



Object Oriented Programming(OOP)

(Input/Output)

Simple program

```
#include<iostream>
using namespace std;
int main()
{
    cout << "Hello World";
    return 0;
}
```

#include <iostream>

- A C++ **stream** is a **flow of data into or out of a program**.
- **iostream** stands for **standard input-output stream**.
- This header file contains definitions to objects like cin, cout, cerr etc. .
- Lines beginning with a hash sign (#) are directives for the preprocessor.
- The directive #include tells the preprocessor to include the iostream standard file.
- The two keywords **cout** and **cin** are used very often for printing outputs and taking inputs respectively.
- To use cin and cout in C++ one must include the header file *iostream* in the program.

using namespace std;

- A namespace is a **declarative region that provides a scope to the identifiers** (the names of types, functions, variables, etc) inside it.
- All the elements of the standard C++ library are declared within what is called a namespace, the namespace with the name std.
- So in order to access its functionality we declare with this expression that we will be using these entities.

int main ()

- This line corresponds to the beginning of the definition of the main function.
- The main function is the point by where all C++ programs start their execution, independently of its location within the source code.
- By default the main function return “0” because main function's default return type is “int”.
- main function return type is integer by default. But it can be void also . When return type is integer ,you have to include "return 0" statement at the end.

cout << "Hello World!";

- **cout** represents the **standard output stream** in C++.
- The data needed to be displayed on the screen is inserted in the standard output stream (cout) using **the insertion operator(<<)**.

standard input stream (cin):

- Usually the input device in a computer is the keyboard. C++ cin statement is the instance of the class **istream** and is used to read input from the standard input device which is usually a keyboard.

The extraction operator(>>) is used along with the object **cin** for reading inputs. The extraction operator extracts the data from the object **cin** which is entered using the keyboard.

return 0;

- A return code of 0 for the main function is generally interpreted as the program worked as expected without any errors during its execution.

Comments

- Single-line comments (informally, C++ style), start with `//` and continue until the end of the line. If the last character in a comment line is a `\` the comment will continue in the next line.
- Multi-line comments (informally, C style), start with `/*` and end with `*/`

New line

- C++ manipulator `endl` function is used to insert a new line character and flush the stream. Working of `endl` manipulator is similar to `'\n'` character in C++. It prints the output of the following statement in the next line.
- The new line character `\n` can be used as an alternative to **endl**.

Program to Add Two Integers

```
#include <iostream>
using namespace std;
int main()
{
    int firstNumber, secondNumber, sumOfTwoNumbers;
    cout << "Enter two integers: ";

    cin >> firstNumber >> secondNumber;

    sumOfTwoNumbers = firstNumber + secondNumber;

    cout << firstNumber << " + " << secondNumber << " = " <<
        sumOfTwoNumbers;
    return 0;
}
```

Output

Enter two integers: 4 5

4 + 5 = 9

Swap Numbers (Using Temporary Variable)

```
#include <iostream>
using namespace std;
int main()
{
    int a = 5, b = 10, temp;
    cout << "Before swapping." << endl;
    cout << "a = " << a << ", b = " << b << endl;
    temp = a;
    a = b;
    b = temp;
    cout << "\nAfter swapping." << endl;
    cout << "a = " << a << ", b = " << b << endl;
    return 0;
}
```