

NAME

ioctl - control device

LIBRARY

Standard C Library (libc, -lc)

SYNOPSIS

```
#include <sys/ioctl.h>
```

int

```
ioctl(int fd, unsigned long request, ...);
```

DESCRIPTION

The **ioctl()** system call manipulates the underlying device parameters of special files. In particular, many operating characteristics of character special files (e.g. terminals) may be controlled with **ioctl()** requests. The argument *fd* must be an open file descriptor.

The third argument to **ioctl()** is traditionally named *char *argp*. Most uses of **ioctl()**, however, require the third argument to be a *caddr_t* or an *int*.

An **ioctl()** *request* has encoded in it whether the argument is an "in" argument or "out" argument, and the size of the argument *argp* in bytes. Macros and defines used in specifying an *ioctl request* are located in the file *<sys/ioctl.h>*.

GENERIC IOCTLS

Some generic ioctls are not implemented for all types of file descriptors. These include:

FIONREAD int

Get the number of bytes that are immediately available for reading.

FIONWRITE int

Get the number of bytes in the descriptor's send queue. These bytes are data which has been written to the descriptor but which are being held by the kernel for further processing. The nature of the required processing depends on the underlying device. For TCP sockets, these bytes have not yet been acknowledged by the other side of the connection.

FIONSPACE int

Get the free space in the descriptor's send queue. This value is the size of the send queue minus the number of bytes being held in the queue. Note: while this value represents the number of bytes that may be added to the queue, other resource limitations may cause a write not larger

than the send queue's space to be blocked. One such limitation would be a lack of network buffers for a write to a network connection.

RETURN VALUES

If an error has occurred, a value of -1 is returned and *errno* is set to indicate the error.

ERRORS

The **ioctl()** system call will fail if:

- | | |
|----------|--|
| [EBADF] | The <i>fd</i> argument is not a valid descriptor. |
| [ENOTTY] | The <i>fd</i> argument is not associated with a character special device. |
| [ENOTTY] | The specified request does not apply to the kind of object that the descriptor <i>fd</i> references. |
| [EINVAL] | The <i>request</i> or <i>argp</i> argument is not valid. |
| [EFAULT] | The <i>argp</i> argument points outside the process's allocated address space. |

SEE ALSO

[execve\(2\)](#), [fcntl\(2\)](#), [intro\(4\)](#), [tty\(4\)](#)

HISTORY

The **ioctl()** function appeared in Version 7 AT&T UNIX.