

# CSE102L Computer Programming Lab

## LAB # 2



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**Semester: 2<sup>nd</sup>**

**Class Section: C**

“On my honor, as student of University of Engineering and Technology,  
I have neither given nor received unauthorized assistance on this  
academic work.”

March 2 , 2020

**Department of Computer Systems Engineering**

***University of Engineering and Technology, Peshawar***

## **Objective:**

**To be familiar with different data types, Operators and Expressions in C++.**

### **Task # 1**

#### **Title:**

Write a program that takes the temperature in Fahrenheit and convert it to Celsius and Kelvin:

$$K = C + 273$$

$$C = (F - 32) / 1.8$$

#### **Code:**

```
# include < iostream> // library for writing the output to console window
```

```
using namespace std;
```

```
int main ()
```

```
{
```

```
    float x,y;
```

```
        cout<<"Enter Temperature in Faranhite = \n";
```

```
        cin>>x;
```

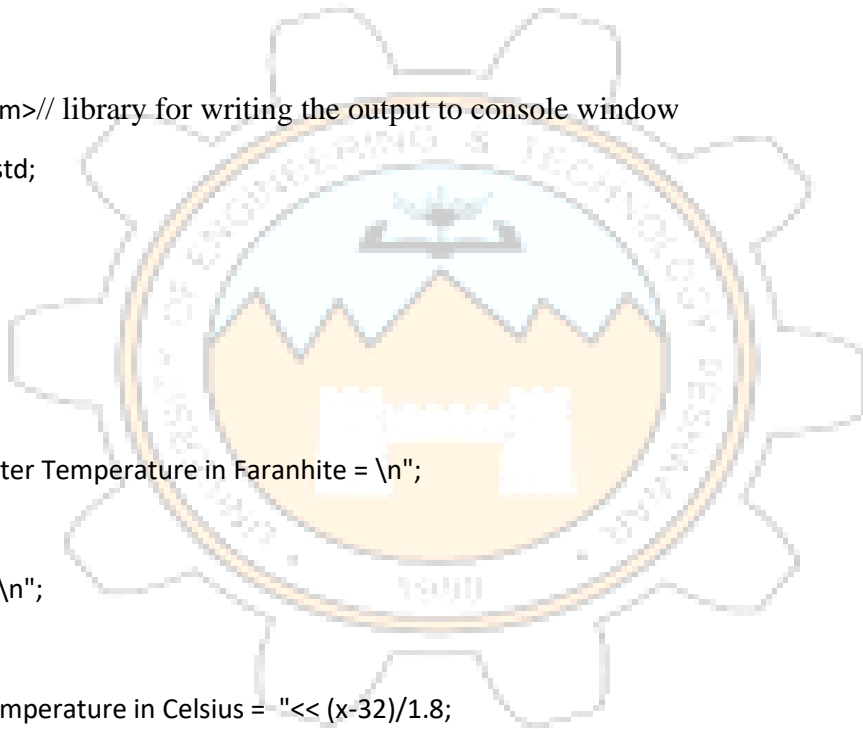
```
        cout<<"\n\n";
```

```
        cout<<"Temperature in Celsius = "<< (x-32)/1.8;
```

```
        cout<<"\n";
```

```
        cout<<"Temperature in Kelvin = "<<((x-32)/1.8)+273;
```

```
}
```



### Output (Compilation, Debugging & Testing):

```
"C:\Users\Pc\Documents\CPP Lab pactice\task_temp_convert.exe"
Enter Temperature in Faranhite =
30

Temperature in Celsius = -1.11111
Temperature in Kelvin = 271.889
Process returned 0 (0x0)   execution time : 5.427 s
Press any key to continue.
```

### Task # 2

#### Title:

Write the C++ code that takes the integer a, b, c, d and e from the user and display the output according to the following equation.

$$\frac{a^3 + b^2 - d}{b}$$
$$a (b + c (e + a) / b) - 10$$

#### Code:

```
#include <iostream> // library for writing the output to console window
using namespace std;
int main()
{
    float a,b,c,d,e,k,m;

    cout<<"Enter a = ";

    cin>>a;

    cout<<"\n";

    cout<<"Enter b = ";

    cin>>b;

    cout<<"\n";
```

```
cout<<"Enter c = ";
cin>>c;
cout<<"\n";

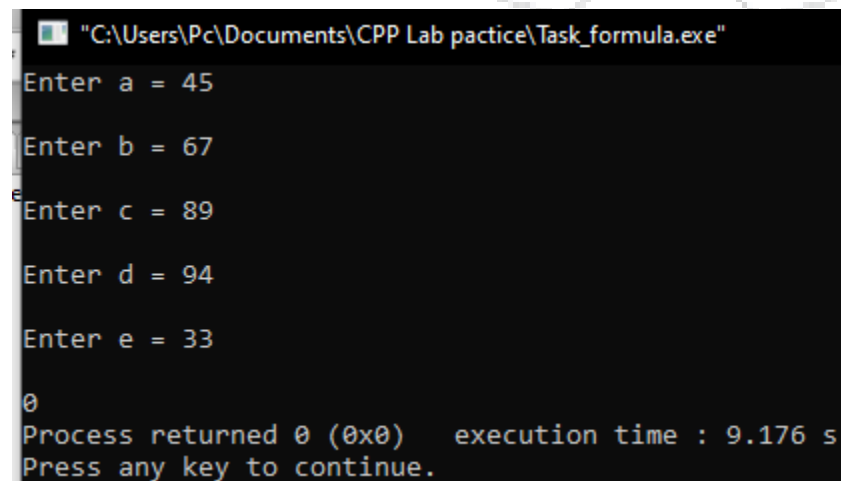
cout<<"Enter d = ";
cin>>d;
cout<<"\n";

cout<<"Enter e = ";
cin>>e;
cout<<"\n";

k=((a*a*a)+(b*b)-d)/b;
m=a*(b+c*(e+a)/b)-10;
int answer =k/m ;
cout<<answer;

return 0;
}
```

### **Output (Compilation, Debugging & Testing):**



The screenshot shows a terminal window titled "C:\Users\Pc\Documents\CPP Lab pactice\Task\_formula.exe". It displays the execution of a C++ program where the user is prompted to enter values for variables a, b, c, d, and e. The inputs are 45, 67, 89, 94, and 33 respectively. The program then outputs the calculated result, 0. At the bottom, it shows "Process returned 0 (0x0) execution time : 9.176 s" and "Press any key to continue."

```
"C:\Users\Pc\Documents\CPP Lab pactice\Task_formula.exe"
Enter a = 45
Enter b = 67
Enter c = 89
Enter d = 94
Enter e = 33
0
Process returned 0 (0x0)   execution time : 9.176 s
Press any key to continue.
```

### **Task # 3:**

#### **Title:**

Write a program to declare two integer and one float variables then initialize them to 10, 15, and 12.6. Also print the variable values in the screen

#### **Code:**

```
#include <iostream>

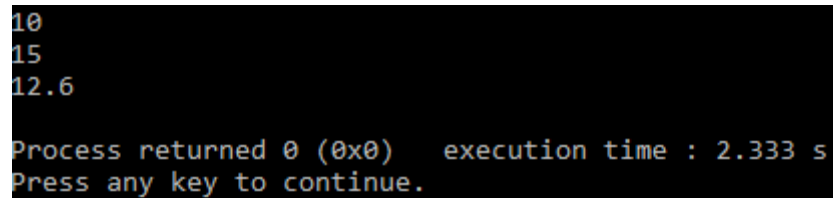
using namespace std;

int main()
{
    int x=10; ; //declare variable and assign value to variable

    int y=15; ; //declare variable and assign value to variable

    float z=12.6; ; //declare variable and assign value to variable
    cout<<x<<endl; //display x
    cout<<y<<endl; //display y
    cout<<z<<endl; //display z
    return 0;
}
```

#### **Output (Compilation, Debugging & Testing):**

A screenshot of a terminal window showing the output of the program. The first three lines are the values of the variables: 10, 15, and 12.6. Below these, a message indicates the process returned 0 (0x0) with an execution time of 2.333 seconds, and prompts the user to press any key to continue.

```
10
15
12.6

Process returned 0 (0x0)   execution time : 2.333 s
Press any key to continue.
```

### **Task # 4:**

#### **Title:**

Write a C++ program to prompt the user to input 3 integers values and print these values in forward and reversed order.

**Code:**

```
#include <iostream>

using namespace std;

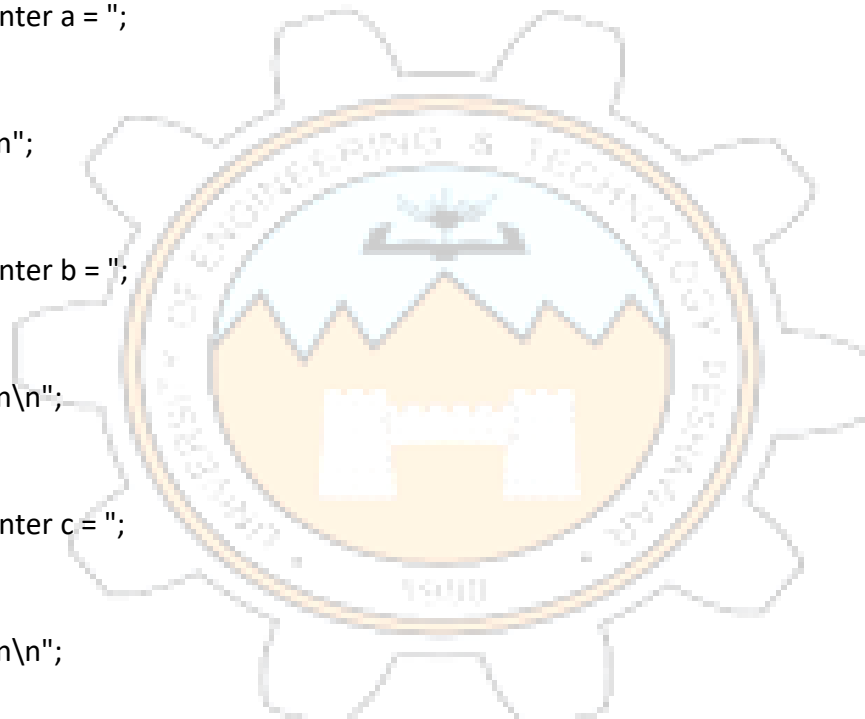
int main()
{
    int a,b,c; //variable declaration

    cout<<"Enter a = ";
    cin>>a;
    cout<<"\n";

    cout<<"Enter b = ";
    cin>>b;
    cout<<"\n\n";

    cout<<"Enter c = ";
    cin>>c;
    cout<<"\n\n";

    cout<<a<<b<<c;
    cout<<"\n\n";
    cout<<c<<b<<a;
    return 0;
}
```



**Output (Compilation, Debugging & Testing):**

```
"C:\Users\Pc\Documents\CPP Lab pactice\task_value_reversed.exe"
Enter a = 4
Enter b = 6
Enter c = 7

467
764
Process returned 0 (0x0)   execution time : 6.905 s
Press any key to continue.
```

### **Task # 5:**

#### **Title:**

Write a program to swap two variables values with and without using third variables.

Code:

#### **Code:**

Without Using 3<sup>rd</sup> Variable:

```
#include <iostream>
using namespace std;
int main()
{
float a,b;

    cout<<"Enter a = ";

    cin>>a;

    cout<<"\n";

    cout<<"Enter b = ";

    cin>>b;

    cout<<"\n\n";

    cout<<"a"<<"="<<b;
```

```
    cout<<"\n\n";  
    cout<<"b"<<"="<<a;  
}
```

### **Output (Compilation, Debugging & Testing):**

```
"C:\Users\Pc\Documents\CPP Lab pactice\task_swap_values.exe"  
Enter a = 56  
Enter b = 89  
a=89  
b=56  
Process returned 0 (0x0) execution time : 5.331 s  
Press any key to continue.
```

### **With using 3<sup>rd</sup> variable:**

```
#include <iostream>  
using namespace std;  
int main()  
{  
    int a,b,c;  
    cout <<"Enter 1st num:"; //user enters the value of 1st num  
    cin >>a;  
    cout <<"Enter 2nd num:"; //user enters the value of second num  
    cin >>b;  
    c=a; //c is equal to 1st num  
    a=b; //1st num is equal to 2nd num  
    b=c; //2nd num is qual to c  
    cout <<"value of 1st num"<<endl;  
    cout<<a<<endl; //display a
```

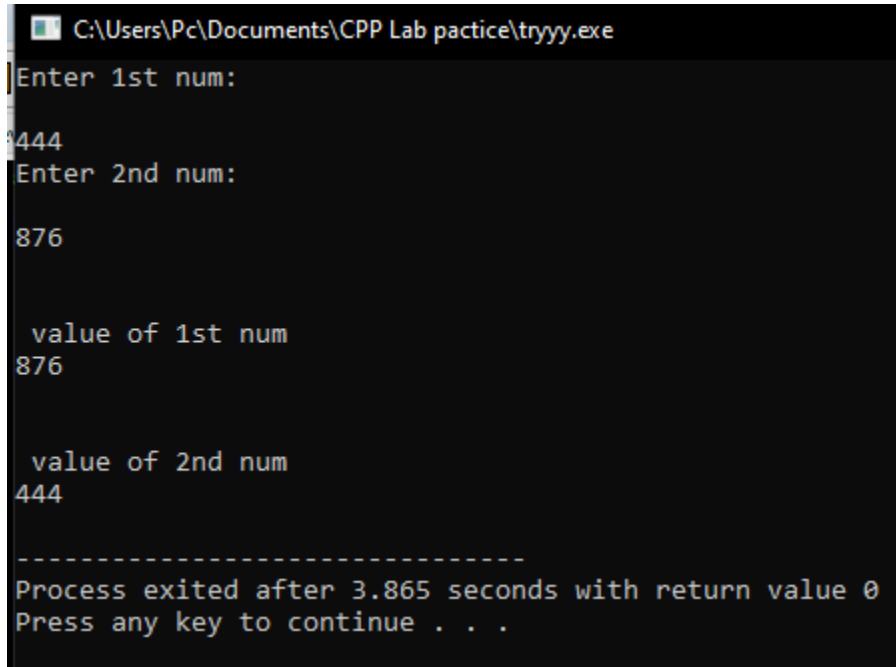


```
cout <<"value of 2nd num"<<endl;

cout <<b<<endl; //display b

return 0; //end the program }
```

### **Output (Compilation, Debugging & Testing):**



```
C:\Users\Pc\Documents\CPP Lab pactice\tryyy.exe
Enter 1st num:
444
Enter 2nd num:
876

value of 1st num
876

value of 2nd num
444

-----
Process exited after 3.865 seconds with return value 0
Press any key to continue . . .
```

### **TASK # 6:**

Write a program to print the size of char, float, double and long double data types in C.

### **Code:**

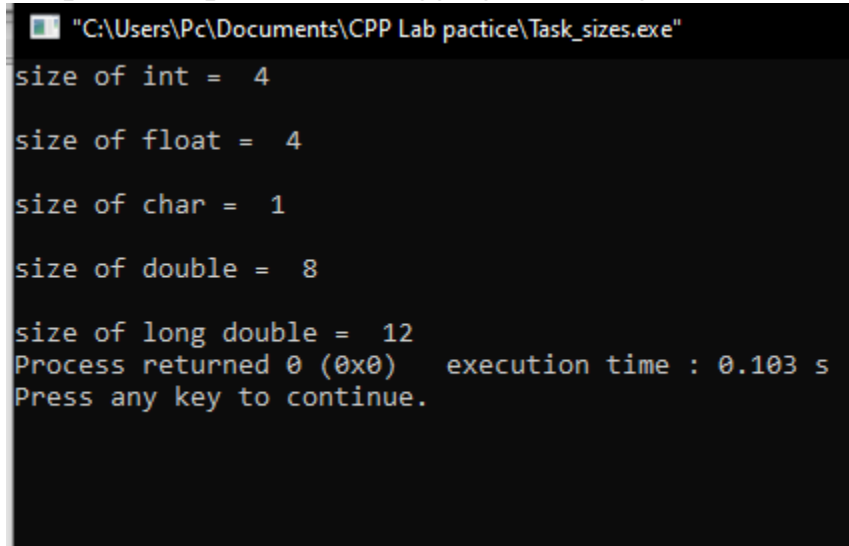
```
#include <iostream> /* library for writing the output to console window*/
using namespace std;
int main()
{ //start the program

int a;
    float b;
    char c;
    double d;
    long double e;

    cout<<"size of int = "<<sizeof(a);
    cout<<"\n\n";
```

```
cout<<"size of float = "<<sizeof(b);  
cout<<"\n\n";  
cout<<"size of char = "<<sizeof(c);  
cout<<"\n\n";  
cout<<"size of double = "<<sizeof(d);  
cout<<"\n\n";  
cout<<"size of long double = "<<sizeof(e);  
  
}
```

### **Output (Compilation, Debugging & Testing;**



```
"C:\Users\Pc\Documents\CPP Lab pactice\Task_sizes.exe"  
size of int = 4  
  
size of float = 4  
  
size of char = 1  
  
size of double = 8  
  
size of long double = 12  
Process returned 0 (0x0)   execution time : 0.103 s  
Press any key to continue.
```