# Object Oriented Lab

**Spring2025**

# Assignment #6

Umar Farooq
09-131242-088
BSE-2B

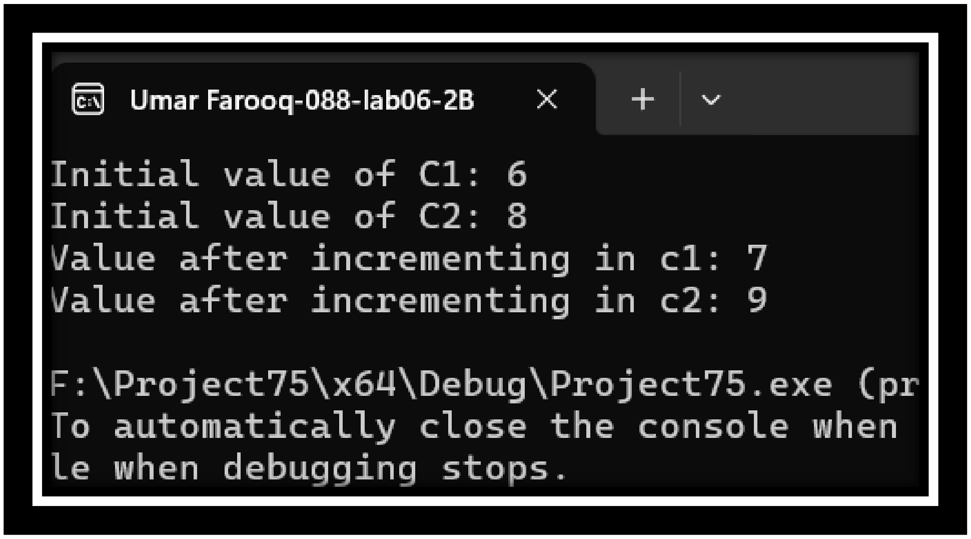
DEPARTMENT OF SOFTWARE ENGINEERING
BAHRIA UNIVERSITY ISLAMABAD CAMPUS

**Task 01:** Write a program by using a class Counter to create two objects c1 and c2 of that class. Use constructor to initialize the value of count. Display the initial count value in the objects. Then use the overloaded ++ operator (overloaded incrementing unary operator) to increment c1 once and c2 twice and display the resulting values.

**Code:**

```
#include <iostream>
using namespace std;
class Counter {
private:
        int count;
public:
        Counter(int c)
        {
                count = c;
        }
        Counter()
        {
                count = 0;
        }
        int display()
        {
                return count;
        }
        Counter operator++()
        {
                return ++count;
        }
};
int main()
{
        Counter c1(6);
        Counter c2(8);
        cout << "Initial value of C1: " << c1.display() << endl;
        cout << "Initial value of C2: " << c2.display() << endl;
        c1 = ++c1;
        c2 = ++c2;
        cout << "Value after incrementing in c1: " << c1.display() << endl;
        cout << "Value after incrementing in c2: " << c2.display() << endl;
        return 0;
}
```

**Screenshot:**



```
Initial value of C1: 6
Initial value of C2: 8
Value after incrementing in c1: 7
Value after incrementing in c2: 9

F:\Project75\x64\Debug\Project75.exe (pr
To automatically close the console when
le when debugging stops.
```

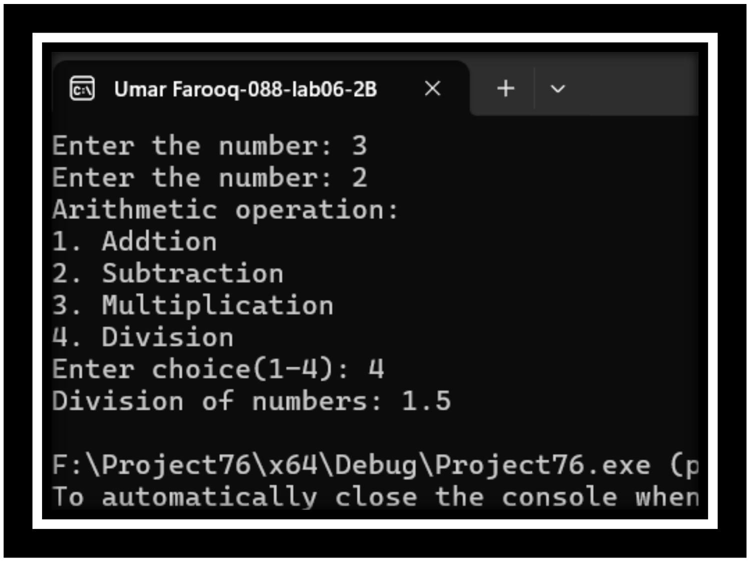
**Task 02:** Write a program to overload the arithmetic operations (+, -, *, /) using the concept of operator overloading.

**Code:**

```
#include <iostream>
using namespace std;
class Arithmetic {
private:
        double value;
public:
        Arithmetic()
        {
                value = 0.0;
        }
        Arithmetic(double v)
        {
                value = v;
        }
        Arithmetic operator+(Arithmetic& obj)
        {
                return Arithmetic(this->value + obj.value);
        }
        Arithmetic operator-(Arithmetic& obj)
```

```
    {
        return Arithmetic(this->value - obj.value);
    }
    Arithmetic operator*(Arithmetic& obj)
    {
        return Arithmetic(this->value * obj.value);
    }
    Arithmetic operator/(Arithmetic& obj)
    {
        if (obj.value == 0)
        {
            cout << "Invalid!" << endl;
            return Arithmetic(0);
        }
        return Arithmetic(this->value / obj.value);
    }
    double display()
    {
        return value;
    }
};
int main()
{
    double n1, n2;
    char choice;
    cout << "Enter the number: ";
    cin >> n1;
    cout << "Enter the number: ";
    cin >> n2;
    Arithmetic num1(n1);
    Arithmetic num2(n2);
    Arithmetic result;
    cout << "Arithmetic operation:" << endl;
    cout << "1. Addtion" << endl;
    cout << "2. Subtraction" << endl;
    cout << "3. Multiplication" << endl;
    cout << "4. Division" << endl;
    cout << "Enter choice(1-4): ";
    cin >> choice;
    switch (choice)
    {
    case '1':
        result = num1 + num2;
        cout << "Addition of numbers: " << result.display() << endl;
        break;
    case '2':
        result = num1 - num2;
        cout << "Subtraction of numbers: " << result.display() << endl;
        break;
    case '3':
        result = num1 * num2;
        cout << "Multiplication of numbers: " << result.display() << endl;
        break;
    case '4':
        result = num1 / num2;
        cout << "Division of numbers: " << result.display() << endl;
        break;
    }
}
```

**Screenshot**:



```
Enter the number: 3
Enter the number: 2
Arithmetic operation:
1. Addtion
2. Subtraction
3. Multiplication
4. Division
Enter choice(1-4): 4
Division of numbers: 1.5

F:\Project76\x64\Debug\Project76.exe (p
To automatically close the console when
```

**Task 03:** Write a program to concatenate (join) two strings by using overloaded + operator.

**Code:**

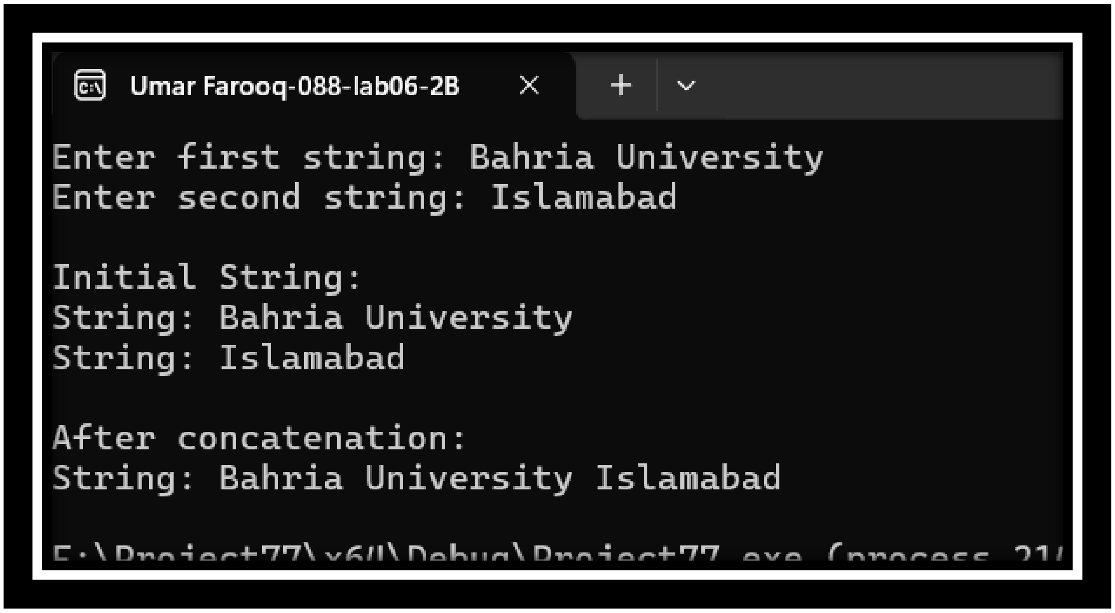
```
#include <iostream>
#include <cstring>
using namespace std;

class String {
private:
  char name[100];
public:
  String() : name("") {}
  String(const char* n)
  {
    strcpy(name, n);
  }
  String operator+(const String& s)
  {
    String temp;
    strcpy(temp.name, name);
    strcat(temp.name, " ");
    strcat(temp.name, s.name);
    return temp;
  }
  void display() const
  {
    cout << "String: " << name << endl;
  }
};

int main()
{
  char name1[100], name2[100];
  cout << "Enter first string: ";
  cin.getline(name1, 100);
  cout << "Enter second string: ";
  cin.getline(name2, 100);
  String str1(name1), str2(name2);
  cout << endl;
  cout << "Initial String: " << endl;
  str1.display();
```

```
    str2.display();
    cout << endl;
    String result = str1 + str2;
    cout << "After concatenation: " << endl;
    result.display();
    return 0;
}
```

**Screenshot:**



```
Enter first string: Bahria University
Enter second string: Islamabad

Initial String:
String: Bahria University
String: Islamabad

After concatenation:
String: Bahria University Islamabad

E:\Project77\x64\Debug\Project77.exe (process 21
```