

## DAY 16 : Assignment

By  
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### Assignment 1

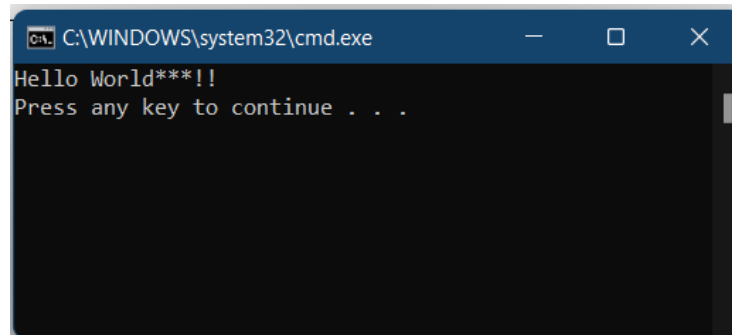
Write a C# code to print Hello World using object oriented approach.

**Answer :**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace helloworld_oop
{
    class HelloWorld
    {
        public void PrintText()
        {
            Console.WriteLine("Hello World***!!");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            HelloWorld helloWorld = new HelloWorld();
            helloWorld.PrintText();
        }
    }
}
```

## Output :

A screenshot of a Windows Command Prompt window. The title bar shows the path 'C:\WINDOWS\system32\cmd.exe'. The window contains the text 'Hello World\*\*\*!!' on the first line and 'Press any key to continue . . .' on the second line. The background is black, and the text is white.

```
C:\WINDOWS\system32\cmd.exe
Hello World***!!
Press any key to continue . . .
```

## Assignment 2

Write a C# code to read and print factorials of a given number using an object oriented approach.

## Answer :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace read_print_fact_oop
{
    class Factorial
    {
        int input;

        //Reading input
        public int ReadInput()
        {
            Console.WriteLine("Enter a number : ");
            input = int.Parse(Console.ReadLine());
            return input;
        }
    }
}
```

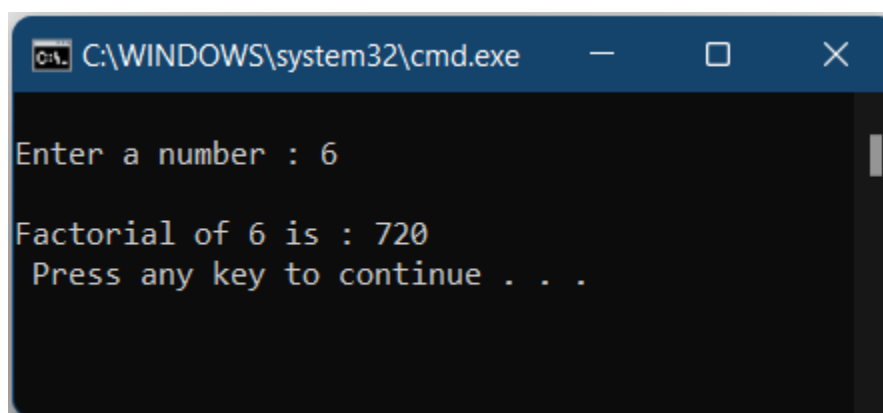
```

//Returning the factorial
public int PrintFact()
{
    int fact = 1;
    for(int i = 1 ; i <= input; i++)
    {
        fact *= i;
    }
    return fact;
}
}
internal class Program
{
    static void Main(string[] args)
    {
        Factorial fact = new Factorial();
        int input = fact.ReadInput();
        Console.WriteLine("\nFactorial of {0} is : {1} ", input, fact.PrintFact());

        Console.ReadKey();
    }
}
}

```

Output :



```

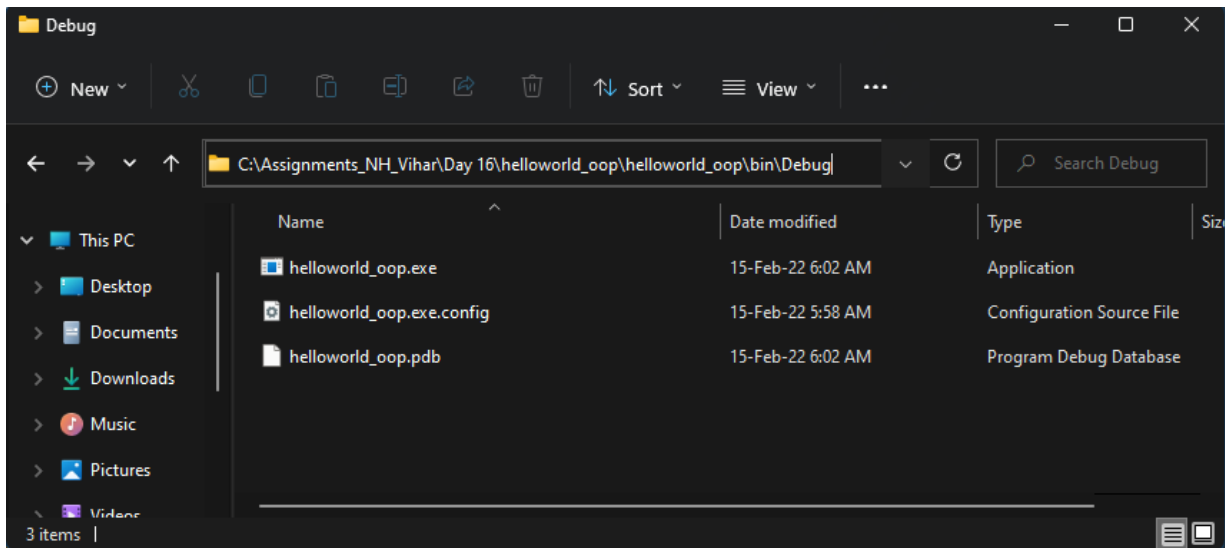
C:\WINDOWS\system32\cmd.exe
Enter a number : 6
Factorial of 6 is : 720
Press any key to continue . . .

```

### Assignment 3

For the console app created for task 2, screenshot the .exe file path

Answer :



### Assignment 4

Create a class library project with VDLibrary. Paste screenshots of .dll file.

Answer :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace VD_Library
{
    public class Maths
    {
        int input;

        //Reading input
        public int ReadInput()
```

```

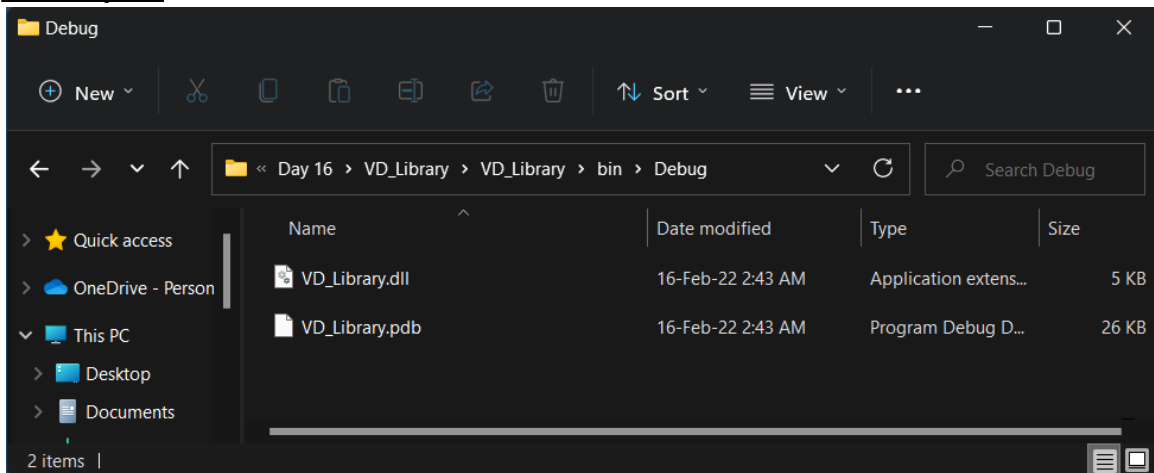
{
    Console.WriteLine("\nEnter a number : ");
    input = int.Parse(Console.ReadLine());
    return input;
}

//Returning the factorial
public int PrintFact()
{
    int fact = 1;
    for (int i = 1; i <= input; i++)
    {
        fact *= i;
    }
    return fact;
}
}

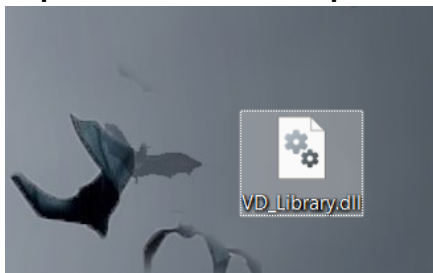
```

**Output :**

**.dll file path :**



**Duplicate file on desktop :**



## Assignment 5

Create a class library with 3 classes and refer all the classes into one console application.

Answer :

VD\_Library (Console App) :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using VD_Library;

namespace three_class_refer
{
    internal class Program
    {
        static void Main(string[] args)
        {
            //Mathematics Class
            Console.WriteLine("\n Mathematics modulus and factorial");
            Console.WriteLine("-----");
            Console.WriteLine("\n\n Calculate modulus : ");
            Mathematics m = new Mathematics();
            Console.WriteLine(m.Modulus());

            Console.WriteLine("\n\n Calculate factorial : ");
            m.ReadInput();
            Console.WriteLine(m.PrintFact());

            //Chemistry Class
            Console.WriteLine("\n\n Chemical Compositions");
            Console.WriteLine("-----");
            Chemistry c = new Chemistry();
            Console.WriteLine("\n Benzene composition : ");
            c.GetBenzene();
            Console.WriteLine("\n Water composition : ");
            c.GetWater();
            Console.WriteLine("\n Methane composition : ");
            c.GetMethane();
        }
    }
}
```

```

        //Physics Class
        Console.WriteLine("\n\n Physics FinalVelocity");
        Console.WriteLine("-----");
        int u = 5;
        int a = 7;
        int t = 10;
        var p = new Physics();
        //var v = p.FinalVelocity(u, a, t);
        Console.WriteLine(p.FinalVelocity(u, a, t));

        Console.ReadLine();
    }
}
}

```

### 1) Mathematics.cs :

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace VD_Library
{
    public class Mathematics
    {
        int a, b, input;
        //Modulus
        public int Modulus()
        {
            Console.Write("\n Enter a : ");
            a = Convert.ToInt32(Console.ReadLine());
            Console.Write("\n Enter b : ");
            b = Convert.ToInt32(Console.ReadLine());
            int x = a % b;
            //Console.WriteLine(x);
            return x;
        }

        //Factorial
    }
}

```

```

//Reading input
public int ReadInput()
{
    Console.WriteLine("Enter a number : ");
    input = int.Parse(Console.ReadLine());
    return input;
}

//Returning the factorial
public int PrintFact()
{
    int fact = 1;
    for (int i = 1; i <= input; i++)
    {
        fact *= i;
    }
    Console.WriteLine(fact);
    return fact;
}
}

```

## 2) Chemistry.cs :

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace VD_Library
{
    public class Chemistry
    {
        public string GetBenzene()
        {
            Console.WriteLine("C6H6");
            return "C6H6";
        }

        public string GetWater()
        {

```



```

        Console.WriteLine("H2O");
        return "H2O";
    }

    public string GetMethane()
    {
        Console.WriteLine("CH4");
        return "CH4";
    }
}

```

### 3) Physics.cs :

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace VD_Library
{
    public class Physics
    {
        public int FinalVelocity(int u, int a, int t)
        {
            int v = u + a * t;
            Console.WriteLine("\n Final Velocity : ", v);
            return v;
        }
    }
}

```

## Output :

```
C:\WINDOWS\system32\cmd.exe

Mathematics modulus and factorial
-----

Calculate modulus :

Enter a : 27

Enter b : 5
2

Calculate factorial :

Enter a number : 6
720

Chemical Compositions
-----

Benzene composition :
C6H6

Water composition :
H2O

Methane composition :
CH4

Physics FinalVelocity
-----

Final Velocity :
75

Press any key to continue . . .
```

## Assignment 6

Write a C# code to print the multiplication table of a given number using an object oriented approach.

**Answer :**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace multi_table_oop
{
    class MultiTable
    {
        int input;
        public int ReadData()
        {
            Console.WriteLine("\n Enter a number : ");
            input = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("\n*****Multiplication Table of {0}*****", input);
            return input;
        }

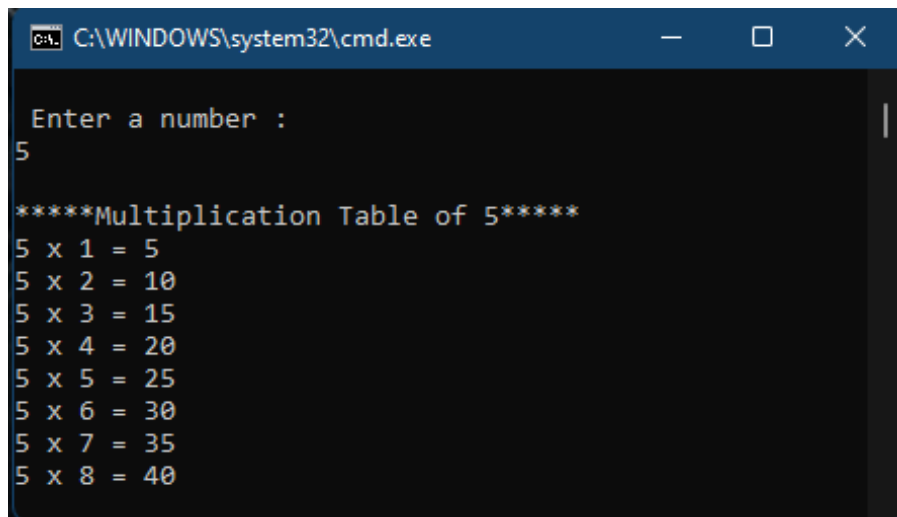
        public void PrintData()
        {
            for (int i = 1; i <= 10; i++)
            {
                Console.WriteLine("{0} x {1} = {2}", input, i, input * i);
            }
        }
    }

    internal class Program
    {
        static void Main(string[] args)
        {
            MultiTable mt = new MultiTable(); //Creating object
            mt.ReadData(); //Reading Input
            mt.PrintData(); //Getting Output

            Console.ReadLine();
        }
    }
}
```

```
}  
}  
}
```

Output :



```
C:\WINDOWS\system32\cmd.exe  
  
Enter a number :  
5  
  
*****Multiplication Table of 5*****  
5 x 1 = 5  
5 x 2 = 10  
5 x 3 = 15  
5 x 4 = 20  
5 x 5 = 25  
5 x 6 = 30  
5 x 7 = 35  
5 x 8 = 40
```

## Assignment 7

Write a C# code to check if the given number is a palindrome or not using object oriented approach.

Answer :

```
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;  
  
namespace palindrome_oop  
{  
    class Palindrome  
    {  
        int input;  
        public int ReadData()  
        {  
            Console.WriteLine("\n***** Palindrome or Not *****");  
        }  
    }  
}
```

```

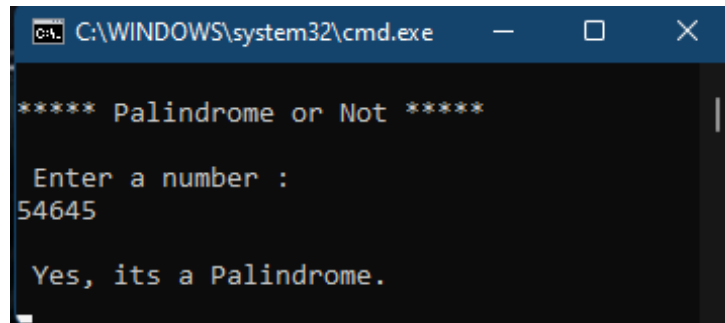
        Console.WriteLine("\n Enter a number : ");
        input = Convert.ToInt32(Console.ReadLine());
        return input;
    }
    public bool Palin()
    {
        int rev = 0, r, x;
        x = input;
        while(x>0)
        {
            r = x % 10;
            x /= 10;
            rev = rev * 10 + r;
        }
        if (input == rev)
            return true;
        else
            return false;
    }
}
internal class Program
{
    static void Main(string[] args)
    {
        Palindrome pal = new Palindrome();
        int input = pal.ReadData();
        bool Palin = pal.Palin();

        if(Palin == true)
            Console.WriteLine("\n Yes, its a palindrome.");
        else
            Console.WriteLine("\n Its not a Palindrome.");

        Console.ReadLine();
    }
}
}

```

**Output :**



```
C:\WINDOWS\system32\cmd.exe

***** Palindrome or Not *****

Enter a number :
54645

Yes, its a Palindrome.
```

### **Assignment 8**

**Create a solution “MyProject” with 2 class libraries and 1 console application.**

**Answer :**

```

ClientApp ( console application ) :
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

using VD_Library;
using Public_Library;

namespace ClientApp
{
    internal class Program
    {
        static void Main(string[] args)
        {
            //Mathematics
            Console.WriteLine("\n -----Mathematics-----");
            Console.Write("\n Factorial of 5 = ");
            Mathematics.Factorial(5);
            Console.Write("\n Sum of 20 + 10 = ");
            Mathematics.Add(20, 10);
            Console.Write("\n Product of 25 x 5 = ");
            Mathematics.Mult(25, 5);

            //Physics
            Console.WriteLine("\n -----Physics-----");
            Console.Write("\n Final velocity = ");
            Physics.FinalVelocity(5, 5, 5);
            Console.Write("\n Energy = ");
            Physics.Energy(10, 3);

            //Chemistry
            Console.WriteLine("\n -----Chemistry-----");
            Console.Write("\n Benzene = ");
            Chemistry.Benzene();
            Console.Write("\n Methane = ");
            Chemistry.Methane();
            Console.Write("\n Water = ");
            Chemistry.Water();

            Console.ReadLine();
        }
    }
}

```

```
    }  
  }  
}
```

VD\_Library ( Mathematics ) :

```
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;
```

namespace VD\_Library

```
{  
    public static class Mathematics  
    {  
        public static int Factorial(int n)  
        {  
            int fact = 1;  
            for (int i = 1; i <= n; i++)  
            {  
                fact *= i;  
            }  
            Console.WriteLine(fact);  
            return fact;  
        }  
        public static int Add(int a, int b)  
        {  
            int sum = a + b;  
            Console.WriteLine(sum);  
            return a + b;  
        }  
        public static int Mult(int a, int b)  
        {  
            int mult = a * b;  
            Console.WriteLine(mult);  
            return a * b;  
        }  
    }  
}
```

Public\_Library ( Physics ) :

```
using System;
```



```

using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Public_Library
{
    public static class Physics
    {
        public static int FinalVelocity(int u, int a, int t)
        {
            int v = u + a * t;
            Console.WriteLine(v);
            return v;
        }
        public static int Energy(int m, int c)
        {
            double C = c * c;
            double e = m * C;
            Console.WriteLine(e);
            return (int)e;
        }
    }
}

```

Public\_Library ( Chemistry ) :

```

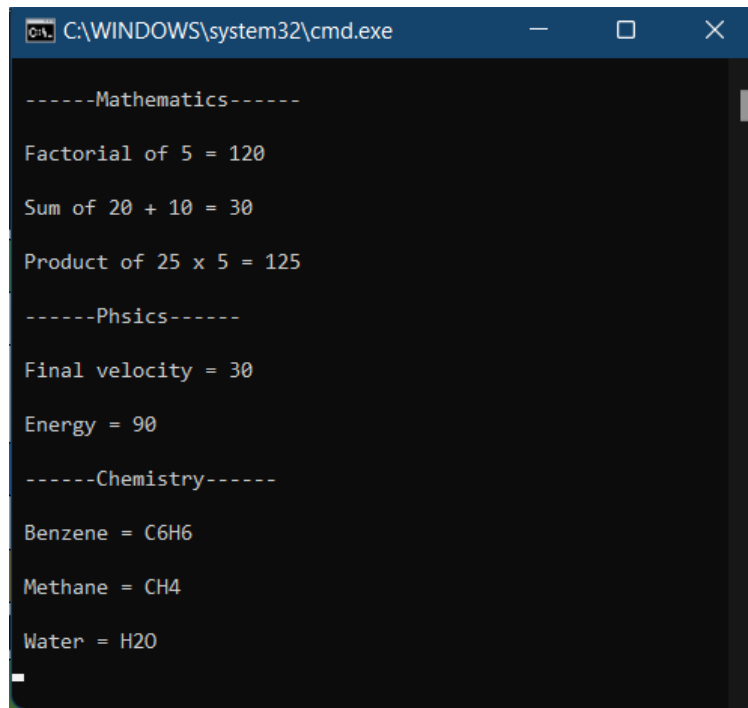
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Public_Library
{
    public static class Chemistry
    {
        public static string Benzene()
        {
            Console.WriteLine("C6H6");
            return "C6H6";
        }
        public static string Methane()

```

```
{  
    Console.WriteLine("CH4");  
    return "CH4";  
}  
public static string Water()  
{  
    Console.WriteLine("H2O");  
    return "H2O";  
}  
}
```

Output :



A screenshot of a Windows command prompt window titled "C:\WINDOWS\system32\cmd.exe". The window has a dark background and displays the following text:

```
-----Mathematics-----  
Factorial of 5 = 120  
Sum of 20 + 10 = 30  
Product of 25 x 5 = 125  
-----Phsics-----  
Final velocity = 30  
Energy = 90  
-----Chemistry-----  
Benzene = C6H6  
Methane = CH4  
Water = H2O
```

## Assignment 9

Create a solution “MyProject” with 2 class libraries and 1 windows forms application.  
( solution referred to assignment 8 )

**Answer :**

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

using VD_Library;
using Public_Library;

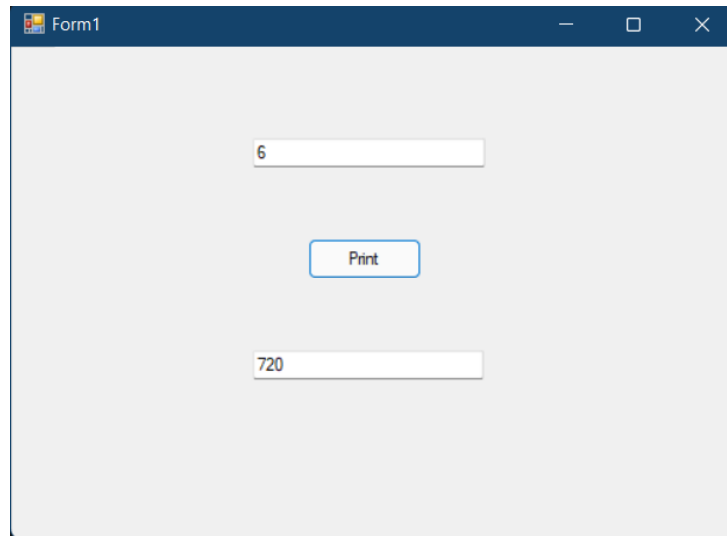
namespace factorial_desktop_form_app
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            int x = Convert.ToInt32(textBox1.Text);

            int fact = Mathematics.Factorial(x);

            textBox2.Text = fact.ToString();
        }
    }
}
```

**Output :**



The screenshot shows a Windows application window titled "Form1". The window has a standard Windows title bar with minimize, maximize, and close buttons. The main content area is light gray and contains three elements: a text box at the top containing the number "6", a "Print" button in the center, and another text box at the bottom containing the number "720".

## Assignment 10

Research and write about the uses of partial classes and write a code example and paste screenshots.

**Answer :**

### Uses of Partial classes in C# :

- A partial class provides a special ability to implement the functionality of a single class into multiple files and those files are combined into a single class file when the application is compiled.
- The partial class is mainly used to allow splitting of a class definition across multiple files.

### CODE :

math1.cs :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

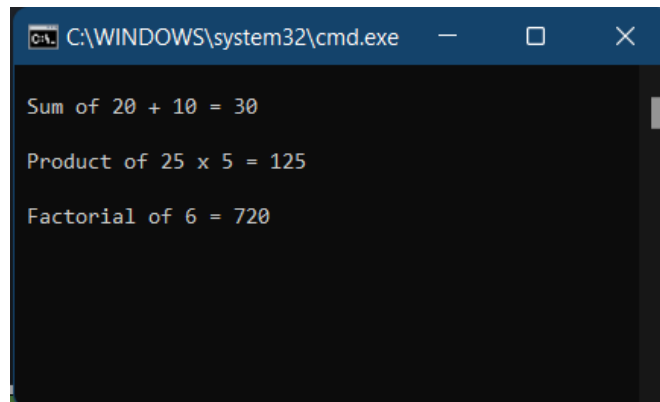
namespace VD_Library
{
    public static partial class math1
    {
        public static int Add(int a, int b)
        {
            int sum = a + b;
            Console.WriteLine(sum);
            return sum;
        }
        public static int Mult(int a, int b)
        {
            int mult = a * b;
            Console.WriteLine(mult);
            return mult;
        }
    }
}
```

math2.cs :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace VD_Library
{
    public static partial class math2
    {
        public static int Factorial(int x)
        {
            int fact = 1;
            for(int i = 1; i <= x; i++)
            {
                fact *= i;
            }
            return fact;
        }
    }
}
```

**Output :**



A screenshot of a Windows Command Prompt window. The title bar shows the path 'C:\WINDOWS\system32\cmd.exe'. The window contains three lines of text: 'Sum of 20 + 10 = 30', 'Product of 25 x 5 = 125', and 'Factorial of 6 = 720'.

```
C:\WINDOWS\system32\cmd.exe

Sum of 20 + 10 = 30

Product of 25 x 5 = 125

Factorial of 6 = 720
```