DATA TYPES, OPERATORS AND EXPRESSIONS IN C++

LAB # 2



Spring 2022 CSE102L Computer Programming Lab

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Registration No.: 21PWCSE2059

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."

Student Signature: _____

Submitted to:

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July 4, 2022

Department of Computer Systems Engineering
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Lab Objective(s)

• 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:

CODE SCREENSHOTS:

Here is the screenshot of the code.

```
w Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
 task1.cpp \times task2.cpp \times task3.cpp \times task4.cpp \times task5.cpp \times
     #include <iostream>
 2 using namespace std;
 4 ⊟main(){
 5
            float Temp_K, Temp_C, Temp_F;
 6
 7
           cout << "Enter Temperature in Farhenheit..";</pre>
 8
            cin >> Temp F;
 9
10
           Temp C = (Temp F - 32)/1.8;
11
12
            Temp K = Temp C + 273;
13
14
            cout<<"Temperature in Celsius is: "<<Temp C<<endl;</pre>
15
            cout<<"Temperature in Kelvin is: "<<Temp_K<<endl;</pre>
16
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

```
D:\uni\2nd Semester\CP Lab\Class 2\task1.exe

Enter Temperature in Farhenheit..32

Temperature in Celsius is: 0

Temperature in Kelvin is: 273

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.

$$\frac{a^3 + b - d/b}{a(b + c(e+a)/b) - 5}$$

CODE SCREENSHOTS:

Here is the screenshot of the code.

```
.cpp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
_{\text{re}} × _{\text{task1.cpp}} × _{\text{task2.cpp}} × _{\text{task3.cpp}} × _{\text{task4.cpp}} × _{\text{task5.cpp}} ×
 1 #include <iostream>
      using namespace std;
 int a, b, c, d, e;
 5
 6
            float numerator, denominator, result;
 7
 8
            cout << "Enter values of a..";</pre>
 9
           cin >> a;
            cout << "Enter values of b..";</pre>
10
11
            cin >> b;
            cout << "Enter values of c..";</pre>
12
13
            cin >> c;
14
            cout << "Enter values of d..";</pre>
15
            cin >> d;
            cout << "Enter values of e..";</pre>
16
17
           cin >> e;
18
19
            numerator = ((a * a * a) + b - d / b);
20
            denominator = a * (b + c * (e + a) / b) - 5;
21
22
            result = numerator / denominator;
23
            cout << "Result is " << result << endl;</pre>
2.4
25
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

```
D:\uni\2nd Semester\CP Lab\Class 2\task2.exe

Enter values of a..5

Enter values of b..5

Enter values of c..5

Enter values of d..5

Enter values of e..5

Result is 1.84286

Press any key to continue . . . _
```

TASK #3:

Title:

Write a program to declare two integer and one float variables then initialize them to 10, 11, and 12.6. Also print the variable values on the screen.

CODE SCREENSHOTS:

Here is the screenshot of the code.

```
pp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
\times task1.cpp \times task2.cpp \times *task3.cpp \times task4.cpp \times task5.cpp \times
  1 #include <iostream>
        using namespace std;
  2
  3
  4
     ⊟main(){
  5
              float num1, num2;
  6
              float num3;
  7
              num1 = 10;
  8
  9
              num2 = 11;
 10
              num3 = 12.6;
 11
 12
              cout<<"Integer num1 value is: "<<num1<<end1;</pre>
 13
              cout<<"Integer num2 value is: "<<num2<<end1;</pre>
              cout<<"Float num3 value is: "<<num3<<end1;</pre>
 14
 15
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

```
■ D:\uni\2nd Semester\CP Lab\Class 2\task3.exe
Integer num1 value is: 10
Integer num2 value is: 11
Float num3 value is: 12.6
Press any key to continue . . . _
```

TASK #4:

Title:

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

CODE SCREENSHOTS:

Here is the screenshot of the code.

```
Code: Blocks 20.03
ew Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp × task2.cpp × *task3.cpp × task4.cpp × task5.cpp ×
 1 #include <iostream>
 2
      using namespace std;
 3
 4
    ⊟main(){
 5
           int num1, num2, num3;
 6
 7
           cout << "Enter the value of num1..";
 8
           cin>>num1;
 9
           cout<<"Enter the value of num2..";</pre>
10
           cin>>num2;
           cout<<"Enter the value of num3..";</pre>
11
12
           cin>>num3;
13
           cout<<"The Forward order is: "<<num1<<","<<num2<<","<<num3<<end1;</pre>
14
           cout<<"The Reverse order is: "<<num3<<","<<num2<<","<<num1<<end1;</pre>
15
16
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

```
■ D:\uni\2nd Semester\CP Lab\Class 2\task4.exe

Enter the value of num1..3

Enter the value of num2..2

Enter the value of num3..1

The Forward order is: 3,2,1

The Reverse order is: 1,2,3

Press any key to continue . . .
```

TASK # 5:

Title:

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

CODE SCREENSHOTS:

Here is the screenshot of the code.

```
n - Code: Blocks 20.03
iew Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp × task2.cpp × *task3.cpp × task4.cpp × task5.cpp ×
 1 #include <iostream>
 2
       using namespace std;
 3
 4 ⊟main(){
  5
             int A, B, C;
  6
 7
             cout<<"Enter Value of A: ";</pre>
 8
             cin>>A;
 9
             cout<<"Enter Value of B: ";</pre>
10
11
             cin>>B;
12
13
             // Before Swapping Process
14
             cout<<"Before Swapping"<<endl;</pre>
15
16
             cout << "A = "<< A << end1;
17
             cout << "B = " << B << end1;
18
19
             // After Swapping Process
20
```

```
p - Code::Blocks 20.03
Fiew Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
	imes task1.cpp 	imes task2.cpp 	imes *task3.cpp 	imes task4.cpp 	imes task5.cpp 	imes
             // After Swapping Process
20
21
             cout<<"After Swapping with the help of third variable"<<endl;</pre>
22
23
             C = A;
24
             A = B;
             B = C;
25
26
             cout << "A = "<< A << end1;
27
28
             cout << "B = " << B << endl;
29
30
             cout<<"After Swapping Without Third Variable"<<endl;</pre>
31
32
             A = A + B; //5 = 5 + 4 = 9
33
             B = A - B; //4 = 9 - 4 = 5
             A = A - B; // 9 - 5
34
35
36
             cout << "A = "<< A << endl;
37
             cout<<"B = "<<B<<endl;</pre>
38
                                                                                       Activate W
 39
```

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OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.

Name: Ali Asghar

```
D:\uni\2nd Semester\CP Lab\Class 2\task5.exe

Enter Value of A: 4

Enter Value of B: 7

Before Swapping

A = 4

B = 7

After Swapping with the help of third variable

A = 7

B = 4

After Swapping Without Third Variable

A = 4

B = 7

Press any key to continue . . . .
```

Section: C