Day 16 - Assignment

By Manoj Karnatapu - NBHealthCareTechnologies

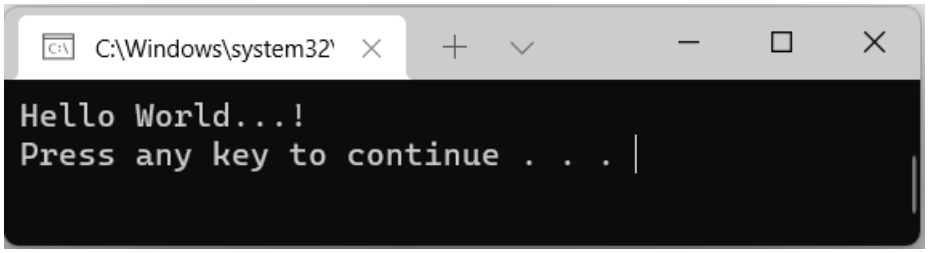
Assignment 1

Write a C# Code, To Print Hello World Using Object Oriented Approach.

Code

```
using System;

// Author : Manoj.Karnatapu
// Purpose : Write C# Code to Print Hello World, Using Object Oriented Approach

// For Reference, Check Day16Project1 in the same Repositpory

namespace Day16Project1
{
    class HelloWorld
    {
        /// <summary>
        /// Displaying the Hello World Message
        /// </summary>
        public void PrintMessage()
        {
            Console.WriteLine("Hello World...!");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            HelloWorld helloWorld = new HelloWorld();
            helloWorld.PrintMessage();
        }
    }
}
```

Output



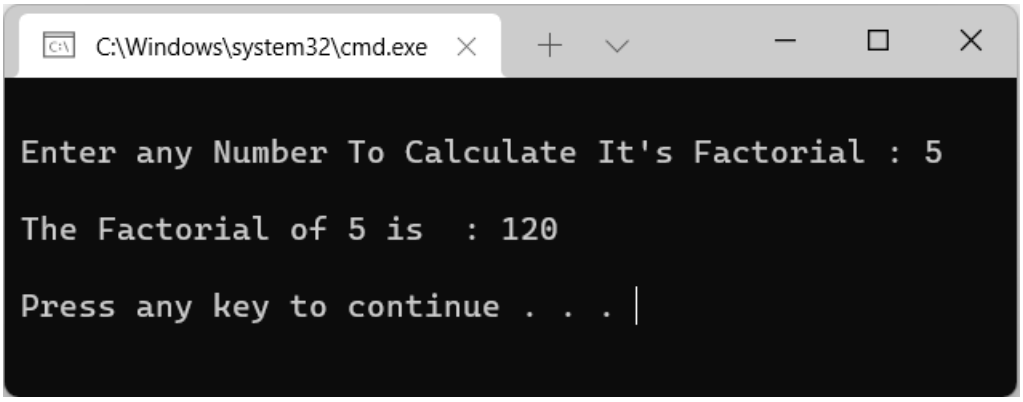
Assignment 2

Write a C# Code, To Read & Print Factorial of a given Number Using Object Oriented Approach.

Code

```
using System;

// Author : Manoj.Karnatapu
// Purpose : Reading & Printing the Factorial of a Number, Using Object Oriented Approach.

// For Reference, Check Day16Project2 in the same Repository.

namespace Day16Project2
{
    class Factorial
    {
         int input;

        /// <summary>
        /// Reading Inputs to Calculate Factorial.
        /// </summary>
        /// <returns>Given Input value</returns>
        public int ReadInput()
        {
            Console.Write("\nEnter any Number To Calculate It's Factorial : ");
            input = int.Parse(Console.ReadLine());
            return input;
        }
        /// <summary>
        /// Returning the Factorial of a given Number, after calculation
        /// </summary>
        /// <returns>Factorial Calculated Value</returns>
        public int PrintFactorial()
        {
            int fact = 1;
            for(int i = 1; i <= input;i++)
            {
                fact *= i;
            }

            return fact;
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Factorial factorial = new Factorial();
            int input = factorial.ReadInput();
            Console.WriteLine("\nThe Factorial of {0} is  :
{1}\n",input,factorial.PrintFactorial());

            Console.ReadKey();
        }
    }
}
```

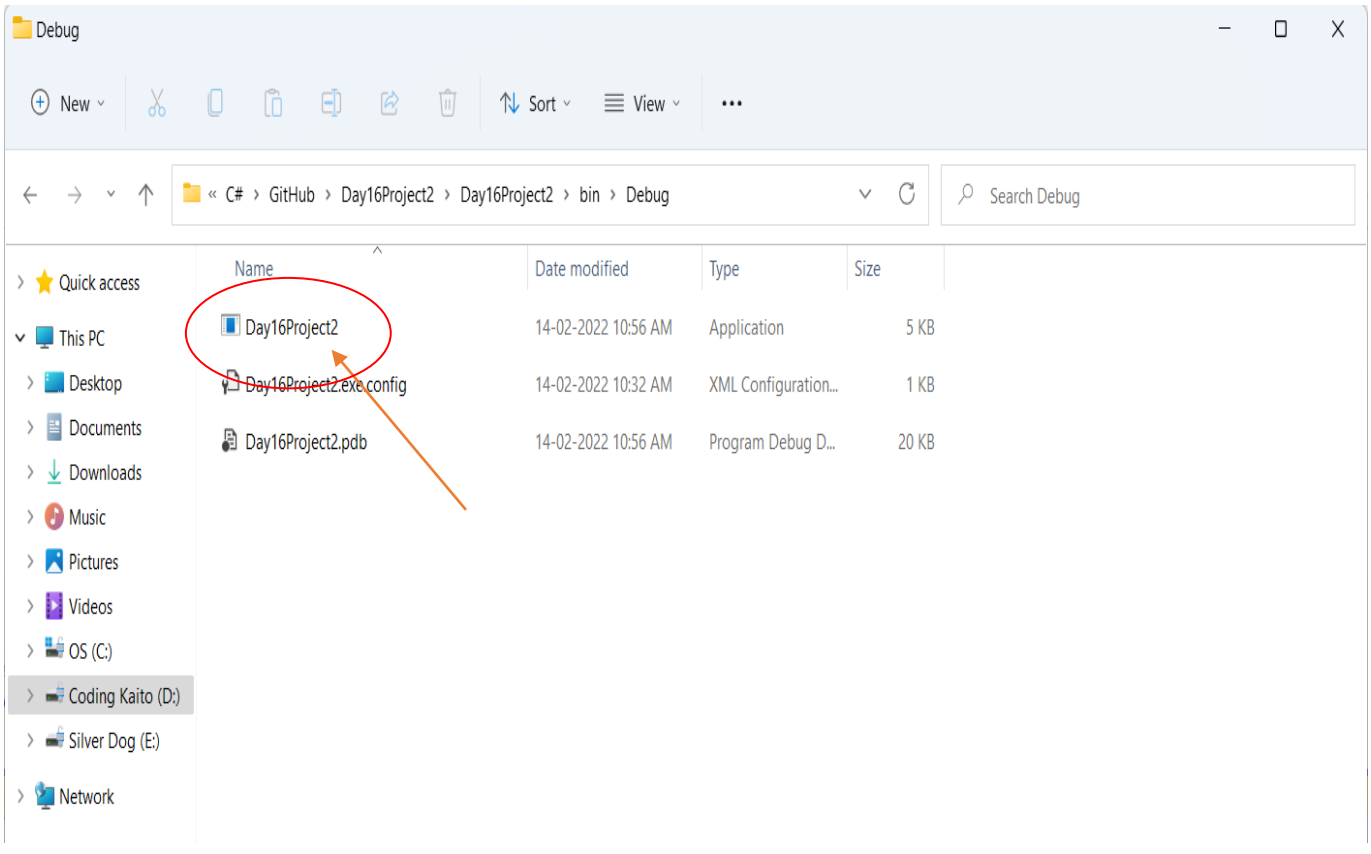
Output



Assignment 3

For the Console App Created for task 2, Screen Shot the Exe File Path.

Answer



Assignment 4

Create a Class Library Project, with ManojLibrary. Place Screenshots of DLL

Code

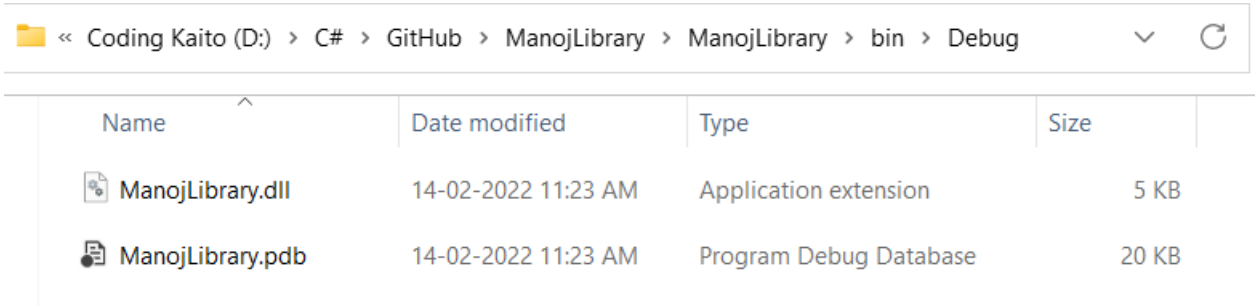
```
using System;
// Author : Manoj.Karnatapu
// Purpose : Creating a Class Library, for Code Reusability of Factorial

// For Reference, Check ManojLibrary in the same Repository.

namespace ManojLibrary
{
    public class Mathematics
    {
        int input;

        /// <summary>
        /// Reading Inputs to Calculate Factorial.
        /// </summary>
        /// <returns>Given Input value</returns>
        public int ReadInput()
        {
            Console.Write("\nEnter any Number To Calculate It's Factorial : ");
            input = int.Parse(Console.ReadLine());
            return input;
        }

        /// <summary>
        /// Returning the Factorial of a given Number, after calculation
        /// </summary>
        /// <returns>Factorial Calculated Value</returns>
        public int PrintFactorial()
        {
            int fact = 1;
            for (int i = 1; i <= input; i++)
            {
                fact *= i;
            }

            return fact;
        }

    }
}
```

Output

Rebuild Successfully.

```
Rebuild started...
1>------ Rebuild All started: Project: ManojLibrary, Configuration: Debug Any CPU ------
1>  ManojLibrary -> D:\C#\GitHub\ManojLibrary\ManojLibrary\bin\Debug\ManojLibrary.dll
========== Rebuild All: 1 succeeded, 0 failed, 0 skipped ==========
```

The DLL File is Created in the Path.



Copying the DLL File to the Given Desktop.

Assignment 5

Create a Class Library with 3 classes, & refer all Classes in the Console App.

Code

Program.cs (Console App)

```
using System;
using ManojLibrary;


// Author : Manoj.Karnatapu
// Purpose : This is a Console App with <ManojLibrary> having 3 Classes

// for Reference, Check  ManojKarnatapu Solution in the same Repository.
namespace ConsoleApp
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("\nAddition of 5 & 6 is : ");
            Mathematics.Addition(5, 6);
            Console.Write("\nSubtraction of 7 & 3 is : ");
            Mathematics.Subtraction(7, 3);
            Console.Write("\nMultiplication of 8 & 4 is : ");
            Mathematics.Multiplication(8, 4);
```

```
            Console.Write("\nDivision of 9 / 5 is : ");
            Mathematics.Division(9, 5);

            Console.Write("\nFinal Velocity is : ");
            Physics.FinalVelocity(5, 5, 5);
            Console.Write("\nCalculated Force is : ");
            Physics.ForceCalculation(10, 5);

            Console.Write("\nBenzene Formula is :  ");
            Chemistry.Benzene();
            Console.Write("\nWater Formula is : ");
            Chemistry.Water();

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

ManojLibrary > Mathematics.cs

```
using System;

// Author : Manoj.Karnatapu
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Mathematics.cs in ManojLibrary inside ManojKarnatapu Solution.

namespace ManojLibrary
{
    public static class Mathematics
    {
        public static int Addition(int a, int b)
        {
            int sum = a + b;
            Console.WriteLine(sum);
            return sum;
        }
        public static int Subtraction(int a, int b)
        {
            int diff = a - b;
            Console.WriteLine(diff);
            return diff;
        }
        public static int Multiplication(int a, int b)
        {
            int mul = a * b;
            Console.WriteLine(mul);
            return mul;
        }
        public static int Division(int a, int b)
        {
            int div = a / b;
            Console.WriteLine(div);
            return div;
        }
    }
}
```

ManojLibrary > Physics.cs

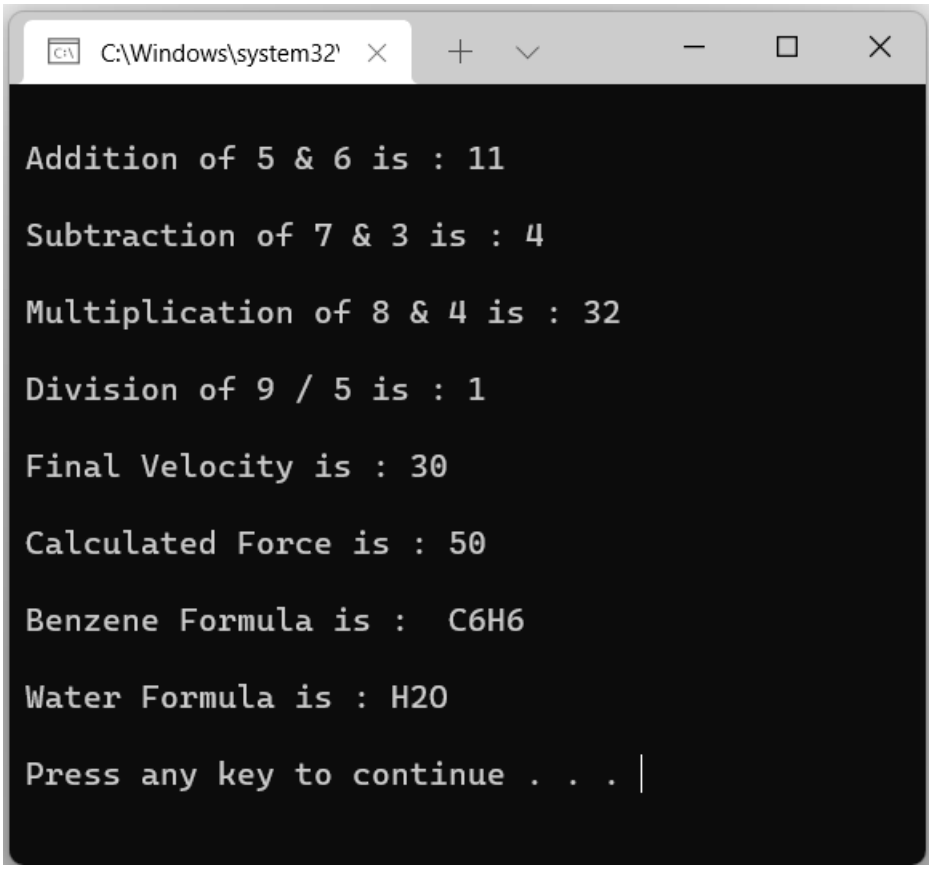
```
using System;

// Author : Manoj.Karnatapu
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Physics.cs in ManojLibrary inside ManojKarnatapu Solution.

namespace ManojLibrary
{
    public class Physics
    {
        /// <summary>
```

```
        /// This is a Final Velocity Calculation
        /// </summary>
        /// <param name="u">initial velocity</param>
        /// <param name="a">acceleration</param>
        /// <param name="t">time</param>
        /// <returns>Final Velocity</returns>
        public static int FinalVelocity(int u, int a, int t)
        {
            int finalVelocity = u + a * t;
            Console.WriteLine(finalVelocity);
            return finalVelocity;
        }
        /// <summary>
        /// This is a Force Calculation Method
        /// </summary>
        /// <param name="m">Mass</param>
        /// <param name="a">Acceleration</param>
        /// <returns>Force</returns>
        public static int ForceCalculation(int m, int a)
        {
            int force = m * a;
            Console.WriteLine(force);
            return force;
        }
    }
}
```

ManojLibrary > Chemistry.cs

```
using System;

// Author : Manoj.Karnatapu
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Chemistry.cs in ManojLibrary inside ManojKarnatapu Solution.

namespace ManojLibrary
{
    public static class Chemistry
    {
        /// <summary>
        /// This is a Benzene Formula
        /// </summary>
        /// <returns>Benzene Formula</returns>
        public static string Benzene()
        {
            Console.WriteLine("C6H6");
            return "C6H6";
        }
        /// <summary>
        /// This is a Water Formula.
        /// </summary>
        public static void Water()
        {
            Console.WriteLine("H2O");
        }
    }
}
```

Output



Assignment 6

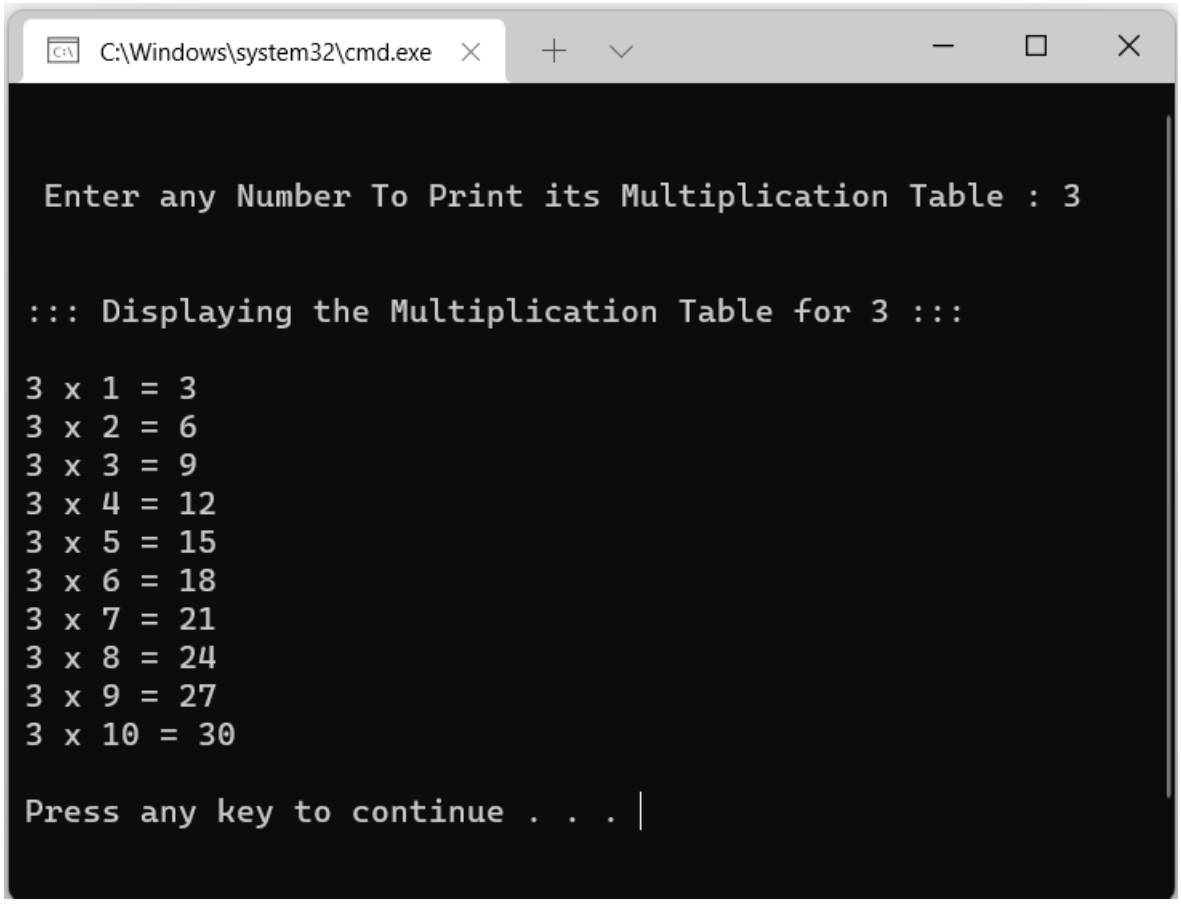
Write a C# Code, to Print Multiplication Table of given Number Using Object Oriented Approach.

Code

```
using System;

// Author : Manoj.Karnatapu
// Purpose : Printing Multiplication table of a given number using Object Oriented
Approach.

// For Reference, Check Day16Project3 in the same Repository.
namespace Day16Project3
{
    class MultiplicationTable
    {
        int input;
        /// <summary>
        /// Reading Input Number to Print its Multiplication Table
        /// </summary>
        /// <returns>Entered Number for reference</returns>
        public int ReadInput()
        {

            Console.Write("\n Enter any Number To Print its Multiplication Table : ");
            input = int.Parse(Console.ReadLine());
            Console.WriteLine("\n\n::: Displaying the Multiplication Table for {0} :::\n",
input);
            return input;
```

```
        }
        /// <summary>
        /// Printing The Multiplication Table for given input number.
        /// </summary>
        public void PrintMulTable()
        {
            for (int i = 1; i <= 10; i++)
            {
                //Printing OutPut using String Formating
                Console.WriteLine("{0} x {1} = {2}", input, i, input * i);
            }

            Console.WriteLine();
        }
        internal class Program
        {
            static void Main(string[] args)
            {
                // Creating Object for a Class as it is not static
                MultiplicationTable table = new MultiplicationTable();
                table.ReadInput();      // calling the ReadInput Method.
                table.PrintMulTable();  // calling the PrintMulTable Method.

                Console.ReadKey();
            }
        }
    }
}
```

Output



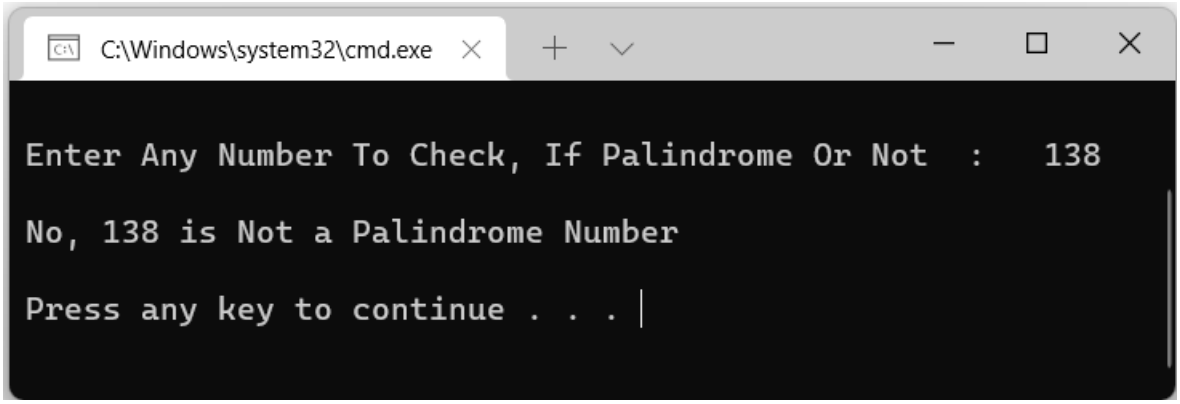
Assignment 7

Write a C# Code, to check if the given Number is Palindrome or Not Using Object Oriented Approach

Code

```
using System;
// Author : Manoj.Karnatapu
// Purpose : Write a C# Code, To check if the given Number is Palindrome or Not, Using
Object Oriented Approach

// For Reference, Check Day16Project4 in the same Repository.
namespace Day16Project4
{
    class Palindrome
    {
        int input;
        /// <summary>
        /// Reading Input Value, To Check Palindrome or Not
        /// </summary>
        /// <returns>Entered Input Number</returns>
        public int ReadInput()
        {
            Console.Write("\nEnter Any Number To Check, If Palindrome Or Not  :   ");
            input = int.Parse(Console.ReadLine());
            return input;
        }
        /// <summary>
        /// To Check, if the given Input is Palindrome or Not
        /// </summary>
        /// <returns>Boolean Value</returns>
        public bool IsPalindrome()
        {
            int rev = 0, rem, m;
            m = input;
            while(m > 0)
            {
                rem = m % 10;
                m = m / 10;
                rev = rev * 10 + rem;
            }
            if (input == rev)
                return true;
            else
                return false;
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            // Creating Object for Palindrome Class
            Palindrome palindrome = new Palindrome();
            int input = palindrome.ReadInput();     // Calling ReadInput() & storing the
Returned Value.
            bool isPalindrome = palindrome.IsPalindrome(); // Calling IsPalindrome() &
storing the Returned Bool value.

            // Printing the Output Message to Console.
            if (isPalindrome == true)
                Console.WriteLine("\nYes, {0} Is a Palindrome Number", input);
            else
                Console.WriteLine("\nNo, {0} is Not a Palindrome Number", input);

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

Output



Assignment 8

Create a solution "MyProject" with 2 Class Libraries & 1 Console App.

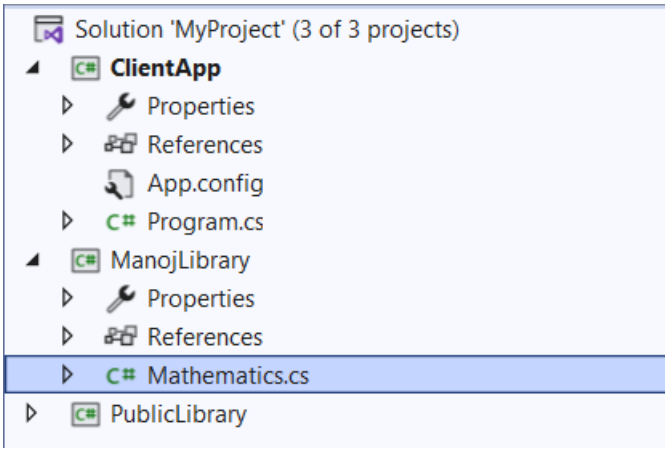
Code

MyProject-Solution > ClientApp(ConsoleApp)

```
using System;
using ManojLibrary;
using PublicLibrary;

// Author : Manoj.Karnatapu
// Purpose : Creating MyProject Solution with Built-in ManojLibrary & PublicLibrary

// For Reference, Check MyProject in the Same Repository.

namespace ClientApp
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("\nAddition of 5 & 6 is : ");
            Mathematics.Addition(5, 6);
            Console.Write("\nSubtraction of 7 & 3 is : ");
            Mathematics.Subtraction(7, 3);
            Console.Write("\nMultiplication of 8 & 4 is : ");
            Mathematics.Multiplication(8, 4);
            Console.Write("\nDivision of 9 / 5 is : ");
            Mathematics.Division(9, 5);

            Console.Write("\nFinal Velocity is : ");
            Physics.FinalVelocity(5, 5, 5);
            Console.Write("\nCalculated Force is : ");
            Physics.ForceCalculation(10, 5);

            Console.Write("\nBenzene Formula is :  ");
            Chemistry.Benzene();
            Console.Write("\nWater Formula is : ");
            Chemistry.Water();

            Console.ReadLine();
        }
    }
```

}

MyProject-Solution > ManojLibrary(Class Library).

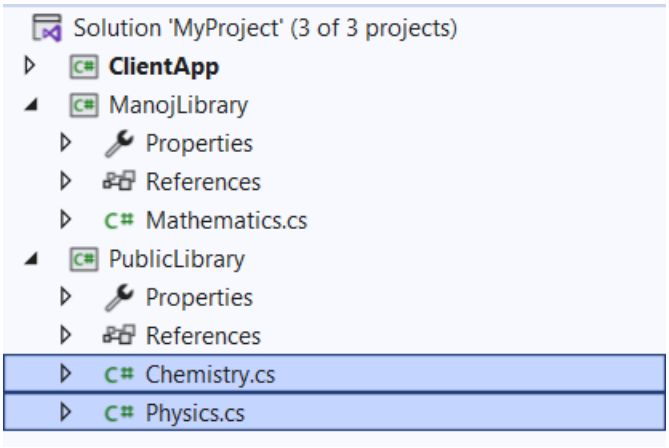


Code:

```
using System;

// Author : Manoj.Karnatapu
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Mathematics.cs in ManojLibrary inside ManojKarnatapu Solution.

namespace ManojLibrary
{
    public static class Mathematics
    {
        public static int Addition(int a, int b)
        {
            int sum = a + b;
            Console.WriteLine(sum);
            return sum;
        }
        public static int Subtraction(int a, int b)
        {
            int diff = a - b;
            Console.WriteLine(diff);
            return diff;
        }
        public static int Multiplication(int a, int b)
        {
            int mul = a * b;
            Console.WriteLine(mul);
            return mul;
        }
        public static int Division(int a, int b)
        {
            int div = a / b;
            Console.WriteLine(div);
            return div;
        }
        public static int Factorial(int input)
        {
            int fact = 1;
            for (int i = 1; i <= input; i++)
            {
                fact *= i;
            }

            return fact;
        }
    }
```

```
}
```

MyProject-Solution > PublicLibrary (Class Library) with 2 Separate Classes.



Code:

Physics Class

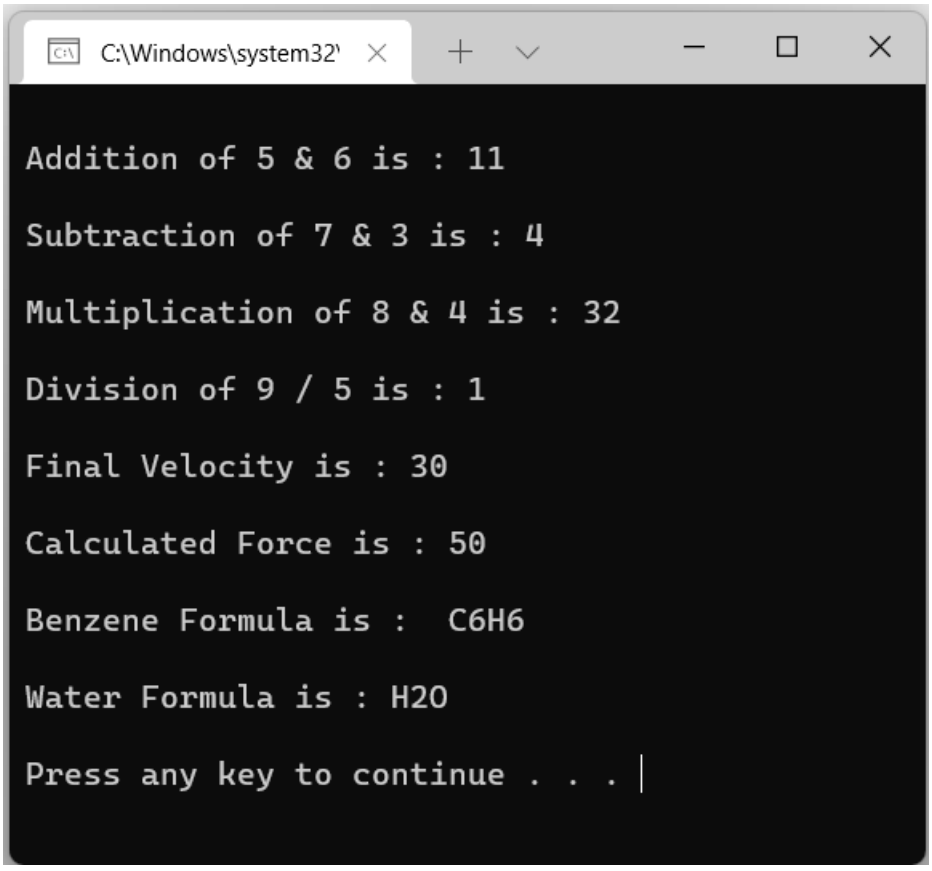
```
using System;

// Author : Manoj.Karnatapu
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Physics.cs in PublicLibrary inside MyProject Solution.

namespace PublicLibrary
{
    public class Physics
    {
        /// <summary>
        /// This is a Final Velocity Calculation
        /// </summary>
        /// <param name="u">initial velocity</param>
        /// <param name="a">acceleration</param>
        /// <param name="t">time</param>
        /// <returns>Final Velocity</returns>
        public static int FinalVelocity(int u, int a, int t)
        {
            int finalVelocity = u + a * t;
            Console.WriteLine(finalVelocity);
            return finalVelocity;
        }
        /// <summary>
        /// This is a Force Calculation Method
        /// </summary>
        /// <param name="m">Mass</param>
        /// <param name="a">Acceleration</param>
        /// <returns>Force</returns>
        public static int ForceCalculation(int m, int a)
        {
            int force = m * a;
            Console.WriteLine(force);
            return force;
        }
    }

}
```

Chemistry Class

```
using System;

// Author : Manoj.Karnatapu
```

```
// Purpose : This is a Mathematics Class in <ManojLibrary>

// for Reference, Check Chemistry.cs in PublicLibrary inside MyProject Solution.

namespace PublicLibrary
{
    public static class Chemistry
    {
        /// <summary>
        /// This is a Benzene Formula
        /// </summary>
        /// <returns>Benzene Formula</returns>
        public static string Benzene()
        {
            Console.WriteLine("C6H6");
            return "C6H6";
        }
        /// <summary>
        /// This is a Water Formula.
        /// </summary>
        public static void Water()
        {
            Console.WriteLine("H2O");
        }
    }

}
```

Output

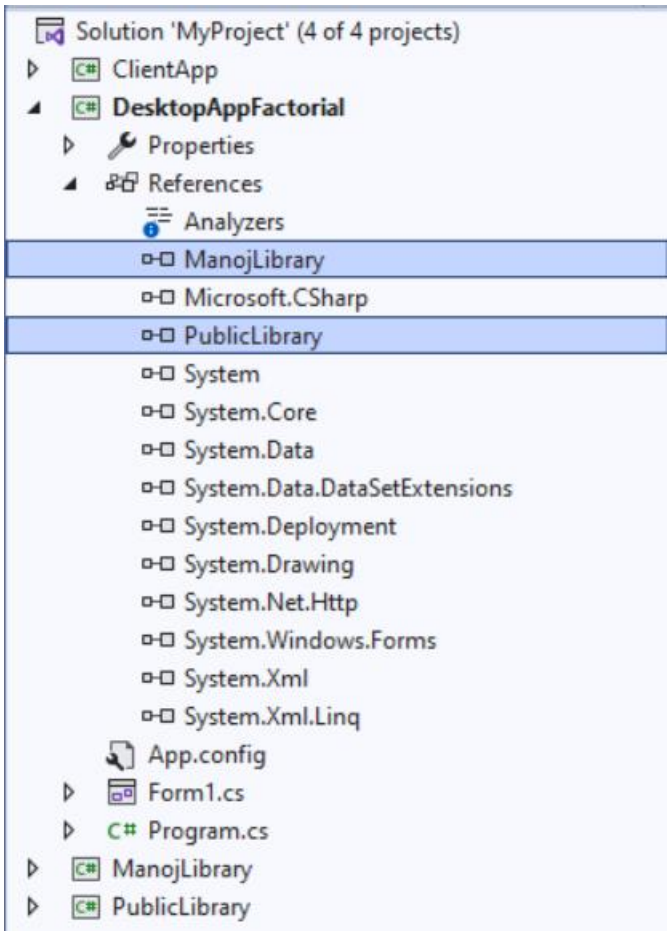


Assignment 9

Create a solution “MyProject” with 2 Class Libraries & 1 Windows Forms Application.

Code

Creating Windows Desktop Application & adding User Defined Libraries ManojLibrary & Public Library. As Shown in the Below Diagram.



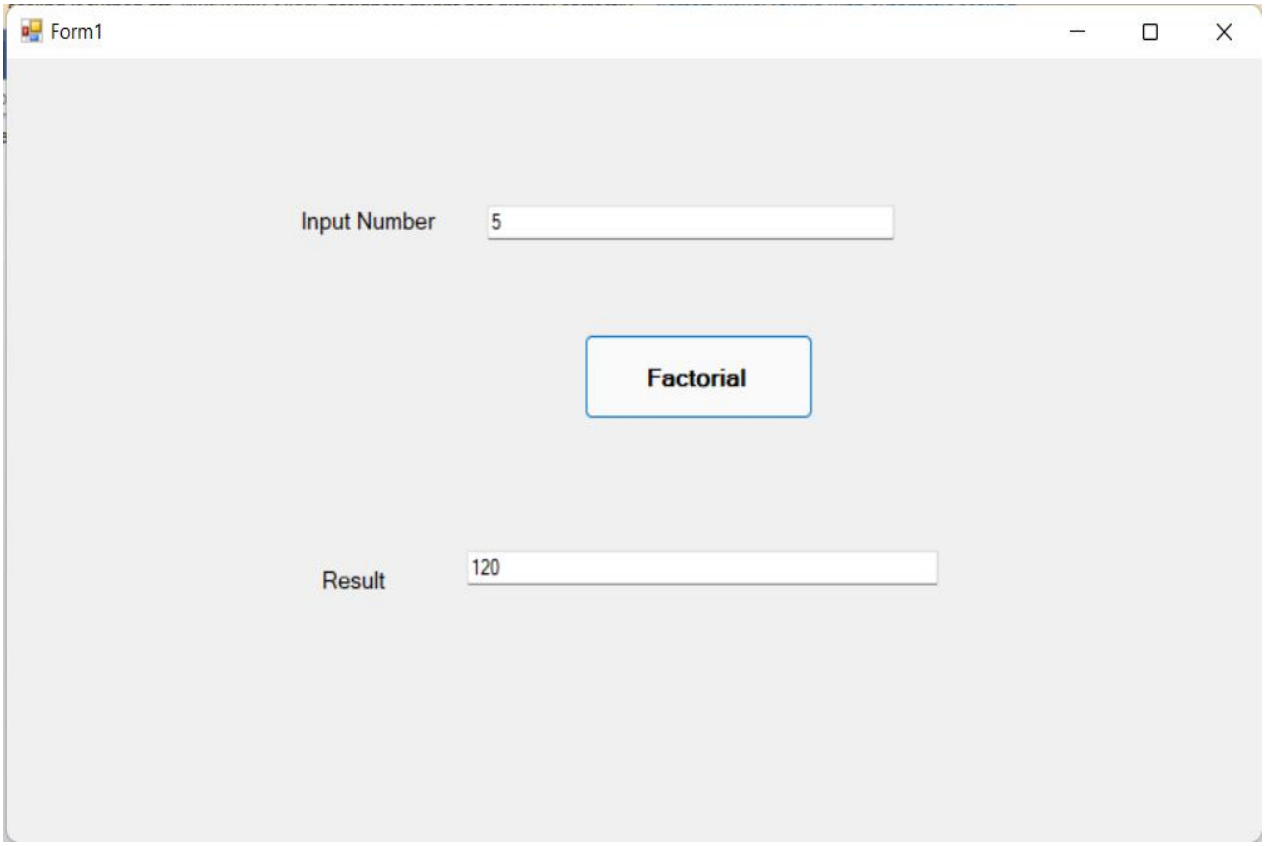
DesktopAppFactorial > Form1.cs

Code :

```
using System;
using System.Windows.Forms;
using ManojLibrary;
using PublicLibrary;

// Author : Manoj.Karnatapu
// Purpose : Creating desktop App, using ManojLibray.

// for Reference, check MyProject>DesktopAppFactorial. in the same Repository.
namespace DesktopAppFactorial
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            int input = int.Parse(textBox1.Text);
```

```
            int factorial = Mathematics.Factorial(input);

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

Output



Assignment 10

Research & Write What is the use of Partial Classes & WRITE EXAMPLE CODE AND PUT SCREEN SHOTS

Code

Uses Of Partial Classes in C# :

A partial class is a special feature of C#. It provides a special ability to implement the functionality of a single class into multiple files and all these files are combined into a single class file when the application is compiled

the general purpose of a partial class is to allow the splitting of a class definition across multiple files.

Day16Project5 > Program.cs

```
using System;
using ManojLibrary;

// Author : Manoj.Karnatapu
```

```
// Purpose : Creating a Mathematics public class for Reusability Using Partial Class in
ManojLibrary.

// For Reference, Check ManojLibrary in Day16Project5 in the same Repository.
namespace Day16Project5
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("\n Executing Mathematical Operations Using Partial Class
\n");

            Console.Write("\nAddition of 5 & 6 is : ");
            Mathematics.Addition(5, 6);
            Console.Write("\nSubtraction of 7 & 3 is : ");
            Mathematics.Subtraction(7, 3);
            Console.Write("\nMultiplication of 8 & 4 is : ");
            Mathematics.Multiplication(8, 4);
            Console.Write("\nDivision of 9 / 5 is : ");
            Mathematics.Division(9, 5);

            Console.WriteLine("\n Factorial of 5 is : {0}",Mathematics.Factorial(5));

            Console.ReadKey();
        }
    }
}
```

Day16Project5 > ManojLibrary with 2 Separate Partial classes.

Partial class – 1:

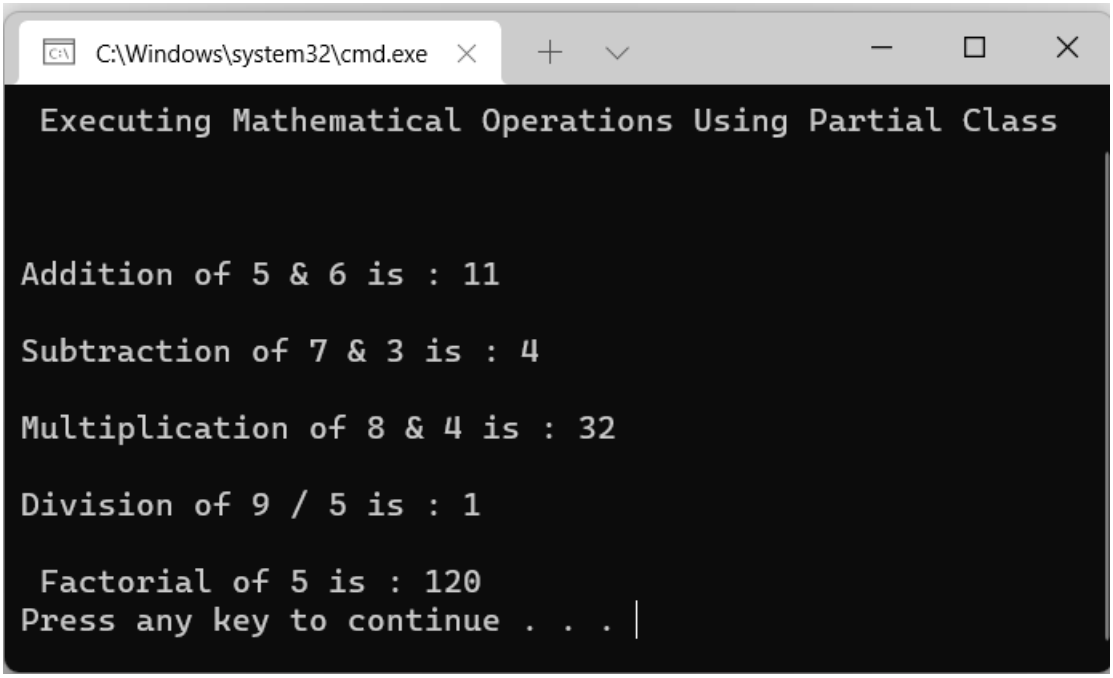
```
using System;

// Author : Manoj.Karnatapu
// Purpose : Creating a Mathematics public class for Reusability Using Partial Class in
ManojLibrary.

// For Reference, Check ManojLibrary in Day16Project5 in the same Repository.

namespace ManojLibrary
{
    public static partial class Mathematics
    {
        public static int Addition(int a, int b)
        {
            int sum = a + b;
            Console.WriteLine(sum);
            return sum;
        }
        public static int Subtraction(int a, int b)
        {
            int diff = a - b;
            Console.WriteLine(diff);
            return diff;
        }
        public static int Multiplication(int a, int b)
        {
            int mul = a * b;
            Console.WriteLine(mul);
            return mul;
        }
        public static int Division(int a, int b)
        {
            int div = a / b;
            Console.WriteLine(div);
            return div;
```

```
        }
    }
}
```

Partial Class - 2:

```
using System;

// Author : Manoj.Karnatapu
// Purpose : Creating a Mathematics public class for Reusability Using Partial Class in
ManojLibrary.

// For Reference, Check ManojLibrary in Day16Project5 in the same Repository.
namespace ManojLibrary
{
    public static partial class Mathematics
    {
        public static int Factorial(int input)
        {
            int fact = 1;
            for (int i = 1; i <= input; i++)
            {
                fact *= i;
            }

            return fact;
        }
    }
}
```

Output



The End