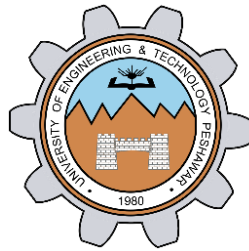**DATA TYPES, OPERATORS AND**

**EXPRESSIONS IN C++**

**LAB # 2**



**Spring 2022**

**CSE102L Computer Programming Lab**

Submitted by: **Ali Asghar**

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:

**Engr. Abdullah Hamid**

July 4, 2022

Department of Computer Systems Engineering

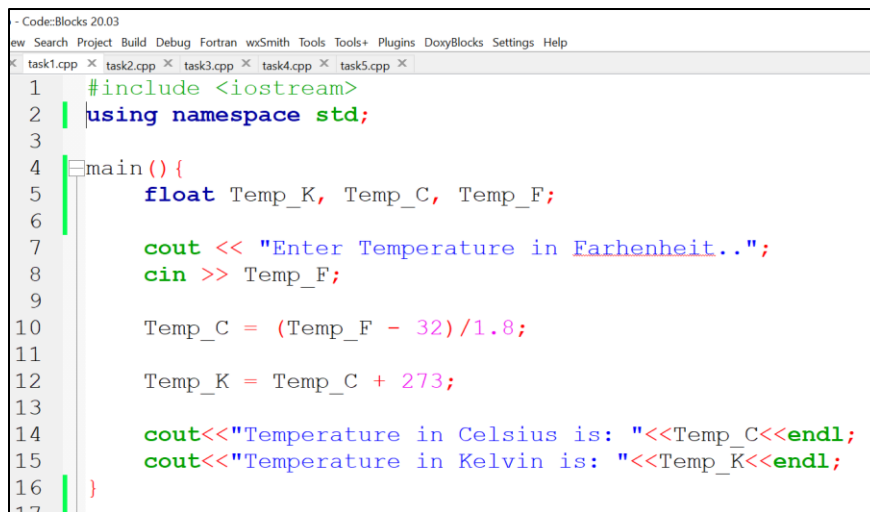University of Engineering and Technology, Peshawar

**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:
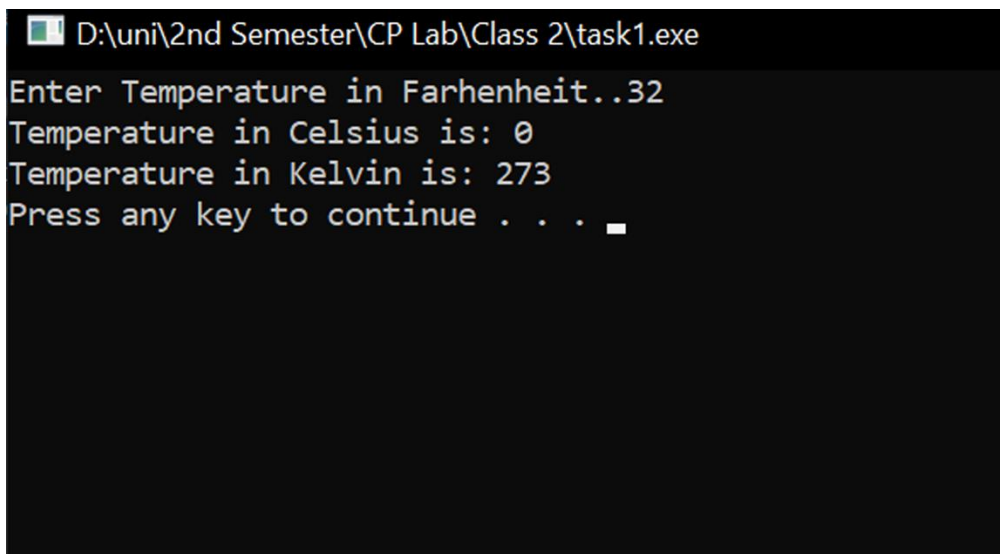
**CODE SCREENSHOTS:**

Here is the screenshot of the code.

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

main(){
    float Temp_K, Temp_C, Temp_F;

    cout << "Enter Temperature in Farhenheit..";
    cin >> Temp_F;

    Temp_C = (Temp_F - 32)/1.8;

    Temp_K = Temp_C + 273;

    cout<<"Temperature in Celsius is: "<<Temp_C<<endl;
    cout<<"Temperature in Kelvin is: "<<Temp_K<<endl;
}
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

Here is the screenshot of the output of above code.

```
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 . . .
```
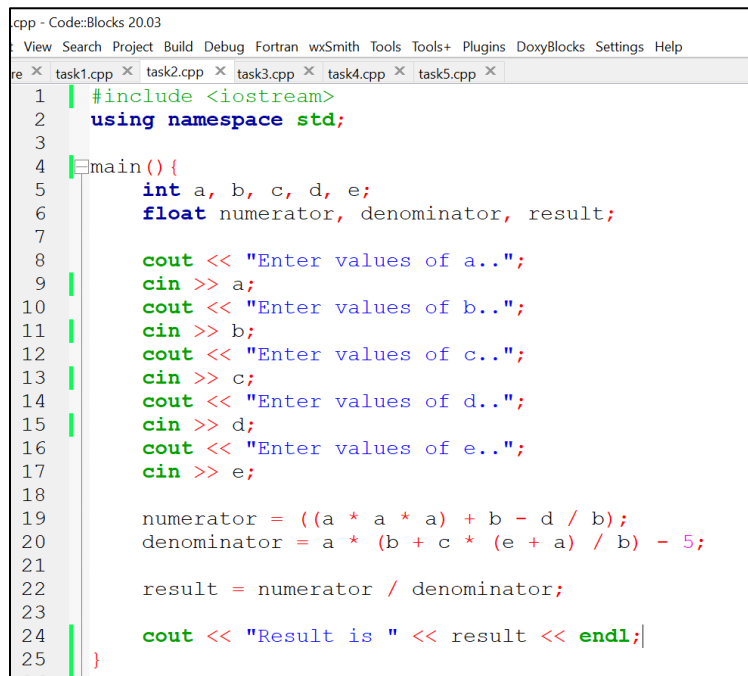
**TASK # 2:**

**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.

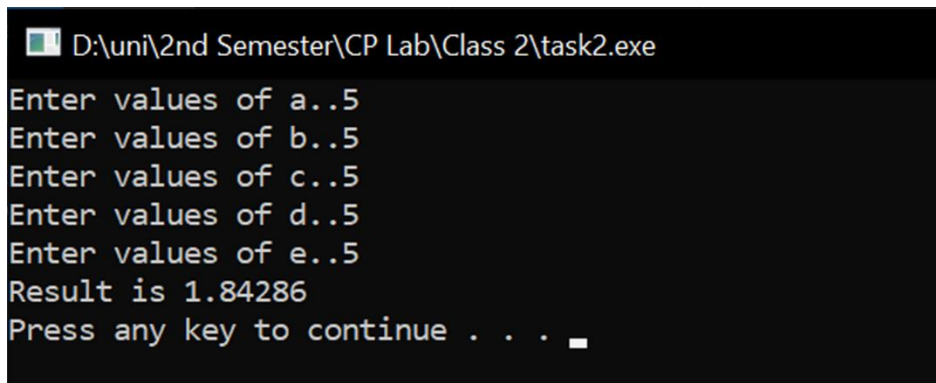$$\frac{a^3 + b - {}^d/_b}{a(b + c(e + a)/b) - 5}$$

**CODE SCREENSHOTS:**

Here is the screenshot of the code.

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

main(){
    int a, b, c, d, e;
    float numerator, denominator, result;

    cout << "Enter values of a..";
    cin >> a;
    cout << "Enter values of b..";
    cin >> b;
    cout << "Enter values of c..";
    cin >> c;
    cout << "Enter values of d..";
    cin >> d;
    cout << "Enter values of e..";
    cin >> e;

    numerator = ((a * a * a) + b - d / b);
    denominator = a * (b + c * (e + a) / b) - 5;

    result = numerator / denominator;

    cout << "Result is " << result << endl;
}
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

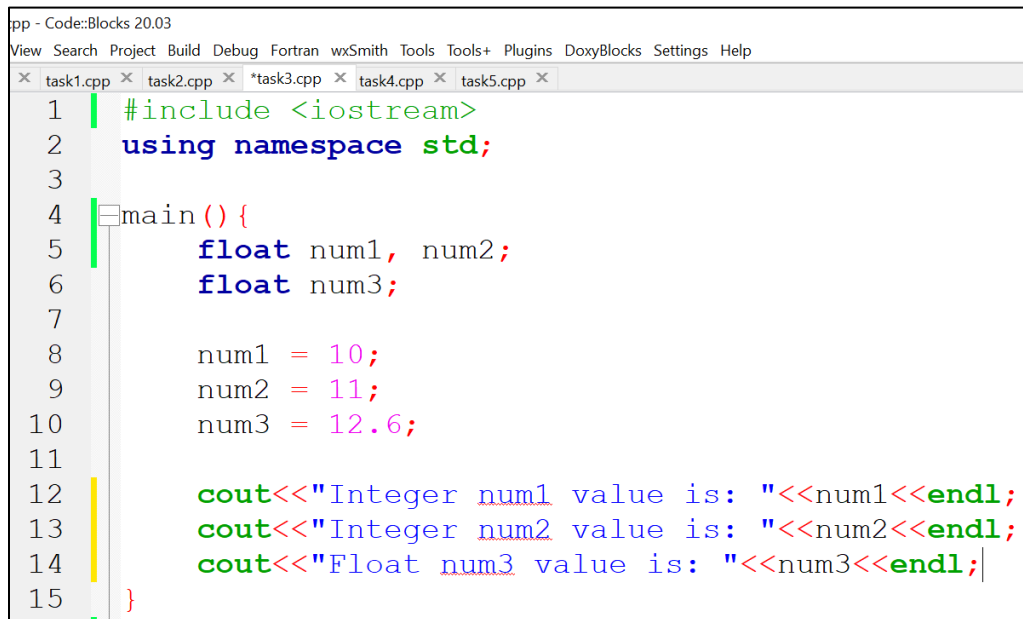Here is the screenshot of the output of above code.

```
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.
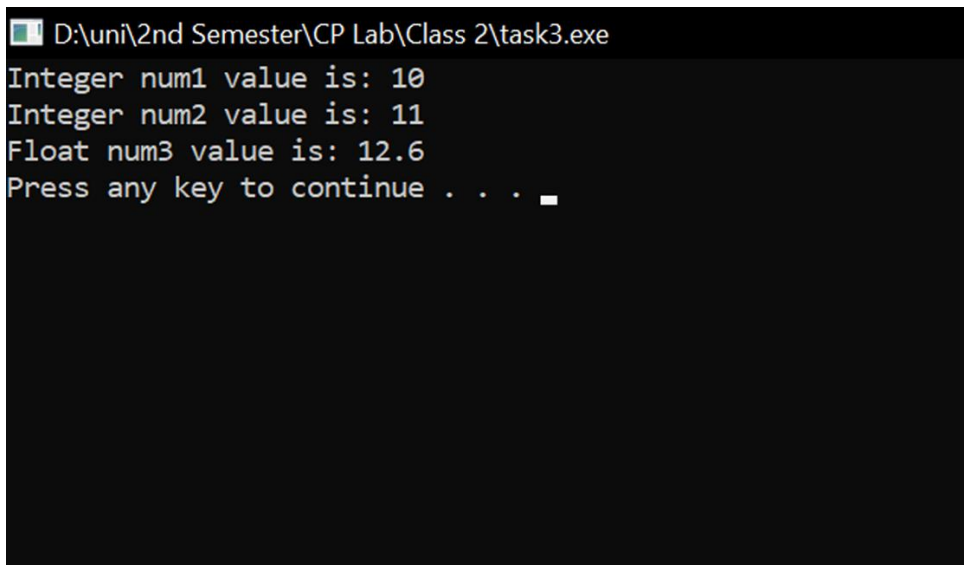
**CODE SCREENSHOTS:**

Here is the screenshot of the code.

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

main(){
    float num1, num2;
    float num3;

    num1 = 10;
    num2 = 11;
    num3 = 12.6;

    cout<<"Integer num1 value is: "<<num1<<endl;
    cout<<"Integer num2 value is: "<<num2<<endl;
    cout<<"Float num3 value is: "<<num3<<endl;
}
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

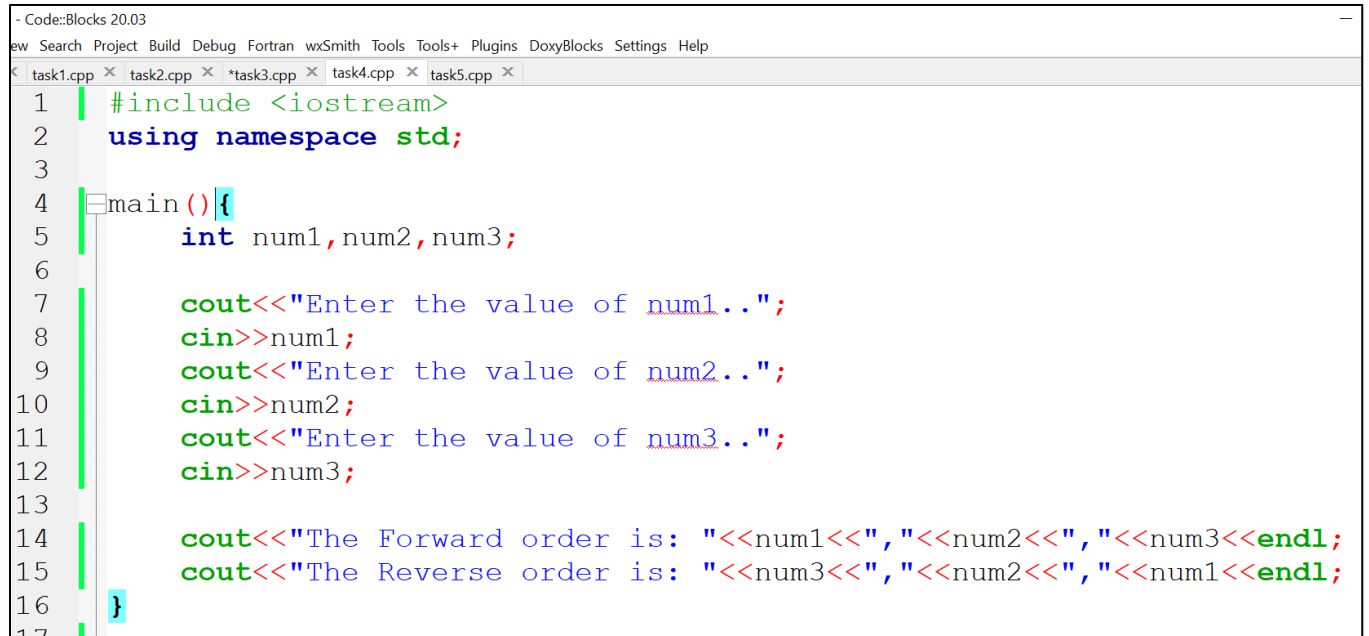Here is the screenshot of the output of above code.

```
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.
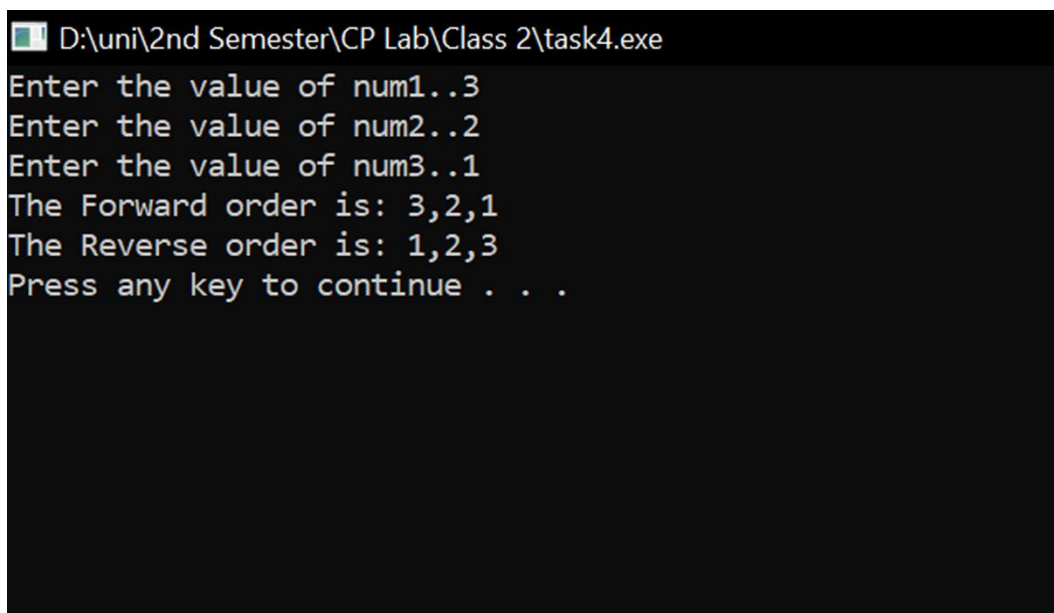
**CODE SCREENSHOTS:**

Here is the screenshot of the code.

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

main(){
    int num1,num2,num3;

    cout<<"Enter the value of num1..";
    cin>>num1;
    cout<<"Enter the value of num2..";
    cin>>num2;
    cout<<"Enter the value of num3..";
    cin>>num3;

    cout<<"The Forward order is: "<<num1<<","<<num2<<","<<num3<<endl;
    cout<<"The Reverse order is: "<<num3<<","<<num2<<","<<num1<<endl;
}
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

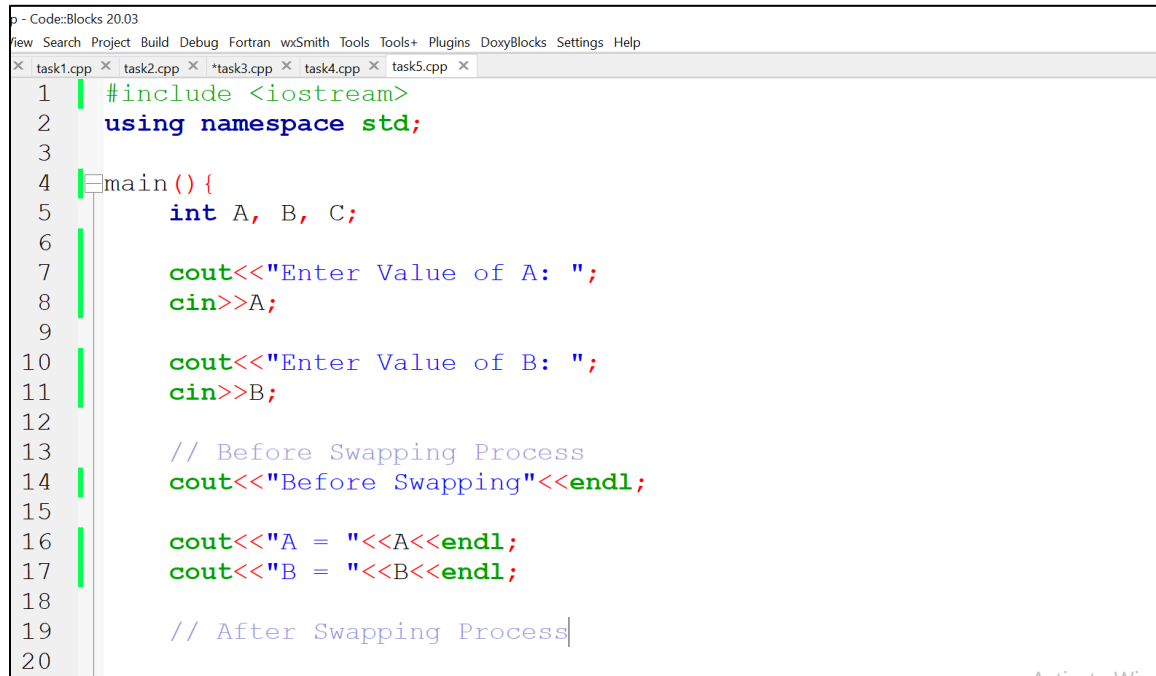Here is the screenshot of the output of above code.

```
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 . . .
```
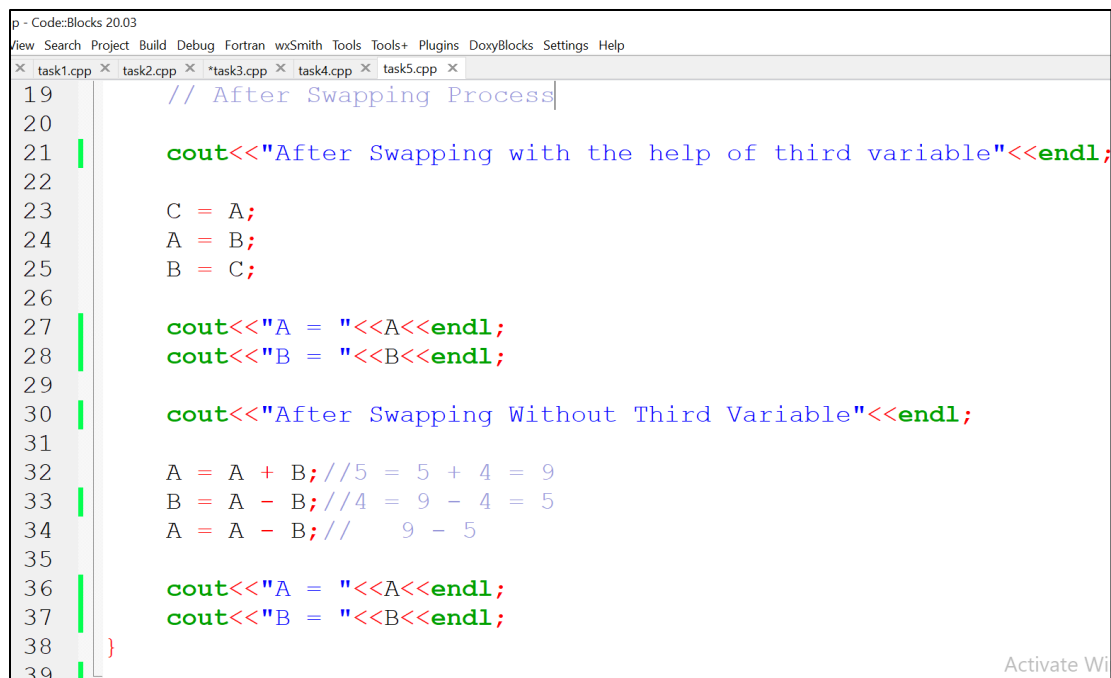
**TASK # 5:**

**Title:**

Write a program to swap two variables values with and without using third variables.
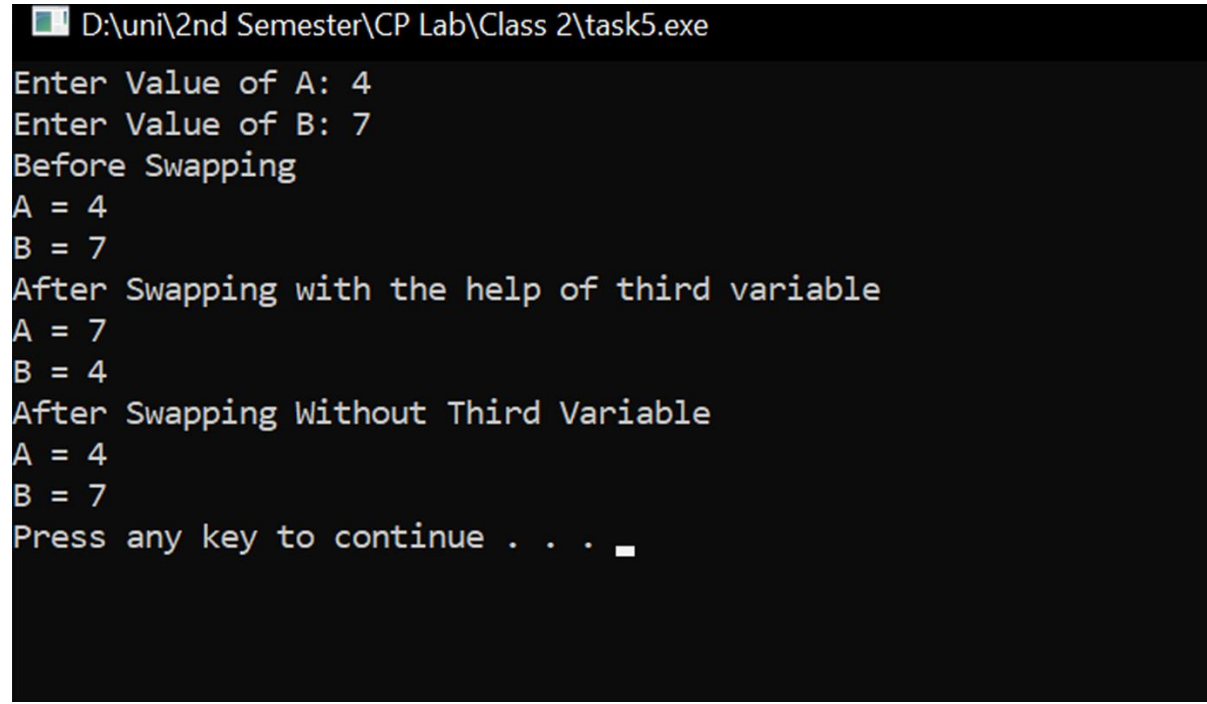
**CODE SCREENSHOTS:**

Here is the screenshot of the code.

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

main(){
    int A, B, C;

    cout<<"Enter Value of A: ";
    cin>>A;

    cout<<"Enter Value of B: ";
    cin>>B;

    // Before Swapping Process
    cout<<"Before Swapping"<<endl;

    cout<<"A = "<<A<<endl;
    cout<<"B = "<<B<<endl;

    // After Swapping Process
```

```cpp
    // After Swapping Process

    cout<<"After Swapping with the help of third variable"<<endl;

    C = A;
    A = B;
    B = C;

    cout<<"A = "<<A<<endl;
    cout<<"B = "<<B<<endl;

    cout<<"After Swapping Without Third Variable"<<endl;

    A = A + B;//5 = 5 + 4 = 9
    B = A - B;//4 = 9 - 4 = 5
    A = A - B;//   9 - 5

    cout<<"A = "<<A<<endl;
    cout<<"B = "<<B<<endl;
}
```

## OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.

```
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 . . . _
```