

## I/O STREAMS : objects and manipulators, examples

---

The standard input/output (I/O) library for C++ is `<iostream.h>`, not `<stdio.h>`. Although C++ supports the "old" I/O functions, you should probably get use to using streams. The following provides the basics of using C++ streams.

### OBJECTS AND MANIPULATORS

#### C++ I/O OBJECTS

Object Name	Default Device
cin	Keyboard
cout	Screen
cerr	Screen
clog	Screen

#### C++ I/O MANIPULATORS

Manipulator	Description
dec	Decimal output
hex	Hexadecimal output
oct	Octal output
endl	End of line (or \n)
ends	End of string (or \0)
flush	Flushes buffer
resetiosflags(long)	Resets effect of setiosflags
setprecision( int )	Secifies digits of precision
setiosflags( format flag )	Sets format flag
setw( int )	Sets field width

#### C++ I/O FORMAT FLAGS

Format Flag	Description
ios::left	Left-justified output within width
ios::right	Right-justified output within width
ios::scientific	Formats numbers in scientific notation
ios::fixed	Normal decimal format
ios::dec	Formats numbers in base 10
ios::hex	Formats numbers in base 16
ios::oct	Formats numbers in base 8
ios::uppercase	Scientific notation characters uppercase
ios::showbase	Force base prefix in output
ios::showpos	Show '+' sign for positive numbers

### EXAMPLES

The following snippet shows how to use the basics of using C++ I/O streams. The insert operator '<<' and extraction operator '>>' are used to send and get data from the screen and keyboard.

```
// io.cp
#include <iostream.h>
#include <iomanip.h>

void main( void )

    int  i;
    float f;
    char  c;

    cout << "Enter an integer: ";
    cin >> i;
    cout << "Enter a float: ";
    cin >> f;
    cout << "Enter a character: ";
    cin >> c;

    cout << endl;
    cout << "Default formats" << endl;
    cout << i << endl;
    cout << f << endl;
    cout << c << endl;

    cout << endl << "Other formats" << endl;
    cout << hex << i << endl;
    cout << setprecision(2) << f << endl;
    cout << setiosflags( ios::scientific ) << f << endl;

// end io.cp
```