AIUB

CSC 3220: Compiler Design

Lab 01

Supta Richard Philip richard@aiub.edu

---

1. Basic building blocks of C++ program (namespace, scope resolution operator, syntax for input, output, header file, etc.)

```
/*
Multiple line
comment
*/
//Single line comment

// include directive
#include<iostream>
//  for cout and cin in the std namespace
using namespace std;

//This is where the execution of program begins
int main()
{
   // displays Hello World! on screen
   cout<<"Hello World!";

// declare integer variable and take input from user.
    int a;
    cin>> a
    //print variable a
    cout<<a<<endl;
    return 0;
}
```

6. Recape Basic C programming language

   a. Data Type (int, float, doule, long, char, etc.)

---> short --- 16 bits (-2^15-1 to 2^15-1) ---> int --- 32 bits (-2^31-1 to 2^31-1) --> long long int --- 64 bits (-2^63-1 to 2^63-1) ---> float ---> double ---> char 0-255 ---> bool

```
#include<iostream>
using namespace std;
int main()
{
double a, b, c;
cout<<"Enter two number: ";
cin>>a>>b;
c = a+b;
cout<<"the result: "<<c;
```

```
return 0;
}
```

b. Operator and expression Arithmetic (+,-,*,/,%)

```
#include<iostream>
using namespace std;
int main(){
    int a=10;
    int b=20;
    cout<<(a+b)<<endl;//30
    cout<<(a-b)<<endl;//-10
    cout<<(a*b)<<endl;//200
    cout<<(a/b)<<endl;//0
    cout<<(a%b)<<endl;//10
return 0;
}
```

Relational (>,>=,<,<=,==,!=)

```
#include<iostream>
using namespace std;
int main(){
    int a=10;
    int b=20;
    cout<<(a<b)<<endl;//1
    cout<<(a>b)<<endl;//0
    cout<<(a<=b)<<endl;//1
    cout<<(a>=b)<<endl;//0
    cout<<(a==b)<<endl;//0
    cout<<(a!=b)<<endl;//1
return 0;
}
```

Logical (&&,||)

```
#include<iostream>
using namespace std;
int main(){
    int a=10;
    int b=20;
    int c=30;
    cout<<((a<b)&&(a>c))<<endl;//0
    cout<<((a<b)||(a>c))<<endl;//1
return 0;
}
```

Ternary Operator : a>b?1:0

```
#include<iostream>
using namespace std;
int main(){
    int marks=70;
```

```
    cout<<(marks>=50?"Pass":"Fail")<<endl;
return 0;
}
```

c. Conditional statement(if, else, switch case)

```
#include <iostream>
using namespace std;
int main(){
  int marks=70;
  if( marks >= 50 ){
     cout<<"Pass";
  }else{
     cout<<"Fail";
  }
  return 0;
}
```

```
#include<iostream>
using namespace std;

int main(){
    int age=15;
    if(age>=18){
        cout<<"I am adult."<<endl;
    }else{
        cout<<"I am just young."<<endl;
    }
// Equivalent ternary operator
cout<<(age>=18?"I am adult.":"I am just young.")<<endl;

return 0;
}
```

```
#include<iostream>
using namespace std;

int main(){

    int marks=70;
        if(marks>=90){
            cout<<"A+"<<endl;
        }else if(marks>=70 && marks<90){
            cout<<"A"<<endl;
        }else if(marks>=50 && marks<70){
            cout<<"B"<<endl;
        }else{
            cout<<"F"<<endl;
        }
// Equivalent switch case
    switch(marks){
        case 90 ... 100:
```

```
             cout<<"A+"<<endl;
             break;
        case 70 ... 89:
            cout<<"A"<<endl;
            break;
        case 50 ... 69:
            cout<<"B"<<endl;
            break;
        default:
             cout<<"F"<<endl;
            break;
    }
return 0;
}
```

6. Excercise

   a. Write a program that prints your Name, ID and Department in three separate lines.

   b. Write a program to take input your Name, ID and Department and print them.

   c. Write a program that creates an integer variable assigns the value 90 to it and then prints.

   d. Write a program that creates two double variables assigns values to them and print.

   e. Write a program that takes one integer variable as input from the user and checks if it is even.

   f. Write a program that takes length and breadth as input from the user and prints the area of a rectangle as output.

   g. write a program to find area of circle. Hints: Area = PI *x* radius *x* radius

7. Home Work/ Assignment Task

   a. There are three resistors in a circuit. Resistor 1 has value 4 ohm. Resistor 2 has value 8 ohm and Resistor 3 has value 1 ohm. Write a program that gives the following output

   Value of resistor 1: 4 ohm

   Value of resistor 2: 8 ohm

   Value of resistor 3: 1 ohm

   b. Write a program that takes two inputs from the user and adds, subtracts, multiplies and divide it and also print the output.

   c. Write a program that converts 1 degree Celsius into its equivalent Kelvin value.

   d. Write a program that acts like a simple calculator. Hint: Use SWITCH CASE

   e. Write a program that asks the user to give input salary. If salary is greater than 10000TK than the program outputs CONGRATULATION.