C++ Basics

MCA -111

Anupama Mishra

Evolution of c++

- First Generation: Machine language
- Second Generation: Assembly language
- Third Generation: C language
- Fourth generation: C++ language

c++ language

- C++ is an object oriented programming language & is an extension of c.

- It was developed by Bjarne Stroustrup at AT&T Bell Lab, USA, in 1979.

- C+ + is a superset of C. Almost all c programs are also C++ programs.

- The most important facilities that C++ objects, classes, inheritance, function overloading and operator overloading.

General structure of a c++ program

SECTION 1 is optional. It contains the description about the program.

```
// on the same line is considered comment
```

SECTION 2 contains the preprocessor directives. The frequently used preprocessor directives are include and define.

```
#include <iostream.h>
```

SECTION 3 is optional. It contains the global declarations. These declarations usually include the declaration of the data items which are to be shared between many functions in the program.

General structure of a c++ program

SECTION 4 contains the main function. The execution of the program always begins with the execution of the main function.

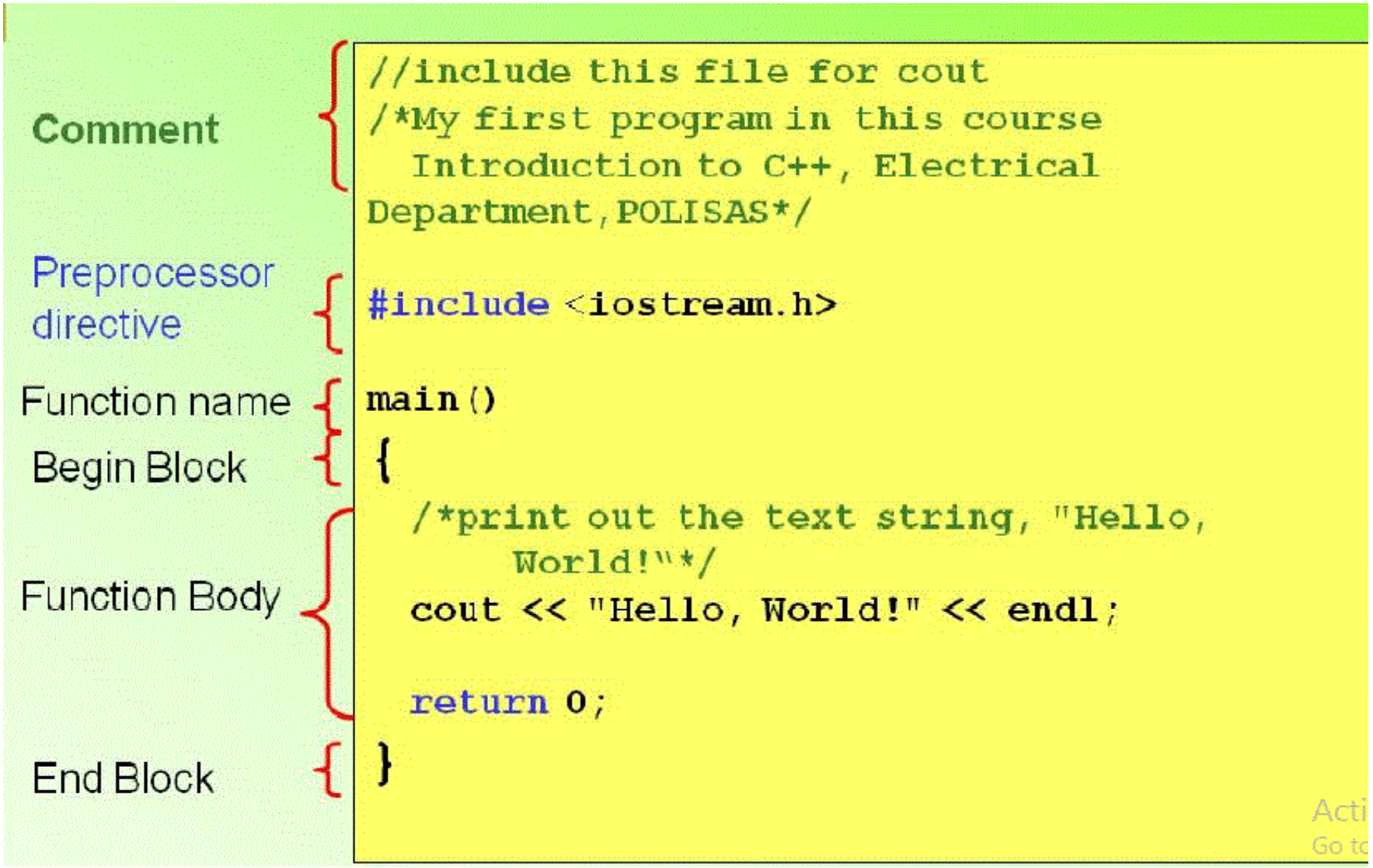
```
#include <header file>
global declarations
Void main
{
local declarations
statements
}
```

SECTION 5 is also optional. If present, it contains the other functions as required.

Notes

- All statements ended by semicolon (;)
- # include statement does not end with a semicolon
- Lower vs. upper case matters!!
  - Void is different than void
  - Main is different that main

Hello world program



Input statements

cin >> variable-name;

Meaning: read the value of the variable called <variable-name> from the user

Example:

```
cin >> a;
cin >> b >> c;
cin >> x;
cin >> my-character;
```

Output statements

cout << variable-name;

Meaning: print the value of variable <variable-name> to the user

cout << “any message “;

Meaning: print the message within quotes to the user

cout << endl;

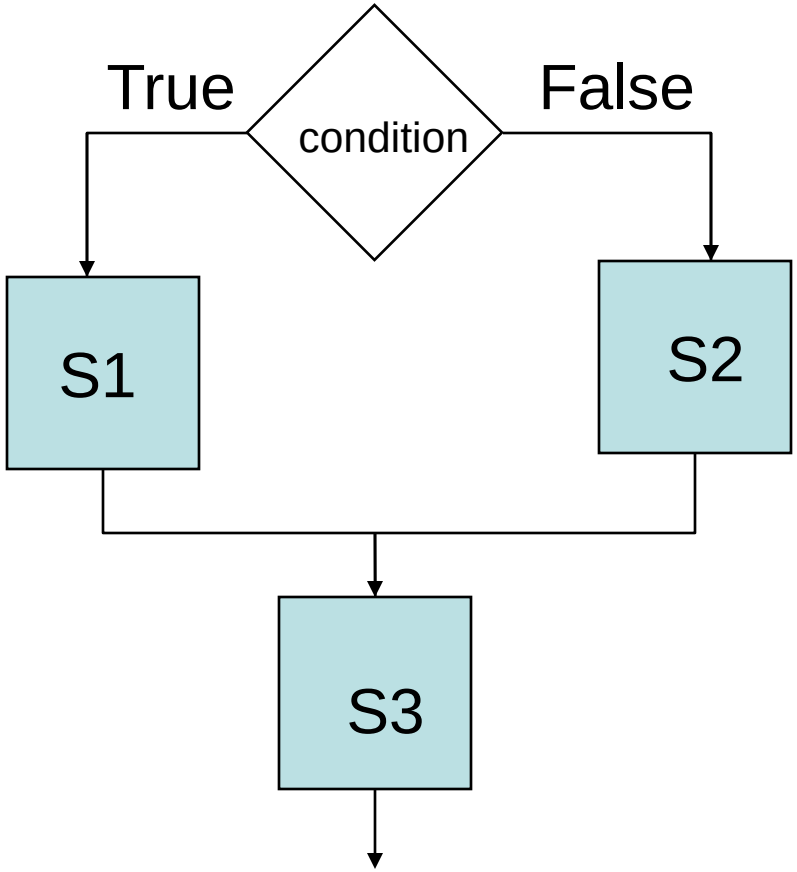
Meaning: print a new line

Example:

```
cout << a;
cout << b << c;
cout << “This is my character: “ << my-character << “ he he he”
        << endl;
```

If statements

```
if (condition) {
    S1;
}
else {
    S2;
}
S3;
```

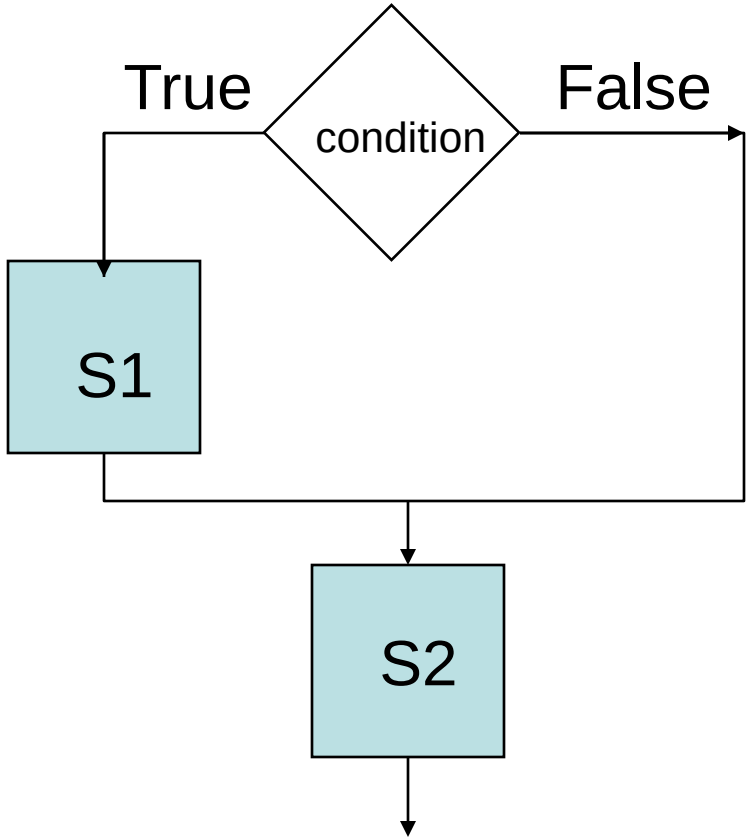


If example

```
#include <iostream.h>
void main() {
int a,b;
Cout<<“enter the value of a and b”
cin >> a >> b ;
if (a <=b) {
      cout << “min is “ << a << endl;
      }
else {
      cout << “ min is “ << b << endl;
}
cout << “happy now?” << endl;
}
```

While statements

```
while (condition) {
   S1;
}
S2;
```



While example

```
//read 10 numbers from the user and output their sum
#include <iostream.h>
void main() {
int i, sum, x;
sum=0;
i=1;
while (i <= 10) {
    cout<< enter the 10 numbers;
    cin >> x;
    sum = sum + x;
    i = i+1;
}
cout << “sum is “ << sum << endl;
}
```