NAME

outb, outw, outl, outsb, outsw, outsl, inb, inw, inl, insb, insw, insl, outb_p, outw_p, outl_p, inb_p, inw_p, inl_p − port I/O

LIBRARY

Standard C library (*libc*, *−lc*)

SYNOPSIS

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

unsigned char inb(unsigned short port);
unsigned char inb_p(unsigned short port);
unsigned short inw(unsigned short port);
unsigned short inw_p(unsigned short port);
unsigned int inl(unsigned short port);
unsigned int inl_p(unsigned short port);

void outb(unsigned char value, unsigned short port);
void outb_p(unsigned char value, unsigned short port);
void outw(unsigned short value, unsigned short port);
void outw_p(unsigned short value, unsigned short port);
void outl(unsigned int value, unsigned short port);
void outl_p(unsigned int value, unsigned short port);

void insb(unsigned short port, void addr[.count],
          unsigned long count);
void insw(unsigned short port, void addr[.count],
          unsigned long count);
void insl(unsigned short port, void addr[.count],
          unsigned long count);
void outsb(unsigned short port, const void addr[.count],
          unsigned long count);
void outsw(unsigned short port, const void addr[.count],
          unsigned long count);
void outsl(unsigned short port, const void addr[.count],
          unsigned long count);
```

DESCRIPTION

This family of functions is used to do low-level port input and output. The out* functions do port output, the in* functions do port input; the b-suffix functions are byte-width and the w-suffix functions word-width; the _p-suffix functions pause until the I/O completes.

They are primarily designed for internal kernel use, but can be used from user space.

You must compile with **−O** or **−O2** or similar. The functions are defined as inline macros, and will not be substituted in without optimization enabled, causing unresolved references at link time.

You use **ioperm**(2) or alternatively **iopl**(2) to tell the kernel to allow the user space application to access the I/O ports in question. Failure to do this will cause the application to receive a segmentation fault.

STANDARDS

outb() and friends are hardware-specific. The*value* ar gument is passed first and the *port* ar gument is passed second, which is the opposite order from most DOS implementations.

SEE ALSO

ioperm(2), **iopl**(2)