtok_r(GLIBC_2.0) [1]	memcpy(GLIBC_2.0) [2]	strcspn(GLIBC_2.0) [2]	strpbrk(GLIBC_2.0) [2]	strtoull(GLIBC_2.0) [2]
__ strtol_internal(GLIBC_2.0) [1]	memmove(GLIBC_2.0) [2]	strupdup(GLIBC_2.0) [2]	strptime(GLIBC_2.0) [1]	strtoumax(GLIBC_2.1) [2]
__ strtold_internal(GLIBC_2.0) [1]	memrchr(GLIBC_2.2) [1]	strerror(GLIBC_2.0) [2]	strrchr(GLIBC_2.0) [2]	strtouq(GLIBC_2.0) [1]
__ strtoll_internal(GLIBC_2.0) [1]	memset(GLIBC_2.0) [2]	strerror_r(GLIBC_2.0) [1]	strsep(GLIBC_2.0) [1]	strverscmp(GLIBC_2.1) [1]
__ strtoul_internal(GLIBC_2.0) [1]	rindex(GLIBC_2.0) [2]	strfmon(GLIBC_2.0) [2]	strsignal(GLIBC_2.0) [1]	strxfrm(GLIBC_2.0) [2]
__ strtoull_internal(GLIBC_2.0) [1]	stpcpy(GLIBC_2.0) [1]	strfry(GLIBC_2.0) [1]	strspn(GLIBC_2.0) [2]	swab(GLIBC_2.0) [2]
bcmp(GLIBC_2.0) [2]	stpncpy(GLIBC_2.0) [1]	strftime(GLIBC_2.0) [2]	strstr(GLIBC_2.0) [2]	
bcopy(GLIBC_2.0) [2]	strcasecmp(GLIBC_2.0) [2]	strlen(GLIBC_2.0) [2]	strtof(GLIBC_2.0) [2]	

102

103 *Referenced Specification(s)*

104 [1]. this specification

105 [2]. ISO POSIX (2003)

1.2.9. IPC Functions

1.2.9.1. Interfaces for IPC Functions

107 An LSB conforming implementation shall provide the architecture specific functions for IPC Functions specified in
108 Table 1-14, with the full functionality as described in the referenced underlying specification.

109 **Table 1-14. libc - IPC Functions Function Interfaces**

ftok(GLIBC_2.0) [1]	msgrcv(GLIBC_2.0) [1]	semget(GLIBC_2.0) [1]	shmctl(GLIBC_2.2) [1]	
msgctl(GLIBC_2.2) [1]	msgsnd(GLIBC_2.0) [1]	semop(GLIBC_2.0) [1]	shmdt(GLIBC_2.0) [1]	
msgget(GLIBC_2.0) [1]	semctl(GLIBC_2.2) [1]	shmat(GLIBC_2.0) [1]	shmget(GLIBC_2.0) [1]	

110

111 *Referenced Specification(s)*

112 [1]. ISO POSIX (2003)

1.2.10. Regular Expressions

1.2.10.1. Interfaces for Regular Expressions

An LSB conforming implementation shall provide the architecture specific functions for Regular Expressions specified in Table 1-15, with the full functionality as described in the referenced underlying specification.

Table 1-15. libc - Regular Expressions Function Interfaces

regcomp(GLIBC_2.0) [1]	regerror(GLIBC_2.0) [1]	regexec(GLIBC_2.0) [1]	regfree(GLIBC_2.0) [1]	
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Referenced Specification(s)

[1]. ISO POSIX (2003)

An LSB conforming implementation shall provide the architecture specific deprecated functions for Regular Expressions specified in Table 1-16, with the full functionality as described in the referenced underlying specification.

These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn in future releases of this specification.

Table 1-16. libc - Regular Expressions Deprecated Function Interfaces

advance(GLIBC_2.0) [1]	re_comp(GLIBC_2.0) [1]	re_exec(GLIBC_2.0) [1]	step(GLIBC_2.0) [1]	
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Referenced Specification(s)

[1]. SUSv2

An LSB conforming implementation shall provide the architecture specific deprecated data interfaces for Regular Expressions specified in Table 1-17, with the full functionality as described in the referenced underlying specification.

These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn in future releases of this specification.

Table 1-17. libc - Regular Expressions Deprecated Data Interfaces

loc1(GLIBC_2.0) [1]	loc2(GLIBC_2.0) [1]	locs(GLIBC_2.0) [1]		
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Referenced Specification(s)

[1]. SUSv2

1.2.11. Character Type Functions

1.2.11.1. Interfaces for Character Type Functions

An LSB conforming implementation shall provide the architecture specific functions for Character Type Functions specified in Table 1-18, with the full functionality as described in the referenced underlying specification.

139 **Table 1-18. libc - Character Type Functions Function Interfaces**

<code>__ctype_get_mb_cu r_max(GLIBC_2.0) [1]</code>	<code>isdigit(GLIBC_2.0) [2]</code>	<code>iswalnum(GLIBC_2. .0) [2]</code>	<code>iswlower(GLIBC_2. 0) [2]</code>	<code>toascii(GLIBC_2.0) [2]</code>
<code>_tolower(GLIBC_2. 0) [2]</code>	<code>isgraph(GLIBC_2.0) [2]</code>	<code>iswalpha(GLIBC_2. .0) [2]</code>	<code>iswprint(GLIBC_2. 0) [2]</code>	<code>tolower(GLIBC_2.0) [2]</code>
<code>_toupper(GLIBC_2. .0) [2]</code>	<code>islower(GLIBC_2.0) [2]</code>	<code>iswblank(GLIBC_2. .1) [2]</code>	<code>iswpunct(GLIBC_2. .0) [2]</code>	<code>toupper(GLIBC_2.0) [2]</code>
<code>isalnum(GLIBC_2.0) [2]</code>	<code>isprint(GLIBC_2.0) [2]</code>	<code>iswcntrl(GLIBC_2. .0) [2]</code>	<code>iswspace(GLIBC_2. .0) [2]</code>	
<code>isalpha(GLIBC_2.0) [2]</code>	<code>ispunct(GLIBC_2.0) [2]</code>	<code>iswctype(GLIBC_2. .0) [2]</code>	<code>iswupper(GLIBC_2. .0) [2]</code>	
<code>isascii(GLIBC_2.0) [2]</code>	<code>isspace(GLIBC_2.0) [2]</code>	<code>iswdigit(GLIBC_2. .0) [2]</code>	<code>iswdxdigit(GLIBC_2. .0) [2]</code>	
<code>iscntrl(GLIBC_2.0) [2]</code>	<code>isupper(GLIBC_2.0) [2]</code>	<code>iswgraph(GLIBC_2. .0) [2]</code>	<code>isxdigit(GLIBC_2.0) [2]</code>	

141 *Referenced Specification(s)*

142 [1]. this specification

143 [2]. ISO POSIX (2003)

1.2.12. Time Manipulation

144 1.2.12.1. Interfaces for Time Manipulation

145 An LSB conforming implementation shall provide the architecture specific functions for Time Manipulation specified
 146 in Table 1-19, with the full functionality as described in the referenced underlying specification.

147 **Table 1-19. libc - Time Manipulation Function Interfaces**

<code>adjtime(GLIBC_2.0) [1]</code>	<code>ctime(GLIBC_2.0) [2]</code>	<code>gmtime(GLIBC_2.0) [2]</code>	<code>localtime_r(GLIBC_2. .0) [2]</code>	<code>ualarm(GLIBC_2.0) [2]</code>
<code>asctime(GLIBC_2.0) [2]</code>	<code>ctime_r(GLIBC_2.0) [2]</code>	<code>gmtime_r(GLIBC_2. .0) [2]</code>	<code>mktime(GLIBC_2.0) [2]</code>	
<code>asctime_r(GLIBC_2. .0) [2]</code>	<code>difftime(GLIBC_2. .0) [2]</code>	<code>localtime(GLIBC_2. .0) [2]</code>	<code>tzset(GLIBC_2.0) [2]</code>	

149 *Referenced Specification(s)*

150 [1]. this specification

151 [2]. ISO POSIX (2003)

152 An LSB conforming implementation shall provide the architecture specific deprecated functions for Time
 153 Manipulation specified in Table 1-20, with the full functionality as described in the referenced underlying
 154 specification.

155 These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn
 156 in future releases of this specification.

157 **Table 1-20. libc - Time Manipulation Deprecated Function Interfaces**

158 adjtimex(GLIBC_2.0) [1]				
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159 *Referenced Specification(s)*

160 [1]. this specification

161 An LSB conforming implementation shall provide the architecture specific data interfaces for Time Manipulation
 162 specified in Table 1-21, with the full functionality as described in the referenced underlying specification.

163 **Table 1-21. libc - Time Manipulation Data Interfaces**

164 __daylight(GLIBC_2.0) [1]	__tzname(GLIBC_2.0) [1]	timezone(GLIBC_2.0) [2]		
__timezone(GLIBC_2.0) [1]	daylight(GLIBC_2.0) [2]	tzname(GLIBC_2.0) [2]		

165 *Referenced Specification(s)*

166 [1]. this specification

167 [2]. ISO POSIX (2003)

1.2.13. Terminal Interface Functions

1.2.13.1. Interfaces for Terminal Interface Functions

169 An LSB conforming implementation shall provide the architecture specific functions for Terminal Interface Functions
 170 specified in Table 1-22, with the full functionality as described in the referenced underlying specification.

171 **Table 1-22. libc - Terminal Interface Functions Function Interfaces**

cfgetispeed(GLIBC_2.0) [1]	cfsetispeed(GLIBC_2.0) [1]	tcdrain(GLIBC_2.0) [1]	tcgetattr(GLIBC_2.0) [1]	tcsendbreak(GLIBC_2.0) [1]
cfgetospeed(GLIBC_2.0) [1]	cfsetospeed(GLIBC_2.0) [1]	tcflow(GLIBC_2.0) [1]	tcgetpgrp(GLIBC_2.0) [1]	tcsetattr(GLIBC_2.0) [1]
cfmakeraw(GLIBC_2.0) [2]	cfsetspeed(GLIBC_2.0) [2]	tcflush(GLIBC_2.0) [1]	tcgetsid(GLIBC_2.1) [1]	tcsetpgrp(GLIBC_2.0) [1]

173 *Referenced Specification(s)*

174 [1]. ISO POSIX (2003)

175 [2]. this specification

1.2.14. System Database Interface

1.2.14.1. Interfaces for System Database Interface

An LSB conforming implementation shall provide the architecture specific functions for System Database Interface specified in Table 1-23, with the full functionality as described in the referenced underlying specification.

179 **Table 1-23. libc - System Database Interface Function Interfaces**

endgrent(GLIBC_2.0) [1]	getgrgid(GLIBC_2.0) [1]	getprotobynumber(GLIBC_2.0) [1]	getservbyport(GLIBC_2.0) [1]	setgrent(GLIBC_2.0) [1]
endnetent(GLIBC_2.0) [1]	getgrgid_r(GLIBC_2.1.2) [1]	getprotoent(GLIBC_2.0) [1]	getservent(GLIBC_2.0) [1]	setgroups(GLIBC_2.0) [2]
endprotoent(GLIBC_2.0) [1]	getgrnam(GLIBC_2.0) [1]	getpwent(GLIBC_2.0) [1]	getutent(GLIBC_2.0) [2]	setnetent(GLIBC_2.0) [1]
endpwent(GLIBC_2.0) [1]	getgrnam_r(GLIBC_2.0) [1]	getpwnam(GLIBC_2.0) [1]	getutent_r(GLIBC_2.0) [2]	setprotoent(GLIBC_2.0) [1]
endservent(GLIBC_2.0) [1]	gethostbyaddr(GLIBC_2.0) [1]	getpwnam_r(GLIBC_2.1.2) [1]	getutxent(GLIBC_2.1) [1]	setpwent(GLIBC_2.0) [1]
endutent(GLIBC_2.0) [3]	gethostbyname(GLIBC_2.0) [1]	getpwuid(GLIBC_2.0) [1]	getutxid(GLIBC_2.1) [1]	setservent(GLIBC_2.0) [1]
endutxent(GLIBC_2.1) [1]	getnetbyaddr(GLIBC_2.0) [1]	getpwuid_r(GLIBC_2.1.2) [1]	getutxline(GLIBC_2.1) [1]	setutent(GLIBC_2.0) [2]
getgrent(GLIBC_2.0) [1]	getprotobyname(GLIBC_2.0) [1]	getservbyname(GLIBC_2.0) [1]	pututxline(GLIBC_2.1) [1]	setutxent(GLIBC_2.1) [1]

181 *Referenced Specification(s)*

182 [1]. ISO POSIX (2003)

183 [2]. this specification

184 [3]. SUSv2

1.2.15. Language Support

1.2.15.1. Interfaces for Language Support

An LSB conforming implementation shall provide the architecture specific functions for Language Support specified in Table 1-24, with the full functionality as described in the referenced underlying specification.

188 **Table 1-24. libc - Language Support Function Interfaces**

__libc_start_main(GLIBC_2.0) [1]	_obstack_begin(GLIBC_2.0) [1]	_obstack_newchunk(GLIBC_2.0) [1]	obstack_free(GLIBC_2.0) [1]	
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190 *Referenced Specification(s)*

191 [1]. this specification

1.2.16. Large File Support

1.2.16.1. Interfaces for Large File Support

193 An LSB conforming implementation shall provide the architecture specific functions for Large File Support specified
194 in Table 1-25, with the full functionality as described in the referenced underlying specification.

195 **Table 1-25. libc - Large File Support Function Interfaces**

<code>_fxstat64(GLIBC_2.2) [1]</code>	<code>fopen64(GLIBC_2.1) [2]</code>	<code>ftello64(GLIBC_2.1) [2]</code>	<code>lseek64(GLIBC_2.1) [2]</code>	<code>readdir64(GLIBC_2.2) [2]</code>
<code>_lxstat64(GLIBC_2.2) [1]</code>	<code>freopen64(GLIBC_2.1) [2]</code>	<code>ftruncate64(GLIBC_2.1) [2]</code>	<code>mkstemp64(GLIBC_2.2) [2]</code>	<code>statvfs64(GLIBC_2.1) [2]</code>
<code>_xstat64(GLIBC_2.2) [1]</code>	<code>fseeko64(GLIBC_2.1) [2]</code>	<code>ftw64(GLIBC_2.1) [2]</code>	<code>mmap64(GLIBC_2.1) [2]</code>	<code>tmpfile64(GLIBC_2.1) [2]</code>
<code>creat64(GLIBC_2.1) [2]</code>	<code>fsetpos64(GLIBC_2.2) [2]</code>	<code>getrlimit64(GLIBC_2.2) [2]</code>	<code>nftw64(GLIBC_2.1) [2]</code>	<code>truncate64(GLIBC_2.1) [2]</code>
<code>fgetpos64(GLIBC_2.2) [2]</code>	<code>fstatvfs64(GLIBC_2.1) [2]</code>	<code>lockf64(GLIBC_2.1) [2]</code>	<code>open64(GLIBC_2.1) [2]</code>	

197 *Referenced Specification(s)*

198 [1]. this specification

199 [2]. Large File Support

1.2.17. Standard Library

1.2.17.1. Interfaces for Standard Library

201 An LSB conforming implementation shall provide the architecture specific functions for Standard Library specified in
202 Table 1-26, with the full functionality as described in the referenced underlying specification.

203 **Table 1-26. libc - Standard Library Function Interfaces**

<code>_Exit(GLIBC_2.1.1) [1]</code>	<code>dirname(GLIBC_2.0) [1]</code>	<code>glob(GLIBC_2.0) [1]</code>	<code>lsearch(GLIBC_2.0) [1]</code>	<code>srand(GLIBC_2.0) [1]</code>
<code>_assert_fail(GLIBC_2.0) [2]</code>	<code>div(GLIBC_2.0) [1]</code>	<code>glob64(GLIBC_2.1) [2]</code>	<code>makecontext(GLIBC_2.1) [1]</code>	<code>srand48(GLIBC_2.0) [1]</code>
<code>_cxa_atexit(GLIBC_2.1.3) [2]</code>	<code>drand48(GLIBC_2.0) [1]</code>	<code>globfree(GLIBC_2.0) [1]</code>	<code>malloc(GLIBC_2.0) [1]</code>	<code>srandom(GLIBC_2.0) [1]</code>
<code>_errno_location(GLIBC_2.0) [2]</code>	<code>ecvt(GLIBC_2.0) [1]</code>	<code>globfree64(GLIBC_2.1) [2]</code>	<code>memmem(GLIBC_2.0) [2]</code>	<code>strtod(GLIBC_2.0) [1]</code>

fpending(GLIBC_2.2) [2]	erand48(GLIBC_2.0) [1]	grantpt(GLIBC_2.1) [1]	mkstemp(GLIBC_2.0) [1]	strtol(GLIBC_2.0) [1]
getpagesize(GLIBC_2.0) [2]	err(GLIBC_2.0) [2]	hcreate(GLIBC_2.0) [1]	mktemp(GLIBC_2.0) [1]	strtoul(GLIBC_2.0) [1]
isinf(GLIBC_2.0) [2]	error(GLIBC_2.0) [2]	hdestroy(GLIBC_2.0) [1]	rand48(GLIBC_2.0) [1]	swapcontext(GLIBC_2.1) [1]
isinff(GLIBC_2.0) [2]	errx(GLIBC_2.0) [2]	hsearch(GLIBC_2.0) [1]	nftw(GLIBC_2.1) [1]	syslog(GLIBC_2.0) [1]
isinfl(GLIBC_2.0) [2]	fcvt(GLIBC_2.0) [1]	htonl(GLIBC_2.0) [1]	nrand48(GLIBC_2.0) [1]	system(GLIBC_2.0) [2]
isnan(GLIBC_2.0) [2]	fmtmsg(GLIBC_2.1) [1]	htonl(GLIBC_2.0) [1]	ntohl(GLIBC_2.0) [1]	tdelete(GLIBC_2.0) [1]
isnanf(GLIBC_2.0) [2]	fnmatch(GLIBC_2.2) [1]	imaxabs(GLIBC_2.1) [1]	ntohs(GLIBC_2.0) [1]	tfind(GLIBC_2.0) [1]
isnanl(GLIBC_2.0) [2]	fpathconf(GLIBC_2.0) [1]	imaxdiv(GLIBC_2.1) [1]	openlog(GLIBC_2.0) [1]	tmpfile(GLIBC_2.1) [1]
sysconf(GLIBC_2.2) [2]	free(GLIBC_2.0) [1]	inet_addr(GLIBC_2.0) [1]	perror(GLIBC_2.0) [1]	tmpnam(GLIBC_2.0) [1]
_exit(GLIBC_2.0) [1]	freeaddrinfo(GLIBC_2.0) [1]	inet_ntoa(GLIBC_2.0) [1]	posix_memalign(GLIBC_2.2) [1]	tsearch(GLIBC_2.0) [1]
_longjmp(GLIBC_2.0) [1]	ftrylockfile(GLIBC_2.0) [1]	inet_ntop(GLIBC_2.0) [1]	ptsname(GLIBC_2.1) [1]	ttynname(GLIBC_2.0) [1]
_setjmp(GLIBC_2.0) [1]	ftw(GLIBC_2.0) [1]	inet_pton(GLIBC_2.0) [1]	putenv(GLIBC_2.0) [1]	ttynname_r(GLIBC_2.0) [1]
a64l(GLIBC_2.0) [1]	funlockfile(GLIBC_2.0) [1]	initstate(GLIBC_2.0) [1]	qsort(GLIBC_2.0) [1]	twalk(GLIBC_2.0) [1]
abort(GLIBC_2.0) [1]	gai_strerror(GLIBC_2.1) [1]	insque(GLIBC_2.0) [1]	rand(GLIBC_2.0) [1]	unlockpt(GLIBC_2.1) [1]
abs(GLIBC_2.0) [1]	gcvt(GLIBC_2.0) [1]	isatty(GLIBC_2.0) [1]	rand_r(GLIBC_2.0) [1]	unsetenv(GLIBC_2.0) [1]
atof(GLIBC_2.0) [1]	getaddrinfo(GLIBC_2.0) [1]	isblank(GLIBC_2.0) [1]	random(GLIBC_2.0) [1]	usleep(GLIBC_2.0) [1]
atoi(GLIBC_2.0) [1]	getcwd(GLIBC_2.0) [1]	jrand48(GLIBC_2.0) [1]	random_r(GLIBC_2.0) [2]	verrx(GLIBC_2.0) [2]
atol(GLIBC_2.0) [1]	getdate(GLIBC_2.1) [1]	l64a(GLIBC_2.0) [1]	realloc(GLIBC_2.0) [1]	vfprintf(GLIBC_2.0) [1]
atoll(GLIBC_2.0)	getenv(GLIBC_2.0)	labs(GLIBC_2.0)	realpath(GLIBC_2.0)	vscanf(GLIBC_2.0)

[1]	[1]	[1]	3) [1]	[1]
basename(GLIBC_2.0) [1]	getlogin(GLIBC_2.0) [1]	lcong48(GLIBC_2.0) [1]	remque(GLIBC_2.0) [1]	vsscanf(GLIBC_2.0) [1]
bsearch(GLIBC_2.0) [1]	getnameinfo(GLIBC_2.1) [1]	ldiv(GLIBC_2.0) [1]	seed48(GLIBC_2.0) [1]	vsyslog(GLIBC_2.0) [2]
calloc(GLIBC_2.0) [1]	getopt(GLIBC_2.0) [2]	lfind(GLIBC_2.0) [1]	setenv(GLIBC_2.0) [1]	warn(GLIBC_2.0) [2]
closelog(GLIBC_2.0) [1]	getopt_long(GLIBC_2.0) [2]	llabs(GLIBC_2.0) [1]	sethostid(GLIBC_2.0) [2]	warnx(GLIBC_2.0) [2]
confstr(GLIBC_2.0) [1]	getopt_long_only(GLIBC_2.0) [2]	lldiv(GLIBC_2.0) [1]	sethostname(GLIBC_2.0) [2]	wordexp(GLIBC_2.1) [1]
cuserid(GLIBC_2.0) [3]	getsubopt(GLIBC_2.0) [1]	longjmp(GLIBC_2.0) [1]	setlogmask(GLIBC_2.0) [1]	wordfree(GLIBC_2.1) [1]
daemon(GLIBC_2.0) [2]	gettimeofday(GLIBC_2.0) [1]	lrand48(GLIBC_2.0) [1]	setstate(GLIBC_2.0) [1]	

204

205 *Referenced Specification(s)*

206 [1]. ISO POSIX (2003)

207 [2]. this specification

208 [3]. SUSv2

209 An LSB conforming implementation shall provide the architecture specific data interfaces for Standard Library
210 specified in Table 1-27, with the full functionality as described in the referenced underlying specification.211 **Table 1-27. libc - Standard Library Data Interfaces**

__environ(GLIBC_2.0) [1]	_sys_errlist(GLIBC_2.1) [1]	getdate_err(GLIBC_2.1) [2]	opterr(GLIBC_2.0) [1]	optopt(GLIBC_2.0) [1]
_environ(GLIBC_2.0) [1]	environ(GLIBC_2.0) [2]	optarg(GLIBC_2.0) [2]	optind(GLIBC_2.0) [1]	

212 213 *Referenced Specification(s)*

214 [1]. this specification

215 [2]. ISO POSIX (2003)

1.3. Data Definitions for libc

216 This section defines global identifiers and their values that are associated with interfaces contained in libc. These
217 definitions are organized into groups that correspond to system headers. This convention is used as a convenience for
218 the reader, and does not imply the existence of these headers, or their content.

219 These definitions are intended to supplement those provided in the referenced underlying specifications.

220 This specification uses ISO/IEC 9899 C Language as the reference programming language, and data definitions are
 221 specified in ISO C format. The C language is used here as a convenient notation. Using a C language description of
 222 these data objects does not preclude their use by other programming languages.

1.3.1. errno.h

```
223
224 #define EDEADLOCK      EDEADLK
```

1.3.2. inttypes.h

```
225
226 typedef unsigned long long uint64_t;
227 typedef long long intmax_t;
228 typedef unsigned long long uintmax_t;
229 typedef unsigned int uintptr_t;
```

1.3.3. limits.h

```
230
231 #define ULONG_MAX      0xFFFFFFFFFUL
232 #define LONG_MAX       2147483647
233
234 #define CHAR_MIN       0
235 #define CHAR_MAX       255
```

1.3.4. setjmp.h

```
236
237 typedef int __jmp_buf[14];
```

1.3.5. signal.h

```
238
239 #define __NUM_ACRS     16
240 #define __NUM_FPRS     16
241 #define __NUM_GPRS     16
242
243 typedef struct
244 {
245     unsigned long mask;
246     unsigned long addr;
247 }
248 __attribute__ ((aligned (8))) _psw_t;
249 typedef struct
250 {
251     _psw_t psw;
252     unsigned long gprs[__NUM_GPRS];
253     unsigned int acrs[__NUM_ACRS];
254 }
255 _s390_regs_common;
```

```

256
257     struct sigaction
258     {
259         union
260         {
261             sighandler_t _sa_handler;
262             void (*_sa_sigaction) (int, siginfo_t *, void *);
263         }
264         __sigaction_handler;
265         sigset_t sa_mask;
266         unsigned long sa_flags;
267         void (*sa_restorer) (void);
268     }
269     ;
270 #define MINSIGSTKSZ      2048
271 #define SIGSTKSZ        8192
272
273     typedef struct
274     {
275         unsigned int fpc;
276         double fprs[__NUM_FPRS];
277     }
278     _s390_fp_regs;
279     typedef struct
280     {
281         _s390_REGS_COMMON regs;
282         _s390_fp_regs fpregs;
283     }
284     _sigregs;
285
286     struct sigcontext
287     {
288         unsigned long oldmask[2];
289         _sigregs *sregs;
290     }
291     ;

```

1.3.6. stddef.h

```

292
293     typedef unsigned long size_t;
294     typedef int ptrdiff_t;

```

1.3.7. sys/ioctl.h

```

295
296     #define FIONREAD          0x541B
297     #define TIOCNOTTY          21538

```

1.3.8. sys/ipc.h

298

```

299 struct ipc_perm
300 {
301     key_t __key;
302     uid_t uid;
303     gid_t gid;
304     uid_t cuid;
305     uid_t cgid;
306     unsigned short mode;
307     unsigned short __pad1;
308     unsigned short __seq;
309     unsigned short __pad2;
310     unsigned long __unused1;
311     unsigned long __unused2;
312 }
313 ;

```

1.3.9. sys/mman.h

```

314
315 #define MCL_CURRENT      1
316 #define MCL_FUTURE       2

```

1.3.10. sys/msg.h

```

317
318 typedef unsigned long msglen_t;
319 typedef unsigned long msgqnum_t;
320
321 struct msqid_ds
322 {
323     struct ipc_perm msg_perm;
324     time_t msg_stime;
325     unsigned long __unused1;
326     time_t msg_rtime;
327     unsigned long __unused2;
328     time_t msg_ctime;
329     unsigned long __unused3;
330     unsigned long __msg_cbytes;
331     msgqnum_t msg_qnum;
332     msglen_t msg_qbytes;
333     pid_t msg_lspid;
334     pid_t msg_lrpid;
335     unsigned long __unused4;
336     unsigned long __unused5;
337 }
338 ;

```

1.3.11. sys/sem.h

```

339
340 struct semid_ds
341 {

```

```

342     struct ipc_perm sem_perm;
343     time_t sem_otime;
344     unsigned long __unused1;
345     time_t sem_ctime;
346     unsigned long __unused2;
347     unsigned long sem_nsems;
348     unsigned long __unused3;
349     unsigned long __unused4;
350 }
351 ;

```

1.3.12. sys/shm.h

```

352
353 #define SHMLBA  (__getpagesize())
354
355 typedef unsigned long shmatt_t;
356
357 struct shmid_ds
358 {
359     struct ipc_perm shm_perm;
360     size_t shm_segsz;
361     time_t shm_atime;
362     unsigned long __unused1;
363     time_t shm_dtime;
364     unsigned long __unused2;
365     time_t shm_ctime;
366     unsigned long __unused3;
367     pid_t shm_cpid;
368     pid_t shm_lpid;
369     shmatt_t shm_nattch;
370     unsigned long __unused4;
371     unsigned long __unused5;
372 }
373 ;

```

1.3.13. sys/socket.h

```

374
375 typedef uint32_t __ss_aligntype;

```

1.3.14. sys/stat.h

```

376
377 #define _STAT_VER      3
378
379 struct stat
380 {
381     dev_t st_dev;
382     unsigned int __pad1;
383     ino_t st_ino;
384     mode_t st_mode;

```

```

385     nlink_t st_nlink;
386     uid_t st_uid;
387     gid_t st_gid;
388     dev_t st_rdev;
389     unsigned int __pad2;
390     off_t st_size;
391     blksize_t st_blksize;
392     blkcnt_t st_blocks;
393     struct timespec st_atim;
394     struct timespec st_mtim;
395     struct timespec st_ctim;
396     unsigned long __unused4;
397     unsigned long __unused5;
398 }
399 ;
400 struct stat64
401 {
402     dev_t st_dev;
403     int __pad1;
404     ino_t __st_ino;
405     mode_t st_mode;
406     nlink_t st_nlink;
407     uid_t st_uid;
408     gid_t st_gid;
409     dev_t st_rdev;
410     int __pad2;
411     off64_t st_size;
412     blksize_t st_blksize;
413     blkcnt64_t st_blocks;
414     struct timespec st_atim;
415     struct timespec st_mtim;
416     struct timespec st_ctim;
417     ino64_t st_ino;
418 }
419 ;

```

1.3.15. sys/statvfs.h

```

420
421 struct statvfs
422 {
423     unsigned long f_bsize;
424     unsigned long f_frsize;
425     fsblkcnt_t f_blocks;
426     fsblkcnt_t f_bfree;
427     fsblkcnt_t f_bavail;
428     fsfilcnt_t f_files;
429     fsfilcnt_t f_ffree;
430     fsfilcnt_t f_favail;
431     unsigned long f_fsid;
432     int __f_unused;
433     unsigned long f_flag;

```

```

434     unsigned long f_namemax;
435     int __f_spare[6];
436 }
437 ;
438 struct statvfs64
439 {
440     unsigned long f_bsize;
441     unsigned long f_frsize;
442     fsblkcnt64_t f_blocks;
443     fsblkcnt64_t f_bfree;
444     fsblkcnt64_t f_bavail;
445     fsfilcnt64_t f_files;
446     fsfilcnt64_t f_ffree;
447     fsfilcnt64_t f_favail;
448     unsigned long f_fsid;
449     int __f_unused;
450     unsigned long f_flag;
451     unsigned long f_namemax;
452     int __f_spare[6];
453 }
454 ;

```

1.3.16. sys/types.h

```

455
456     typedef long long int64_t;
457
458     typedef int32_t ssize_t;

```

1.3.17. termios.h

```

459
460 #define OLCUC    0000002
461 #define ONLCR    0000004
462 #define XCASE    0000004
463 #define NLDLY    0000400
464 #define CR1      0001000
465 #define IUCLC    0001000
466 #define CR2      0002000
467 #define CR3      0003000
468 #define CRDLY    0003000
469 #define TAB1     0004000
470 #define TAB2     0010000
471 #define TAB3     0014000
472 #define TABDLY   0014000
473 #define BS1      0020000
474 #define BSDLY   0020000
475 #define VT1      0040000
476 #define VTDLY   0040000
477 #define FF1      0100000
478 #define FFDLY   0100000
479

```

```

480 #define VSUSP    10
481 #define VEOL     11
482 #define VREPRINT      12
483 #define VDISCARD      13
484 #define VWERASE     14
485 #define VEOL2      16
486 #define VMIN       6
487 #define VSWTC       7
488 #define VSTART      8
489 #define VSTOP       9
490
491 #define IXON      0002000
492 #define IXOFF      0010000
493
494 #define CS6       0000020
495 #define CS7       0000040
496 #define CS8       0000060
497 #define CSIZE      0000060
498 #define CSTOPB     0000100
499 #define CREAD      0000200
500 #define PARENBN    0000400
501 #define PARODD     0001000
502 #define HUPCL      0002000
503 #define CLOCAL     0004000
504 #define VTIME      5
505
506 #define ISIG       0000001
507 #define ICANON     0000002
508 #define ECHOE      0000020
509 #define ECHOK      0000040
510 #define ECHONL     0000100
511 #define NOFLSH     0000200
512 #define TOSTOP     0000400
513 #define ECHOCTL    0001000
514 #define ECHOPRT    0002000
515 #define ECHOKE     0004000
516 #define FLUSHO     0010000
517 #define PENDIN     0040000
518 #define IEXTEN     0100000

```

1.3.18. ucontext.h

```

519
520 #define NGREG     36
521
522 typedef union
523 {
524     double d;
525     float f;
526 }
527 fpreg_t;
528

```

```

529     typedef struct
530     {
531         unsigned int fpc;
532         fpreg_t fprs[16];
533     }
534     fpregset_t;
535
536     typedef struct
537     {
538         _psw_t psw;
539         unsigned long gregs[16];
540         unsigned int aregs[16];
541         fpregset_t fpregs;
542     }
543     mcontext_t;
544
545     typedef struct ucontext
546     {
547         unsigned long uc_flags;
548         struct ucontext *uc_link;
549         stack_t uc_stack;
550         mcontext_t uc_mcontext;
551         sigset_t uc_sigmask;
552     }
553     ucontext_t;

```

1.3.19. unistd.h

```

554
555     typedef int intptr_t;

```

1.3.20. utmp.h

```

556
557     struct lastlog
558     {
559         time_t ll_time;
560         char ll_line[UT_LINESIZE];
561         char ll_host[UT_HOSTSIZE];
562     }
563     ;
564
565     struct utmp
566     {
567         short ut_type;
568         pid_t ut_pid;
569         char ut_line[UT_LINESIZE];
570         char ut_id[4];
571         char ut_user[UT_NAMESIZE];
572         char ut_host[UT_HOSTSIZE];
573         struct exit_status ut_exit;
574         long ut_session;

```

```

575     struct timeval ut_tv;
576     int32_t ut_addr_v6[4];
577     char __unused[20];
578 }
579 ;

```

1.3.21. utmpx.h

```

580
581 struct utmpx
582 {
583     short ut_type;
584     pid_t ut_pid;
585     char ut_line[UT_LINESIZE];
586     char ut_id[4];
587     char ut_user[UT_NAMESIZE];
588     char ut_host[UT_HOSTSIZE];
589     struct exit_status ut_exit;
590     long ut_session;
591     struct timeval ut_tv;
592     int32_t ut_addr_v6[4];
593     char __unused[20];
594 }
595 ;

```

1.4. Interfaces for libm

596 Table 1-28 defines the library name and shared object name for the libm library

597 **Table 1-28. libm Definition**

Library:	libm
SONAME:	libm.so.6

599 The behavior of the interfaces in this library is specified by the following specifications:

600 ISO C (1999)
SUSv2
ISO POSIX (2003)

1.4.1. Math

1.4.1.1. Interfaces for Math

602 An LSB conforming implementation shall provide the architecture specific functions for Math specified in Table 1-29,
603 with the full functionality as described in the referenced underlying specification.

604 **Table 1-29. libm - Math Function Interfaces**

acos(GLIBC_2.0)	cexp(GLIBC_2.1)	expf(GLIBC_2.0)	jnf(GLIBC_2.0) [2]	remquo(GLIBC_2.
-----------------	-----------------	-----------------	--------------------	-----------------

[1]	[1]	[1]		1) [1]
acosf(GLIBC_2.0) [1]	cexpf(GLIBC_2.1) [1]	expl(GLIBC_2.0) [1]	jnl(GLIBC_2.0) [2]	remquo(GLIBC_2. 1) [1]
acosh(GLIBC_2.0) [1]	cexpl(GLIBC_2.1) [1]	expm1(GLIBC_2.0) [1]	ldexp(GLIBC_2.0) [1]	rint(GLIBC_2.0) [1]
acoshf(GLIBC_2.0) [1]	cimag(GLIBC_2.1) [1]	fabs(GLIBC_2.0) [1]	ldexpf(GLIBC_2.0) [1]	rintf(GLIBC_2.0) [1]
acoshl(GLIBC_2.0) [1]	cimaf(GLIBC_2.1) [1]	fabsf(GLIBC_2.0) [1]	ldexpl(GLIBC_2.0) [1]	rintl(GLIBC_2.0) [1]
acosl(GLIBC_2.0) [1]	cimagl(GLIBC_2.1) [1]	fabsl(GLIBC_2.0) [1]	lgamma(GLIBC_2. 0) [1]	round(GLIBC_2.1) [1]
asin(GLIBC_2.0) [1]	clog(GLIBC_2.1) [1]	fdim(GLIBC_2.1) [1]	lgamma_r(GLIBC_ 2.0) [2]	roundf(GLIBC_2.1) [1]
asinf(GLIBC_2.0) [1]	clog10(GLIBC_2.1) [2]	fdimf(GLIBC_2.1) [1]	lgammaf(GLIBC_2. 0) [1]	roundl(GLIBC_2.1) [1]
asinh(GLIBC_2.0) [1]	clog10f(GLIBC_2.1)[2]	fdiml(GLIBC_2.1) [1]	lgammaf_r(GLIBC_ 2.0) [2]	scalb(GLIBC_2.0) [1]
asinhf(GLIBC_2.0) [1]	clog10l(GLIBC_2.1)[2]	feclearexcept(GLIB C_2.1) [1]	lgammal(GLIBC_2. 0) [1]	scalbf(GLIBC_2.0) [2]
asinhl(GLIBC_2.0) [1]	clogf(GLIBC_2.1) [1]	fegetenv(GLIBC_2. 1) [1]	lgammal_r(GLIBC_ 2.0) [2]	scalbl(GLIBC_2.0) [2]
asinl(GLIBC_2.0) [1]	clogl(GLIBC_2.1) [1]	fegetexceptflag(GLI BC_2.1) [1]	llrint(GLIBC_2.1) [1]	scalbln(GLIBC_2.1) [1]
atan(GLIBC_2.0) [1]	conj(GLIBC_2.1) [1]	fegetround(GLIBC_ 2.1) [1]	llrintf(GLIBC_2.1) [1]	scalblnf(GLIBC_2.1)[1]
atan2(GLIBC_2.0) [1]	conjf(GLIBC_2.1) [1]	feholdexcept(GLIB C_2.1) [1]	llrintl(GLIBC_2.1) [1]	scalblnl(GLIBC_2.1)[1]
atan2f(GLIBC_2.0) [1]	conjl(GLIBC_2.1) [1]	feraiseexcept(GLIB C_2.1) [1]	llround(GLIBC_2.1)[1]	scalbn(GLIBC_2.0) [1]
atan2l(GLIBC_2.0) [1]	copysign(GLIBC_2. 0) [1]	fesetenv(GLIBC_2. 1) [1]	llroundf(GLIBC_2. 1) [1]	scalbnf(GLIBC_2.0)[1]
atanf(GLIBC_2.0) [1]	copysignf(GLIBC_ 2.0) [1]	fesetexceptflag(GLI BC_2.1) [1]	llroundl(GLIBC_2.1)[1]	scalbnl(GLIBC_2.0) [1]
atanh(GLIBC_2.0) [1]	copysignl(GLIBC_2. .0) [1]	fesetround(GLIBC_ 2.1) [1]	log(GLIBC_2.0) [1]	significand(GLIBC _2.0) [2]
atanhf(GLIBC_2.0) [1]	cos(GLIBC_2.0) [1]	fetestexcept(GLIBC _2.1) [1]	log10(GLIBC_2.0) [1]	significandf(GLIBC _2.0) [2]

atanhl(GLIBC_2.0) [1]	cosf(GLIBC_2.0) [1]	feupdateenv(GLIBC_2.1) [1]	log10f(GLIBC_2.0) [1]	significndl(GLIBC_2.0) [2]
atanl(GLIBC_2.0) [1]	cosh(GLIBC_2.0) [1]	finite(GLIBC_2.0) [3]	log10l(GLIBC_2.0) [1]	sin(GLIBC_2.0) [1]
cabs(GLIBC_2.1) [1]	coshf(GLIBC_2.0) [1]	finitef(GLIBC_2.0) [2]	log1p(GLIBC_2.0) [1]	sincos(GLIBC_2.1) [2]
cabsf(GLIBC_2.1) [1]	coshl(GLIBC_2.0) [1]	finitel(GLIBC_2.0) [2]	logb(GLIBC_2.0) [1]	sincosf(GLIBC_2.1) [2]
cabsl(GLIBC_2.1) [1]	cosl(GLIBC_2.0) [1]	floor(GLIBC_2.0) [1]	logf(GLIBC_2.0) [1]	sincosl(GLIBC_2.1) [2]
cacos(GLIBC_2.1) [1]	cpow(GLIBC_2.1) [1]	floorf(GLIBC_2.0) [1]	logl(GLIBC_2.0) [1]	sinf(GLIBC_2.0) [1]
cacosf(GLIBC_2.1) [1]	cpowf(GLIBC_2.1) [1]	floarl(GLIBC_2.0) [1]	lrint(GLIBC_2.1) [1]	sinh(GLIBC_2.0) [1]
cacosh(GLIBC_2.1) [1]	cpowl(GLIBC_2.1) [1]	fma(GLIBC_2.1) [1]	lrintf(GLIBC_2.1) [1]	sinhf(GLIBC_2.0) [1]
cacoshf(GLIBC_2.1) [1]	cproj(GLIBC_2.1) [1]	fmaf(GLIBC_2.1) [1]	lrintl(GLIBC_2.1) [1]	sinhl(GLIBC_2.0) [1]
cacoshl(GLIBC_2.1) [1]	cprojf(GLIBC_2.1) [1]	fmal(GLIBC_2.1) [1]	lround(GLIBC_2.1) [1]	sinl(GLIBC_2.0) [1]
cacosl(GLIBC_2.1) [1]	cprojl(GLIBC_2.1) [1]	fmax(GLIBC_2.1) [1]	lroundf(GLIBC_2.1) [1]	sqrt(GLIBC_2.0) [1]
carg(GLIBC_2.1) [1]	creal(GLIBC_2.1) [1]	fmaxf(GLIBC_2.1) [1]	lroundl(GLIBC_2.1) [1]	sqrtf(GLIBC_2.0) [1]
cargf(GLIBC_2.1) [1]	crealf(GLIBC_2.1) [1]	fmaxl(GLIBC_2.1) [1]	matherr(GLIBC_2.0) [2]	sqrtl(GLIBC_2.0) [1]
cargl(GLIBC_2.1) [1]	creall(GLIBC_2.1) [1]	fmin(GLIBC_2.1) [1]	modf(GLIBC_2.0) [1]	tan(GLIBC_2.0) [1]
casin(GLIBC_2.1) [1]	csin(GLIBC_2.1) [1]	fminf(GLIBC_2.1) [1]	modff(GLIBC_2.0) [1]	tanf(GLIBC_2.0) [1]
casinf(GLIBC_2.1) [1]	csinf(GLIBC_2.1) [1]	fminl(GLIBC_2.1) [1]	modfl(GLIBC_2.0) [1]	tanh(GLIBC_2.0) [1]
casinh(GLIBC_2.1) [1]	csinh(GLIBC_2.1) [1]	fmod(GLIBC_2.0) [1]	nan(GLIBC_2.1) [1]	tanhf(GLIBC_2.0) [1]
casinhf(GLIBC_2.1) [1]	csinhf(GLIBC_2.1) [1]	fmodf(GLIBC_2.0) [1]	nanf(GLIBC_2.1) [1]	tanhl(GLIBC_2.0) [1]
casinhl(GLIBC_2.1)	csinhl(GLIBC_2.1)	fmodl(GLIBC_2.0)	nanl(GLIBC_2.1)	tanl(GLIBC_2.0)

[1]	[1]	[1]	[1]	[1]
casinl(GLIBC_2.1) [1]	csinl(GLIBC_2.1) [1]	frexp(GLIBC_2.0) [1]	nearbyint(GLIBC_2. .1) [1]	tgamma(GLIBC_2. 1) [1]
catan(GLIBC_2.1) [1]	csqrt(GLIBC_2.1) [1]	frexpf(GLIBC_2.0) [1]	nearbyintf(GLIBC_ 2.1) [1]	tgammaf(GLIBC_2. 1) [1]
catanf(GLIBC_2.1) [1]	csqrft(GLIBC_2.1) [1]	frexpl(GLIBC_2.0) [1]	nearbyintl(GLIBC_ 2.1) [1]	tgammal(GLIBC_2. 1) [1]
cataanh(GLIBC_2.1) [1]	csqrtr(GLIBC_2.1) [1]	gamma(GLIBC_2.0) [3]	nextafter(GLIBC_2. 0) [1]	trunc(GLIBC_2.1) [1]
cataanhf(GLIBC_2.1)[1]	ctan(GLIBC_2.1) [1]	gammaf(GLIBC_2. 0) [2]	nextafterf(GLIBC_2. .0) [1]	truncf(GLIBC_2.1) [1]
cataanhl(GLIBC_2.1)[1]	ctanf(GLIBC_2.1) [1]	gammal(GLIBC_2. 0) [2]	nextafterl(GLIBC_2. .0) [1]	truncl(GLIBC_2.1) [1]
catanl(GLIBC_2.1) [1]	ctanh(GLIBC_2.1) [1]	hypot(GLIBC_2.0) [1]	nexttoward(GLIBC_ 2.1) [1]	y0(GLIBC_2.0) [1]
cbrt(GLIBC_2.0) [1]	ctanhf(GLIBC_2.1) [1]	hypotf(GLIBC_2.0) [1]	nexttowardf(GLIBC_ 2.1) [1]	y0f(GLIBC_2.0) [2]
cbrtf(GLIBC_2.0) [1]	ctanhl(GLIBC_2.1) [1]	hypotl(GLIBC_2.0) [1]	nexttowardl(GLIBC_ 2.1) [1]	y0l(GLIBC_2.0) [2]
cbrtl(GLIBC_2.0) [1]	ctanl(GLIBC_2.1) [1]	iologb(GLIBC_2.0) [1]	pow(GLIBC_2.0) [1]	y1(GLIBC_2.0) [1]
ccos(GLIBC_2.1) [1]	dremf(GLIBC_2.0) [2]	iologbf(GLIBC_2.0) [1]	pow10(GLIBC_2.1) [2]	y1f(GLIBC_2.0) [2]
ccosf(GLIBC_2.1) [1]	dreml(GLIBC_2.0) [2]	iologbl(GLIBC_2.0) [1]	pow10f(GLIBC_2.1) [2]	y1l(GLIBC_2.0) [2]
ccosh(GLIBC_2.1) [1]	erf(GLIBC_2.0) [1]	j0(GLIBC_2.0) [1]	pow10l(GLIBC_2.1) [2]	yn(GLIBC_2.0) [1]
ccoshf(GLIBC_2.1) [1]	erfc(GLIBC_2.0) [1]	j0f(GLIBC_2.0) [2]	powf(GLIBC_2.0) [1]	ynf(GLIBC_2.0) [2]
ccoshl(GLIBC_2.1) [1]	erfcf(GLIBC_2.0) [1]	j0l(GLIBC_2.0) [2]	powl(GLIBC_2.0) [1]	ynl(GLIBC_2.0) [2]
ccosl(GLIBC_2.1) [1]	erfc1(GLIBC_2.0) [1]	j1(GLIBC_2.0) [1]	remainder(GLIBC_ 2.0) [1]	
ceil(GLIBC_2.0) [1]	erff(GLIBC_2.0) [1]	j1f(GLIBC_2.0) [2]	remainderf(GLIBC_ 2.0) [1]	
ceilf(GLIBC_2.0) [1]	erfl(GLIBC_2.0) [1]	j1l(GLIBC_2.0) [2]	remainderl(GLIBC_ 2.0) [1]	

605	ceil(GLIBC_2.0) [1]	exp(GLIBC_2.0) [1]	jn(GLIBC_2.0) [1]	remquo(GLIBC_2.1) [1]	
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606 *Referenced Specification(s)*
 607 [1]. ISO POSIX (2003)
 608 [2]. ISO C (1999)
 609 [3]. SUSv2
 610 An LSB conforming implementation shall provide the architecture specific data interfaces for Math specified in Table
 611 1-30, with the full functionality as described in the referenced underlying specification.

612 **Table 1-30. libm - Math Data Interfaces**

613	signgam(GLIBC_2. 0) [1]				
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614 *Referenced Specification(s)*
 615 [1]. ISO POSIX (2003)

1.5. Interfaces for libpthread

616 Table 1-31 defines the library name and shared object name for the libpthread library

617 **Table 1-31. pthread Definition**

618	Library:	pthread
	SONAME:	pthread.so.0

619 The behavior of the interfaces in this library is specified by the following specifications:
 Large File Support
 this specification
 620 ISO POSIX (2003)

1.5.1. Realtime Threads

621 **1.5.1.1. Interfaces for Realtime Threads**

622 No external functions are defined for libpthread - Realtime Threads

1.5.2. Advanced Realtime Threads

623 **1.5.2.1. Interfaces for Advanced Realtime Threads**

624 No external functions are defined for libpthread - Advanced Realtime Threads

1.5.3. Posix Threads

1.5.3.1. Interfaces for Posix Threads

An LSB conforming implementation shall provide the architecture specific functions for Posix Threads specified in Table 1-32, with the full functionality as described in the referenced underlying specification.

Table 1-32. libpthread - Posix Threads Function Interfaces

_pthread_cleanup_p op(GLIBC_2.0) [1]	pthread_cancel(GLI BC_2.0) [2]	pthread_join(GLIB C_2.0) [2]	pthread_rwlock_des troy(GLIBC_2.1) [2]	pthread_setconcurre ncy(GLIBC_2.1) [2]
_pthread_cleanup_p ush(GLIBC_2.0) [1]	pthread_cond_broad cast(GLIBC_2.3.2) [2]	pthread_key_create(GLIBC_2.0) [2]	pthread_rwlock_init (GLIBC_2.1) [2]	pthread_setspecific(GLIBC_2.0) [2]
pread(GLIBC_2.2) [2]	pthread_cond_destr oy(GLIBC_2.3.2) [2]	pthread_key_delete(GLIBC_2.0) [2]	pthread_rwlock_rdl ock(GLIBC_2.1) [2]	pthread_sigmask(G LIBC_2.0) [2]
pread64(GLIBC_2. 2) [3]	pthread_cond_init(GLIBC_2.3.2) [2]	pthread_kill(GLIBC _2.0) [2]	pthread_rwlock_tim edrlock(GLIBC_2. 2) [2]	pthread_testcancel(GLIBC_2.0) [2]
pthread_attr_destro y(GLIBC_2.0) [2]	pthread_cond_signa l(GLIBC_2.3.2) [2]	pthread_mutex_dest roy(GLIBC_2.0) [2]	pthread_rwlock_tim edwlock(GLIBC_2. .2) [2]	pwrite(GLIBC_2.2) [2]
pthread_attr_getda chstate(GLIBC_2.0) [2]	pthread_cond_timed wait(GLIBC_2.3.2) [2]	pthread_mutex_init(GLIBC_2.0) [2]	pthread_rwlock_tryr lock(GLIBC_2.1) [2]	pwrite64(GLIBC_2. 2) [3]
pthread_attr_getgu ardsize(GLIBC_2.1) [2]	pthread_cond_wait(GLIBC_2.3.2) [2]	pthread_mutex_lock (GLIBC_2.0) [2]	pthread_rwlock_tryr wlock(GLIBC_2.1) [2]	sem_close(GLIBC_ 2.1.1) [2]
pthread_attr_getsch edparam(GLIBC_2. 0) [2]	pthread_condattr_de stroy(GLIBC_2.0) [2]	pthread_mutex_tryl ock(GLIBC_2.0) [2]	pthread_rwlock_unl ock(GLIBC_2.1) [2]	sem_destroy(GLIB C_2.1) [2]
pthread_attr_getstac kaddr(GLIBC_2.1) [2]	pthread_condattr_ge tpshared(GLIBC_2. 2) [2]	pthread_mutex_unl ock(GLIBC_2.0) [2]	pthread_rwlock_wrl ock(GLIBC_2.1) [2]	sem_getvalue(GLIB C_2.1) [2]
pthread_attr_getstac ksize(GLIBC_2.1) [2]	pthread_condattr_in it(GLIBC_2.0) [2]	pthread_mutexattr_ destroy(GLIBC_2.0) [2]	pthread_rwlockattr_ destroy(GLIBC_2.1) [2]	sem_init(GLIBC_2. 1) [2]
pthread_attr_init(G LIBC_2.1) [2]	pthread_condattr_se tpshared(GLIBC_2. 2) [2]	pthread_mutexattr_ getpshared(GLIBC_ 2.2) [2]	pthread_rwlockattr_ getpshared(GLIBC_ 2.1) [2]	sem_open(GLIBC_ 2.1.1) [2]

629	pthread_attr_setdetachstate(GLIBC_2.0) [2]	pthread_create(GLIBC_2.1) [2]	pthread_mutexattr_gettype(GLIBC_2.1) [2]	pthread_rwlockattr_init(GLIBC_2.1) [2]	sem_post(GLIBC_2.1) [2]
630	pthread_attr_setguardsize(GLIBC_2.1) [2]	pthread_detach(GLIBC_2.0) [2]	pthread_mutexattr_init(GLIBC_2.0) [2]	pthread_rwlockattr_setshared(GLIBC_2.1) [2]	sem_timedwait(GLIBC_2.2) [2]
631	pthread_attr_setschedparam(GLIBC_2.0) [2]	pthread_equal(GLIBC_2.0) [2]	pthread_mutexattr_setpshared(GLIBC_2.2) [2]	pthread_self(GLIBC_2.0) [2]	sem_trywait(GLIBC_2.1) [2]
632	pthread_attr_setstackaddr(GLIBC_2.1) [2]	pthread_exit(GLIBC_2.0) [2]	pthread_mutexattr_settype(GLIBC_2.1) [2]	pthread_setcancelstate(GLIBC_2.0) [2]	sem_unlink(GLIBC_2.1.1) [2]
633	pthread_attr_setstacksize(GLIBC_2.1) [2]	pthread_getspecific(GLIBC_2.0) [2]	pthread_once(GLIBC_2.0) [2]	pthread_setcanceltype(GLIBC_2.0) [2]	sem_wait(GLIBC_2.1) [2]

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

[3]. Large File Support

1.6. Interfaces for libgcc_s

Table 1-33 defines the library name and shared object name for the libgcc_s library

Table 1-33. libgcc_s Definition

Library:	libgcc_s
SONAME:	libgcc_s.so.1

The behavior of the interfaces in this library is specified by the following specifications:

this specification

1.6.1. Unwind Library

1.6.1.1. Interfaces for Unwind Library

An LSB conforming implementation shall provide the architecture specific functions for Unwind Library specified in Table 1-34, with the full functionality as described in the referenced underlying specification.

Table 1-34. libgcc_s - Unwind Library Function Interfaces

_Unwind_DeleteException(GCC_3.0)	_Unwind_GetDataRelBase(GCC_3.0)	_Unwind_GetLanguageSpecificData(GC	_Unwind_RaiseException(GCC_3.0)	_Unwind_SetIP(GC
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[1]	[1]	CC_3.0) [1]	[1]	C_3.0) [1]
_Unwind_Find_FD E(GCC_3.0) [1]	_Unwind_GetGR(G CC_3.0) [1]	_Unwind_GetRegio nStart(GCC_3.0) [1]	_Unwind_Resume(GCC_3.0) [1]	
_Unwind_ForcedUn wind(GCC_3.0) [1]	_Unwind_GetIP(G CC_3.0) [1]	_Unwind_GetTextR elBase(GCC_3.0) [1]	_Unwind_SetGR(G CC_3.0) [1]	

643

644 *Referenced Specification(s)*

645 [1]. this specification

1.7. Interface Definitions for libgcc_s

646 The following interfaces are included in libgcc_s and are defined by this specification. Unless otherwise noted, these
647 interfaces shall be included in the source standard.

648 Other interfaces listed above for libgcc_s shall behave as described in the referenced base document.

_Unwind_DeleteException

Name

649 `_Unwind_DeleteException` — private C++ error handling method

Synopsis

650 `void _Unwind_DeleteException((struct _Unwind_Exception *object));`

Description

651 `_Unwind_DeleteException` deletes the given exception *object*. If a given runtime resumes normal execution
652 after catching a foreign exception, it will not know how to delete that exception. Such an exception shall be deleted by
653 calling `_Unwind_DeleteException`. This is a convenience function that calls the function pointed to by the
654 *exception_cleanup* field of the exception header.

_Unwind_Find_FDE

Name

655 `_Unwind_Find_FDE` — private C++ error handling method

Synopsis

656 `fde * _Unwind_Find_FDE(void *pc, (struct dwarf_eh_bases *bases));`

Description

657 `_Unwind_Find_FDE` looks for the object containing *pc*, then inserts into *bases*.

_Unwind_ForcedUnwind

Name

658 _Unwind_ForcedUnwind — private C++ error handling method

Synopsis

```
659    _Unwind_Reason_Code _Unwind_ForcedUnwind((struct _Unwind_Exception *object),
660    _Unwind_Stop_Fn stop, void *stop_parameter);
```

Description

661 _Unwind_ForcedUnwind raises an exception for forced unwinding, passing along the given exception *object*,
 662 which should have its *exception_class* and *exception_cleanup* fields set. The exception *object* has been allocated by
 663 the language-specific runtime, and has a language-specific format, except that it shall contain an _Unwind_Exception
 664 struct.

665 Forced unwinding is a single-phase process. *stop* and *stop_parameter* control the termination of the unwind
 666 process instead of the usual personality routine query. *stop* is called for each unwind frame, with the parameters
 667 described for the usual personality routine below, plus an additional *stop_parameter*.

Return Value

668 When *stop* identifies the destination frame, it transfers control to the user code as appropriate without returning,
 669 normally after calling _Unwind_DeleteException. If not, then it should return an _Unwind_Reason_Code value.
 670 If *stop* returns any reason code other than _URC_NO_REASON, then the stack state is indeterminate from the point
 671 of view of the caller of _Unwind_ForcedUnwind. Rather than attempt to return, therefore, the unwind library should
 672 use the *exception_cleanup* entry in the exception, and then call *abort*.

673 _URC_NO_REASON

674 This is not the destination from. The unwind runtime will call frame's personality routine with the
 675 _UA_FORCE_UNWIND and _UA_CLEANUP_PHASE flag set in *actions*, and then unwind to the next frame and call
 676 the *stop* function again.

677 _URC_END_OF_STACK

678 In order to allow _Unwind_ForcedUnwind to perform special processing when it reaches the end of the stack,
 679 the unwind runtime will call it after the last frame is rejected, with a NULL stack pointer in the context, and the
 680 *stop* function shall catch this condition. It may return this code if it cannot handle end-of-stack.

681 _URC_FATAL_PHASE2_ERROR

682 The *stop* function may return this code for other fatal conditions like stack corruption.

_Unwind_GetDataRelBase

Name

683 _Unwind_GetDataRelBase — private IA64 C++ error handling method

Synopsis

684 `_Unwind_Ptr _Unwind_GetDataRelBase((struct _Unwind_Context *context));`

Description

685 `_Unwind_GetDataRelBase` returns the global pointer in register one for *context*.

_Unwind_GetGR

Name

686 _Unwind_GetGR — private C++ error handling method

Synopsis

687 `_Unwind_Word _Unwind_GetGR((struct _Unwind_Context *context), int index);`

Description

688 `_Unwind_GetGR` returns data at *index* found in *context*. The register is identified by its index: 0 to 31 are for the fixed registers, and 32 to 127 are for the stacked registers.

690 During the two phases of unwinding, only GR1 has a guaranteed value, which is the global pointer of the frame referenced by the unwind *context*. If the register has its NAT bit set, the behavior is unspecified.

_Unwind_GetIP

Name

692 _Unwind_GetIP — private C++ error handling method

Synopsis

693 `_Unwind_Ptr _Unwind_GetIP((struct _Unwind_Context *context));`

Description

694 `_Unwind_GetIP` returns the instruction pointer value for the routine identified by the unwind *context*.

_Unwind_GetLanguageSpecificData

Name

695 `_Unwind_GetLanguageSpecificData` — private C++ error handling method

Synopsis

```
696    _Unwind_Ptr _Unwind_GetLanguageSpecificData((struct _Unwind_Context *context), uint  
697    value);
```

Description

698 `_Unwind_GetLanguageSpecificData` returns the address of the language specific data area for the current stack frame.

_Unwind_GetRegionStart

Name

700 `_Unwind_GetRegionStart` — private C++ error handling method

Synopsis

```
701    _Unwind_Ptr _Unwind_GetRegionStart((struct _Unwind_Context *context));
```

Description

702 `_Unwind_GetRegionStart` routine returns the address (i.e., 0) of the beginning of the procedure or code fragment described by the current unwind descriptor block.

_Unwind_GetTextRelBase

Name

704 `_Unwind_GetTextRelBase` — private IA64 C++ error handling method

Synopsis

```
705    _Unwind_Ptr _Unwind_GetTextRelBase((struct _Unwind_Context *context));
```

Description

706 `_Unwind_GetTextRelBase` calls the abort method, then returns.

_Unwind_RaiseException

Name

707 `_Unwind_RaiseException` — private C++ error handling method

Synopsis

708 `_Unwind_Reason_Code _Unwind_RaiseException((struct _Unwind_Exception *object));`

Description

709 `_Unwind_RaiseException` raises an exception, passing along the given exception *object*, which should have its *exception_class* and *exception_cleanup* fields set. The exception object has been allocated by the language-specific runtime, and has a language-specific format, exception that it shall contain an `_Unwind_Exception`.

Return Value

713 `_Unwind_RaiseException` does not return unless an error condition is found. If an error condition occurs, an `_Unwind_Reason_Code` is returned:

715 `_URC_END_OF_STACK`

716 The unwinder encountered the end of the stack during phase one without finding a handler. The unwind runtime
717 will not have modified the stack. The C++ runtime will normally call `uncaught_exception` in this case.

718 `_URC_FATAL_PHASE1_ERROR`

719 The unwinder encountered an unexpected error during phase one, because of something like stack corruption.
720 The unwind runtime will not have modified the stack. The C++ runtime will normally call `terminate` in this
721 case.

722 `_URC_FATAL_PHASE2_ERROR`

723 The unwinder encountered an unexpected error during phase two. This is usually a *throw*, which will call
724 `terminate`.

_Unwind_Resume

Name

725 _Unwind_Resume — private C++ error handling method

Synopsis

726 `void _Unwind_Resume((struct _Unwind_Exception *object));`

Description

727 _Unwind_Resume resumes propagation of an existing exception *object*. A call to this routine is inserted as the end
728 of a landing pad that performs cleanup, but does not resume normal execution. It causes unwinding to proceed further.

_Unwind_SetGR

Name

729 _Unwind_SetGR — private C++ error handling method

Synopsis

730 `void _Unwind_SetGR((struct _Unwind_Context *context), int index, uint value);`

Description

731 _Unwind_SetGR sets the *value* of the register *indexed* for the routine identified by the unwind *context*.

_Unwind_SetIP

Name

732 _Unwind_SetIP — private C++ error handling method

Synopsis

733 `void _Unwind_SetIP((struct _Unwind_Context *context), uint value);`

Description

734 _Unwind_SetIP sets the *value* of the instruction pointer for the routine identified by the unwind *context*

1.8. Interfaces for libdl

735 Table 1-35 defines the library name and shared object name for the libdl library

736 **Table 1-35. libdl Definition**

Library:	libdl
SONAME:	libdl.so.2

738 The behavior of the interfaces in this library is specified by the following specifications:

this specification

739 ISO POSIX (2003)

1.8.1. Dynamic Loader

1.8.1.1. Interfaces for Dynamic Loader

741 An LSB conforming implementation shall provide the architecture specific functions for Dynamic Loader specified in
742 Table 1-36, with the full functionality as described in the referenced underlying specification.743 **Table 1-36. libdl - Dynamic Loader Function Interfaces**

dladdr(GLIBC_2.0) [1]	dlclose(GLIBC_2.0) [2]	dlerror(GLIBC_2.0) [2]	dlopen(GLIBC_2.1) [1]	dlsym(GLIBC_2.0) [1]
--------------------------	---------------------------	---------------------------	--------------------------	-------------------------

745 *Referenced Specification(s)*

746 [1]. this specification

747 [2]. ISO POSIX (2003)

1.9. Interfaces for libcrypt

748 Table 1-37 defines the library name and shared object name for the libcrypt library

749 **Table 1-37. libcrypt Definition**

Library:	libcrypt
SONAME:	libcrypt.so.1

751 The behavior of the interfaces in this library is specified by the following specifications:

752 ISO POSIX (2003)

1.9.1. Encryption

1.9.1.1. Interfaces for Encryption

754 An LSB conforming implementation shall provide the architecture specific functions for Encryption specified in Table
755 1-38, with the full functionality as described in the referenced underlying specification.756 **Table 1-38. libcrypt - Encryption Function Interfaces**

crypt(GLIBC_2.0)	encrypt(GLIBC_2.0)	setkey(GLIBC_2.0)		
------------------	--------------------	-------------------	--	--

757	[1]) [1]	[1]		
-----	-----	-------	-----	--	--

758 *Referenced Specification(s)*

759 **[1].** ISO POSIX (2003)

II. Utility Libraries

Chapter 2. Libraries

1 The Utility libraries are those that are commonly used, but not part of the Single Unix Specification.

2.1. Interfaces for libz

2 **Table 2-1. libz Definition**

Library:	libz
SONAME:	libz.so.1

2.1.1. Compression Library

4 **2.1.1.1. Interfaces for Compression Library**

2.2. Data Definitions for libz

5 This section contains standard data definitions that describe system data. These definitions are organized into groups
6 that correspond to system headers. This convention is used as a convenience for the reader, and does not imply the
7 existence of these headers, or their content.

8 ISO C serves as the LSB reference programming language, and data definitions are specified in ISO C . The C
9 language is used here as a convenient notation. Using a C language description of these data objects does not preclude
10 their use by other programming languages.

2.3. Interfaces for libncurses

11 **Table 2-2. libncurses Definition**

Library:	libncurses
SONAME:	libncurses.so.5

2.3.1. Curses

13 **2.3.1.1. Interfaces for Curses**

2.4. Data Definitions for libncurses

14 This section contains standard data definitions that describe system data. These definitions are organized into groups
15 that correspond to system headers. This convention is used as a convenience for the reader, and does not imply the
16 existence of these headers, or their content.

17 ISO C serves as the LSB reference programming language, and data definitions are specified in ISO C . The C
 18 language is used here as a convenient notation. Using a C language description of these data objects does not preclude
 19 their use by other programming languages.

2.4.1. curses.h

```
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35     typedef int bool;
```

2.5. Interfaces for libutil

36 **Table 2-3. libutil Definition**

Library:	libutil
SONAME:	libutil.so.1

38 The behavior of the interfaces in this library is specified by the following standards.

39 Linux Standard Base¹

2.5.1. Utility Functions

40 **2.5.1.1. Interfaces for Utility Functions**

41 **Table 2-4. libutil - Utility Functions Function Interfaces**

forkpty(GLIBC_2.0) ¹	login_tty(GLIBC_2.0) ¹	logwtmp(GLIBC_2.0) ¹		
login(GLIBC_2.0) ¹	logout(GLIBC_2.0) ¹	openpty(GLIBC_2.0) ¹		

43 **Notes**

44 1. Linux Standard Base

Appendix A. Alphabetical Listing of Interfaces

A.1. libgcc_s

- 1 The behaviour of the interfaces in this library is specified by the following Standards.
2 this specification

3 **Table A-1. libgcc_s Function Interfaces**

_Unwind_DeleteException[1]	_Unwind_GetIP[1]	_Unwind_Resume[1]
_Unwind_Find_FDE[1]	_Unwind_GetLanguageSpecificData[1]	_Unwind_SetGR[1]
_Unwind_ForcedUnwind[1]	_Unwind_GetRegionStart[1]	_Unwind_SetIP[1]
_Unwind_GetDataRelBase[1]	_Unwind_GetTextRelBase[1]	
_Unwind_GetGR[1]	_Unwind_RaiseException[1]	

4

Linux Packaging Specification

Table of Contents

I. Package Format and Installation	49
1. Software Installation	1
1.1. Package Dependencies.....	1
1.2. Package Architecture Considerations	1

I. Package Format and Installation

Chapter 1. Software Installation

1.1. Package Dependencies

- 1 The LSB runtime environment shall provide the following dependencies.
- 2 lsb-core-s390
 - 3 This dependency is used to indicate that the application is dependent on features contained in the LSB-Core specification.
 - 4
- 5 Other LSB modules may add additional dependencies; such dependencies shall have the format `lsb-module-s390`.

1.2. Package Architecture Considerations

- 6 All packages must specify an architecture of s390. A LSB runtime environment must accept an architecture of s390 even if the native architecture is different.
- 7
- 8 The archnum value in the Lead Section shall be 0x000E.

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Table of Contents

A. GNU Free Documentation License	1
A.1. PREAMBLE.....	1
A.2. APPLICABILITY AND DEFINITIONS	1
A.3. VERBATIM COPYING	2
A.4. COPYING IN QUANTITY	2
A.5. MODIFICATIONS	3
A.6. COMBINING DOCUMENTS	4
A.7. COLLECTIONS OF DOCUMENTS	4
A.8. AGGREGATION WITH INDEPENDENT WORKS.....	4
A.9. TRANSLATION	5
A.10. TERMINATION	5
A.11. FUTURE REVISIONS OF THIS LICENSE	5
A.12. How to use this License for your documents.....	5

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