NAME

msgrcv - receive a message from a message queue

LIBRARY

Standard C Library (libc, -lc)

SYNOPSIS

#include <sys/types.h>
#include <sys/ipc.h>
#include <sys/msg.h>

ssize_t
msgrcv(*int msqid*, *void *msgp*, *size_t msgsz*, *long msgtyp*, *int msgflg*);

DESCRIPTION

The **msgrcv**() function receives a message from the message queue specified in *msqid*, and places it into the structure pointed to by *msgp*. This structure should consist of the following members:

```
long mtype;    /* message type */
char mtext[1]; /* body of message */
```

mtype is an integer greater than 0 that can be used for selecting messages, *mtext* is an array of bytes, with a size up to that of the system limit (MSGMAX).

The value of *msgtyp* has one of the following meanings:

- The *msgtyp* argument is greater than 0. The first message of type *msgtyp* will be received.

- The *msgtyp* argument is equal to 0. The first message on the queue will be received.

- The *msgtyp* argument is less than 0. The first message of the lowest message type that is less than or equal to the absolute value of *msgtyp* will be received.

The *msgsz* argument specifies the maximum length of the requested message. If the received message has a length greater than *msgsz* it will be silently truncated if the MSG_NOERROR flag is set in *msgflg*, otherwise an error will be returned.

If no matching message is present on the message queue specified by *msqid*, the behavior of **msgrcv**() depends on whether the IPC_NOWAIT flag is set in *msgflg* or not. If IPC_NOWAIT is set, **msgrcv**() will immediately return a value of -1, and set *errno* to ENOMSG. If IPC_NOWAIT is not set, the

calling process will be blocked until:

- A message of the requested type becomes available on the message queue.

- The message queue is removed, in which case -1 will be returned, and *errno* set to EINVAL.

- A signal is received and caught. -1 is returned, and *errno* set to EINTR.

If a message is successfully received, the data structure associated with *msqid* is updated as follows:

- *msg_cbytes* is decremented by the size of the message.

- *msg_lrpid* is set to the pid of the caller.

- *msg_lrtime* is set to the current time.

- *msg_qnum* is decremented by 1.

RETURN VALUES

Upon successful completion, **msgrcv**() returns the number of bytes received into the *mtext* field of the structure pointed to by *msgp*. Otherwise, -1 is returned, and *errno* set to indicate the error.

ERRORS

The **msgrcv**() function will fail if:

[EINVAL]   The *msqid* argument is not a valid message queue identifier.

                    The message queue was removed while **msgrcv**() was waiting for a message of the requested type to become available on it.

                    The *msgsz* argument is less than 0.

[E2BIG]   A matching message was received, but its size was greater than *msgsz* and the MSG_NOERROR flag was not set in *msgflg*.

[EACCES]   The calling process does not have read access to the message queue.

[EFAULT]   The *msgp* argument points to an invalid address.

[EINTR]   The system call was interrupted by the delivery of a signal.

[ENOMSG]   There is no message of the requested type available on the message queue, and
                  IPC_NOWAIT is set in *msgflg*.

SEE ALSO

msgctl(2), msgget(2), msgsnd(2)

HISTORY

Message queues appeared in the first release of AT&T System V UNIX.