



Bahria University, Islamabad

Department of Software Engineering

Object Oriented Programming Lab (Spring-2025)

Teacher: Engr. Muhammad Faisal Zia

Student: Umar Farooq

Enrollment: 09-131242-088

Lab Journal: 4

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Task No:	Task Wise Marks		Documentation Marks		Total Marks (20)
	Assigned	Obtained	Assigned	Obtained	
1	2		4		
2	2				
3	2				
4	5				
5	5				

Comments:

Signature

Home Tasks

Task 01: Create two classes: alpha and beta (friend class). The constructors in these classes initialize their single data item to fixed values (3 in alpha and 7 in beta).

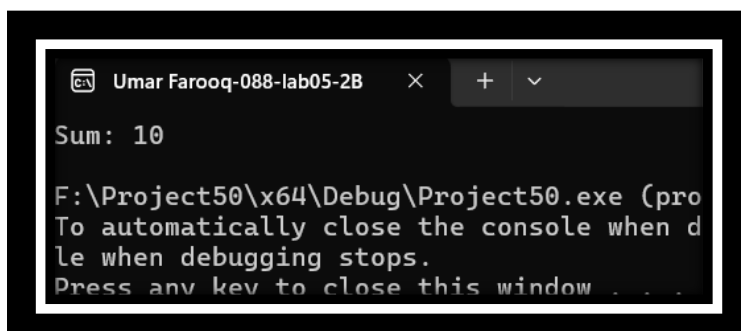
Create a friend function that have access to both private data member of these classes.

An object of each class is passed as an argument to the friend function. This friend function adds the data items and return the sum.

Code:

```
#include <iostream>
using namespace std;
class Alpha {
private:
    int numA;
    friend class Beta;
public:
    Alpha() :numA(3){}
    friend int addValue(Alpha, Beta);
};
class Beta {
private:
    int numB;
public:
    Beta():numB(7){}
    friend int addValue(Alpha, Beta);
};
int addValue(Alpha obj1,Beta obj2)
{
    return obj1.numA + obj2.numB;
}
int main()
{
    Alpha obj1;
    Beta obj2;
    cout << "Sum: " << addValue(obj1, obj2) << endl;
}
```

Screenshot:

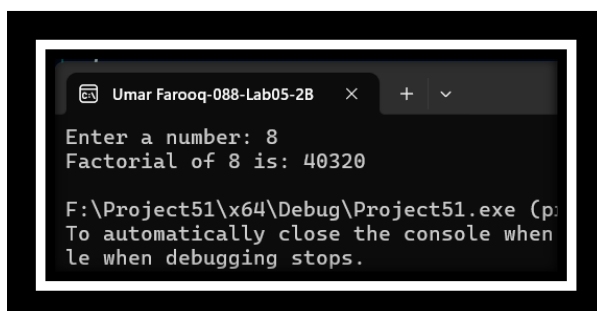


Task 02: Write a program to calculate the factorial of a number using a friend function. The number should be a private data member of a class.

Code:

```
#include <iostream>
using namespace std;
class factorial {
private:
    int num;
public:
    factorial(int n)
    {
        num = n;
    }
    friend int calcFactorial(factorial f);
};
int calcFactorial(factorial f)
{
    int fact = 1;
    for (int i = 1; i <= f.num; i++)
    {
        fact *= i;
    }
    return fact;
}
int main()
{
    int n;
    cout << "Enter a number: ";
    cin >> n;
    factorial obj(n);
    cout << "Factorial of " << n << " is: " << calcFactorial(n) << endl;
    return 0;
}
```

Screenshot:



Task 3: Write a program to display the sum, difference, product and division of two numbers using friend function. Create a class alpha. Declare four friend functions:

friend double sum (alpha)

friend double sub(alpha)

friend double mul(alpha)

friend double div(alpha)

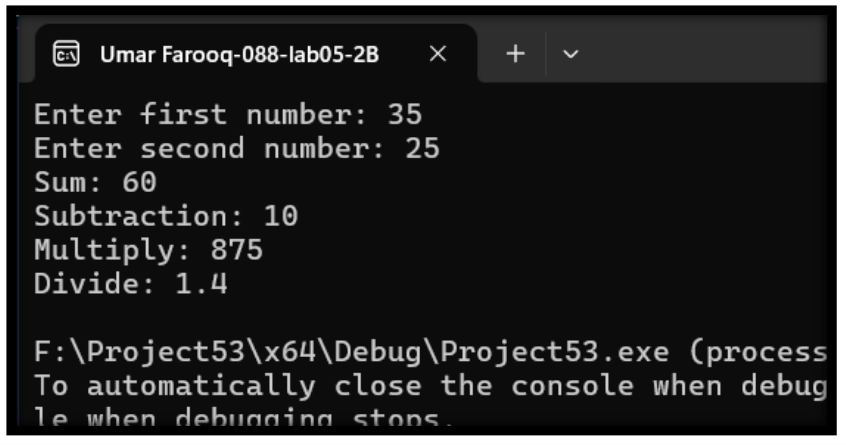
Code:

```
#include <iostream>
using namespace std;
class Alpha {
private:
    double num1, num2;
public:
    Alpha(double n1, double n2)
    {
        num1 = n1;
        num2 = n2;
    }
    friend double sum(Alpha calc);
    friend double sub(Alpha calc);
    friend double multi(Alpha calc);
    friend double div(Alpha calc);
};
double sum(Alpha calc)
{
    return calc.num1 + calc.num2;
}
double sub(Alpha calc)
{
    return calc.num1 - calc.num2;
}
double multi(Alpha calc)
{
    return calc.num1 * calc.num2;
}
double div(Alpha calc)
{
    return calc.num1 / calc.num2;
}

int main()
{
    int num1, num2;
    cout << "Enter first number: ";
    cin >> num1;
    cout << "Enter second number: ";
    cin >> num2;
```

```
Alpha calc(num1, num2);  
cout << "Sum: " << sum(calc) << endl;  
cout << "Subtraction: " << subtr(calc) << endl;  
cout << "Multiply: " << multi(calc) << endl;  
cout << "Divide: " << div(calc) << endl;  
}
```

Screenshot:



```
Umar Farooq-088-lab05-2B  
Enter first number: 35  
Enter second number: 25  
Sum: 60  
Subtraction: 10  
Multiply: 875  
Divide: 1.4  
  
F:\Project53\x64\Debug\Project53.exe (process  
To automatically close the console when debug  
le when debugging stops.
```