NAME

select – synchronous I/O multiplexing

SYNOPSIS

#include <sys/time.h>
#include <sys/types.h>

int select(int *nfds*, **fd_set** **readfds*, **fd_set** **writefds*, **fd_set** **exceptfds*,
    struct timeval **timeout*);

void FD_SET(int fd, **fd_set** &fdset**);**

void FD_CLR(int fd, **fd_set** &fdset**);**

int FD_ISSET(int fd, **fd_set** &fdset**);**

void FD_ZERO(fd_set &fdset**);**

MT-LEVEL

MT-Safe

DESCRIPTION

select( ) examines the I/O file descriptor sets whose addresses are passed in *readfds*, *writefds*, and *exceptfds* to see if any of their file descriptors are ready for reading, are ready for writing, or have an exceptional condition pending, respectively. Out-of-band data is the only exceptional condition. *nfds* is the number of bits to be checked in each bit mask that represents a file descriptor; the file descriptors from **0** to *nfds* –**1** in the file descriptor sets are examined. On return, **select( )** replaces the given file descriptor sets with subsets consisting of those file descriptors that are ready for the requested operation. The return value from the call to **select( )** is the number of ready file descriptors.

The file descriptor sets are stored as bit fields in arrays of integers. The following macros are provided for manipulating such file descriptor sets: **FD_ZERO( )** initializes a file descriptor set *fdset* to the null set. **FD_SET( )** includes a particular file descriptor *fd* in *fdset*. **FD_CLR( )** removes *fd* from *fdset*. **FD_ISSET( )** is nonzero if *fd* is a member of *fdset*, zero otherwise. The behavior of these macros is undefined if a file descriptor value is less than zero or greater than or equal to **FD_SETSIZE**. **FD_SETSIZE** is a constant defined in **<sys/select.h>**.

If *timeout* is not a NULL pointer, it specifies a maximum interval to wait for the selection to complete. If *timeout* is a NULL pointer, the **select( )** blocks indefinitely. To effect a poll, the *timeout* argument should be a non-NULL pointer, pointing to a zero-valued **timeval** structure.

Any of *readfds*, *writefds*, and *exceptfds* may be given as NULL pointers if no file descriptors are of interest.

RETURN VALUES

select( ) returns the number of ready file descriptors contained in the file descriptor sets or –**1** if an error occurred. If the time limit expires, then **select( )** returns **0**.

ERRORS

The call fails if:

EBADF One of the I/O file descriptor sets specified an invalid I/O file descriptor.

EINTR A signal was delivered before any of the selected events occurred, or the time limit expired.

EINVAL A component of the pointed-to time limit is outside the acceptable range: **t_sec** must be between **0** and 10^8, inclusive. **t_usec** must be greater than or equal to **0**, and less than 10^6.

SEE ALSO

poll(2), **read**(2), **write**(2)

NOTES

The default value for **FD_SETSIZE** (currently 1024) is larger than the default limit on the number of open files. In order to accommodate programs that may use a larger number of open files with **select( )**, it is possible to increase this size within a program by providing a larger definition of **FD_SETSIZE** before the inclusion of **<sys/types.h>**.

The file descriptor sets are always modified on return, even if the call returns as the result of a timeout.