<https://www.cnblogs.com/Jimmy1988/p/7485133.html>

**1. 错误码 / errno**

Linux中系统调用的错误都存储于 errno中，errno由操作系统维护，存储就近发生的错误，即下一次的错误码会覆盖掉上一次的错误。

*PS: 只有当系统调用或者调用lib函数时出错，才会置位errno！*

查看系统中所有的errno所代表的含义，可以采用如下的代码：

/\* Function: obtain the errno string

\* char \*strerror(int errno)

\*/

#include <stdio.h>

#include <string.h> //for strerror()

//#include <errno.h>

int main()

{

int tmp = 0;

for(tmp = 0; tmp <=256; tmp++)

{

printf("errno: %2d\t%s\n",tmp,strerror(tmp));

}

return 0;

}

输出信息如下：

errno: 0 Success

errno: 1 Operation not permitted

errno: 2 No such file or directory

errno: 3 No such process

errno: 4 Interrupted system call

errno: 5 Input/output error

errno: 6 No such device or address

errno: 7 Argument list too long

errno: 8 Exec format error

errno: 9 Bad file descriptor

errno: 10 No child processes

errno: 11 Resource temporarily unavailable

errno: 12 Cannot allocate memory

errno: 13 Permission denied

errno: 14 Bad address

errno: 15 Block device required

errno: 16 Device or resource busy

errno: 17 File exists

errno: 18 Invalid cross-device link

errno: 19 No such device

errno: 20 Not a directory

errno: 21 Is a directory

errno: 22 Invalid argument

errno: 23 Too many open files in system

errno: 24 Too many open files

errno: 25 Inappropriate ioctl for device

errno: 26 Text file busy

errno: 27 File too large

errno: 28 No space left on device

errno: 29 Illegal seek

errno: 30 Read-only file system

errno: 31 Too many links

errno: 32 Broken pipe

errno: 33 Numerical argument out of domain

errno: 34 Numerical result out of range

errno: 35 Resource deadlock avoided

errno: 36 File name too long

errno: 37 No locks available

errno: 38 Function not implemented

errno: 39 Directory not empty

errno: 40 Too many levels of symbolic links

errno: 41 Unknown error 41

errno: 42 No message of desired type

errno: 43 Identifier removed

errno: 44 Channel number out of range

errno: 45 Level 2 not synchronized

errno: 46 Level 3 halted

errno: 47 Level 3 reset

errno: 48 Link number out of range

errno: 49 Protocol driver not attached

errno: 50 No CSI structure available

errno: 51 Level 2 halted

errno: 52 Invalid exchange

errno: 53 Invalid request descriptor

errno: 54 Exchange full

errno: 55 No anode

errno: 56 Invalid request code

errno: 57 Invalid slot

errno: 58 Unknown error 58

errno: 59 Bad font file format

errno: 60 Device not a stream

errno: 61 No data available

errno: 62 Timer expired

errno: 63 Out of streams resources

errno: 64 Machine is not on the network

errno: 65 Package not installed

errno: 66 Object is remote

errno: 67 Link has been severed

errno: 68 Advertise error

errno: 69 Srmount error

errno: 70 Communication error on send

errno: 71 Protocol error

errno: 72 Multihop attempted

errno: 73 RFS specific error

errno: 74 Bad message

errno: 75 Value too large for defined data type

errno: 76 Name not unique on network

errno: 77 File descriptor in bad state

errno: 78 Remote address changed

errno: 79 Can not access a needed shared library

errno: 80 Accessing a corrupted shared library

errno: 81 .lib section in a.out corrupted

errno: 82 Attempting to link in too many shared libraries

errno: 83 Cannot exec a shared library directly

errno: 84 Invalid or incomplete multibyte or wide character

errno: 85 Interrupted system call should be restarted

errno: 86 Streams pipe error

errno: 87 Too many users

errno: 88 Socket operation on non-socket

errno: 89 Destination address required

errno: 90 Message too long

errno: 91 Protocol wrong type for socket

errno: 92 Protocol not available

errno: 93 Protocol not supported

errno: 94 Socket type not supported

errno: 95 Operation not supported

errno: 96 Protocol family not supported

errno: 97 Address family not supported by protocol

errno: 98 Address already in use

errno: 99 Cannot assign requested address

errno: 100 Network is down

errno: 101 Network is unreachable

errno: 102 Network dropped connection on reset

errno: 103 Software caused connection abort

errno: 104 Connection reset by peer

errno: 105 No buffer space available

errno: 106 Transport endpoint is already connected

errno: 107 Transport endpoint is not connected

errno: 108 Cannot send after transport endpoint shutdown

errno: 109 Too many references: cannot splice

errno: 110 Connection timed out

errno: 111 Connection refused

errno: 112 Host is down

errno: 113 No route to host

errno: 114 Operation already in progress

errno: 115 Operation now in progress

errno: 116 Stale file handle

errno: 117 Structure needs cleaning

errno: 118 Not a XENIX named type file

errno: 119 No XENIX semaphores available

errno: 120 Is a named type file

errno: 121 Remote I/O error

errno: 122 Disk quota exceeded

errno: 123 No medium found

errno: 124 Wrong medium type

errno: 125 Operation canceled

errno: 126 Required key not available

errno: 127 Key has expired

errno: 128 Key has been revoked

errno: 129 Key was rejected by service

errno: 130 Owner died

errno: 131 State not recoverable

errno: 132 Operation not possible due to RF-kill

errno: 133 Memory page has hardware error

errno: 134~255 unknown error!

**Linux中，在头文件 /usr/include/asm-generic/errno-base.h 对基础常用errno进行了宏定义**：

#ifndef \_ASM\_GENERIC\_ERRNO\_BASE\_H

#define \_ASM\_GENERIC\_ERRNO\_BASE\_H

#define EPERM 1 /\* Operation not permitted \*/

#define ENOENT 2 /\* No such file or directory \*/

#define ESRCH 3 /\* No such process \*/

#define EINTR 4 /\* Interrupted system call \*/

#define EIO 5 /\* I/O error \*/

#define ENXIO 6 /\* No such device or address \*/

#define E2BIG 7 /\* Argument list too long \*/

#define ENOEXEC 8 /\* Exec format error \*/

#define EBADF 9 /\* Bad file number \*/

#define ECHILD 10 /\* No child processes \*/

#define EAGAIN 11 /\* Try again \*/

#define ENOMEM 12 /\* Out of memory \*/

#define EACCES 13 /\* Permission denied \*/

#define EFAULT 14 /\* Bad address \*/

#define ENOTBLK 15 /\* Block device required \*/

#define EBUSY 16 /\* Device or resource busy \*/

#define EEXIST 17 /\* File exists \*/

#define EXDEV 18 /\* Cross-device link \*/

#define ENODEV 19 /\* No such device \*/

#define ENOTDIR 20 /\* Not a directory \*/

#define EISDIR 21 /\* Is a directory \*/

#define EINVAL 22 /\* Invalid argument \*/

#define ENFILE 23 /\* File table overflow \*/

#define EMFILE 24 /\* Too many open files \*/

#define ENOTTY 25 /\* Not a typewriter \*/

#define ETXTBSY 26 /\* Text file busy \*/

#define EFBIG 27 /\* File too large \*/

#define ENOSPC 28 /\* No space left on device \*/

#define ESPIPE 29 /\* Illegal seek \*/

#define EROFS 30 /\* Read-only file system \*/

#define EMLINK 31 /\* Too many links \*/

#define EPIPE 32 /\* Broken pipe \*/

#define EDOM 33 /\* Math argument out of domain of func \*/

#define ERANGE 34 /\* Math result not representable \*/

#endif

**在 /usr/include/asm-asm-generic/errno.h 中，对剩余的errno做了宏定义**：

#ifndef \_ASM\_GENERIC\_ERRNO\_H

#define \_ASM\_GENERIC\_ERRNO\_H

#include <asm-generic/errno-base.h>

#define EDEADLK 35 /\* Resource deadlock would occur \*/

#define ENAMETOOLONG 36 /\* File name too long \*/

#define ENOLCK 37 /\* No record locks available \*/

#define ENOSYS 38 /\* Function not implemented \*/

#define ENOTEMPTY 39 /\* Directory not empty \*/

#define ELOOP 40 /\* Too many symbolic links encountered \*/

#define EWOULDBLOCK EAGAIN /\* Operation would block \*/

#define ENOMSG 42 /\* No message of desired type \*/

#define EIDRM 43 /\* Identifier removed \*/

#define ECHRNG 44 /\* Channel number out of range \*/

#define EL2NSYNC 45 /\* Level 2 not synchronized \*/

#define EL3HLT 46 /\* Level 3 halted \*/

#define EL3RST 47 /\* Level 3 reset \*/

#define ELNRNG 48 /\* Link number out of range \*/

#define EUNATCH 49 /\* Protocol driver not attached \*/

#define ENOCSI 50 /\* No CSI structure available \*/

#define EL2HLT 51 /\* Level 2 halted \*/

#define EBADE 52 /\* Invalid exchange \*/

#define EBADR 53 /\* Invalid request descriptor \*/

#define EXFULL 54 /\* Exchange full \*/

#define ENOANO 55 /\* No anode \*/

#define EBADRQC 56 /\* Invalid request code \*/

#define EBADSLT 57 /\* Invalid slot \*/

#define EDEADLOCK EDEADLK

#define EBFONT 59 /\* Bad font file format \*/

#define ENOSTR 60 /\* Device not a stream \*/

#define ENODATA 61 /\* No data available \*/

#define ETIME 62 /\* Timer expired \*/

#define ENOSR 63 /\* Out of streams resources \*/

#define ENONET 64 /\* Machine is not on the network \*/

#define ENOPKG 65 /\* Package not installed \*/

#define EREMOTE 66 /\* Object is remote \*/

#define ENOLINK 67 /\* Link has been severed \*/

#define EADV 68 /\* Advertise error \*/

#define ESRMNT 69 /\* Srmount error \*/

#define ECOMM 70 /\* Communication error on send \*/

#define EPROTO 71 /\* Protocol error \*/

#define EMULTIHOP 72 /\* Multihop attempted \*/

#define EDOTDOT 73 /\* RFS specific error \*/

#define EBADMSG 74 /\* Not a data message \*/

#define EOVERFLOW 75 /\* Value too large for defined data type \*/

#define ENOTUNIQ 76 /\* Name not unique on network \*/

#define EBADFD 77 /\* File descriptor in bad state \*/

#define EREMCHG 78 /\* Remote address changed \*/

#define ELIBACC 79 /\* Can not access a needed shared library \*/

#define ELIBBAD 80 /\* Accessing a corrupted shared library \*/

#define ELIBSCN 81 /\* .lib section in a.out corrupted \*/

#define ELIBMAX 82 /\* Attempting to link in too many shared libraries \*/

#define ELIBEXEC 83 /\* Cannot exec a shared library directly \*/

#define EILSEQ 84 /\* Illegal byte sequence \*/

#define ERESTART 85 /\* Interrupted system call should be restarted \*/

#define ESTRPIPE 86 /\* Streams pipe error \*/

#define EUSERS 87 /\* Too many users \*/

#define ENOTSOCK 88 /\* Socket operation on non-socket \*/

#define EDESTADDRREQ 89 /\* Destination address required \*/

#define EMSGSIZE 90 /\* Message too long \*/

#define EPROTOTYPE 91 /\* Protocol wrong type for socket \*/

#define ENOPROTOOPT 92 /\* Protocol not available \*/

#define EPROTONOSUPPORT 93 /\* Protocol not supported \*/

#define ESOCKTNOSUPPORT 94 /\* Socket type not supported \*/

#define EOPNOTSUPP 95 /\* Operation not supported on transport endpoint \*/

#define EPFNOSUPPORT 96 /\* Protocol family not supported \*/

#define EAFNOSUPPORT 97 /\* Address family not supported by protocol \*/

#define EADDRINUSE 98 /\* Address already in use \*/

#define EADDRNOTAVAIL 99 /\* Cannot assign requested address \*/

#define ENETDOWN 100 /\* Network is down \*/

#define ENETUNREACH 101 /\* Network is unreachable \*/

#define ENETRESET 102 /\* Network dropped connection because of reset \*/

#define ECONNABORTED 103 /\* Software caused connection abort \*/

#define ECONNRESET 104 /\* Connection reset by peer \*/

#define ENOBUFS 105 /\* No buffer space available \*/

#define EISCONN 106 /\* Transport endpoint is already connected \*/

#define ENOTCONN 107 /\* Transport endpoint is not connected \*/

#define ESHUTDOWN 108 /\* Cannot send after transport endpoint shutdown \*/

#define ETOOMANYREFS 109 /\* Too many references: cannot splice \*/

#define ETIMEDOUT 110 /\* Connection timed out \*/

#define ECONNREFUSED 111 /\* Connection refused \*/

#define EHOSTDOWN 112 /\* Host is down \*/

#define EHOSTUNREACH 113 /\* No route to host \*/

#define EALREADY 114 /\* Operation already in progress \*/

#define EINPROGRESS 115 /\* Operation now in progress \*/

#define ESTALE 116 /\* Stale file handle \*/

#define EUCLEAN 117 /\* Structure needs cleaning \*/

#define ENOTNAM 118 /\* Not a XENIX named type file \*/

#define ENAVAIL 119 /\* No XENIX semaphores available \*/

#define EISNAM 120 /\* Is a named type file \*/

#define EREMOTEIO 121 /\* Remote I/O error \*/

#define EDQUOT 122 /\* Quota exceeded \*/

#define ENOMEDIUM 123 /\* No medium found \*/

#define EMEDIUMTYPE 124 /\* Wrong medium type \*/

#define ECANCELED 125 /\* Operation Canceled \*/

#define ENOKEY 126 /\* Required key not available \*/

#define EKEYEXPIRED 127 /\* Key has expired \*/

#define EKEYREVOKED 128 /\* Key has been revoked \*/

#define EKEYREJECTED 129 /\* Key was rejected by service \*/

/\* for robust mutexes \*/

#define EOWNERDEAD 130 /\* Owner died \*/

#define ENOTRECOVERABLE 131 /\* State not recoverable \*/

#define ERFKILL 132 /\* Operation not possible due to RF-kill \*/

#define EHWPOISON 133 /\* Memory page has hardware error \*/

#endif

**2. 打印错误信息**

**1). 打印错误信息 / perror**

* **作用**：  
  打印系统错误信息
* **头文件**：

#include

* **函数原型**：

void perror(const char \*s)

* **参数**：

**s**: 字符串提示符

* **输出形式**：  
  const char \*s: strerror(errno) //提示符：发生系统错误的原因
* **返回值**：  
  无返回值

**2). 字符串显示错误信息 / strerror**

* **作用**：  
  将错误码以字符串的信息显示出来
* **头文件**：

#include

* **函数原型**：

char \*strerror(int errnum);

* **参数**：

**errnum**: 即errno

* **返回值**：  
  返回错误码字符串信息