Feb 14th Assignment

By

Chandolu Surya Teja

1. WACP to print Hello World
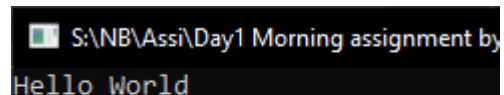
Code:

```csharp
using System;

/************************************************************************
* Author: Surya Teja
* Purpose: Hello World OOPS
* ************************************************************************/

namespace HelloWorldOOPS
{
    class HelloWorld
    {
        /// <summary>
        /// Print Hello World
        /// </summary>
        public void PrintHelloWorld()
        {
            Console.WriteLine("Hello World");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            HelloWorld hw = new HelloWorld();
            hw.PrintHelloWorld();

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

Output:

S:\NB\Assi\Day1 Morning assignment by
Hello World

2. WACP to read a number from user and print factorial of it.

Code:

```csharp
using System;

/************************************************************************
* Author: Surya Teja
* Purpose: Factorial OOPS
* ********************************************************************/

namespace FactorialOOPS
{
    public class Factorial
    {
        public int input;
        /// <summary>
        /// Read data from user
        /// </summary>
        public void ReadNumber()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Factorial logic
        /// </summary>
        /// <returns>Factorial value</returns>
        public int GetFact()
        {
            int fact = 1;

            for (int i = 2; i <= input; i++)
                fact = fact * i;
            return fact;
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Factorial f = new Factorial();
            f.ReadNumber();
            Console.WriteLine($"Factorial of {f.input} is {f.GetFact()}");

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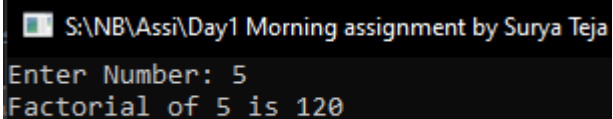
Output:

```
S:\NB\Assi\Day1 Morning assignment by Surya Teja

Enter Number: 5
Factorial of 5 is 120
```

3. For the console application created in 2nd task, add screen shot of the .exe file location

Screenshot:

4. Create a Class Library Project

Code:

```csharp
using System;

/************************************************************************
 * Author: Surya Teja
 * Purpose: Mathematics Library
 * ************************************************************************/

namespace Surya
{
    public class Mathematics
    {
        public int input;
        /// <summary>
        /// Read data from user
        /// </summary>
        public void ReadNumber()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Factorial logic
        /// </summary>
        /// <returns>Factorial value</returns>
        public int GetFact()
        {
            int fact = 1;

            for (int i = 2; i <= input; i++)
                fact = fact * i;
            return fact;
        }
    }
}
```

Output:

Output

Show output from: Build

Build started...
1>------ Build started: Project: Surya, Configuration: Debug Any CPU ------
1> Surya -> S:\NB\Assi\Day1 Morning assignment by Surya Teja Chandolu 24 Jan 2022\C#\16Feb14\Surya\bin\Debug\Surya.dll
========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========

This PC > Surya (S:) > NB > Assi > Day1 Morning assignment by Surya Teja Chandolu 24 Jan 2022 > C# > 16Feb14 > Surya > bin > Debug

Name	Date modified	Type	Size
Surya.dll	14-02-2022 12:19	Application exten...	4 KB
Surya.pdb	14-02-2022 12:19	Program Debug D...	20 KB

4

5. Create a class library with three classes

Code:

Chemistry:

```csharp
using System;

/***********************************************************************
 * Author: Surya Teja
 * Purpose: Physics Library
 * **********************************************************************/

namespace Surya
{
    public class Chemistry
    {
        public string water;
        public string acid;
        /// <summary>
        /// Read User Input
        /// </summary>
        public void ReadData()
        {
            Console.Write("Enter Water formula: ");
            water = Console.ReadLine();
            Console.Write("Enter Acid formula: ");
            acid = Console.ReadLine();
        }
        /// <summary>
        /// Print Output
        /// </summary>
        public void Output()
        {
            Console.WriteLine($"Water formula is {water}");
            Console.WriteLine($"Acid formula is {acid}");
        }
    }
}
```

Mathematics:

```csharp
using System;

/***********************************************************************
 * Author: Surya Teja
 * Purpose: Mathematics Library
 * **********************************************************************/

namespace Surya
{
    public class Mathematics
    {
        public int input;
```

```csharp
        /// <summary>
        /// Read data from user
        /// </summary>
        public void ReadNumber()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Factorial logic
        /// </summary>
        /// <returns>Factorial value</returns>
        public int GetFact()
        {
            int fact = 1;

            for (int i = 2; i <= input; i++)
                fact = fact * i;
            return fact;
        }
    }
}


Physics:


using System;

/************************************************************************
* Author: Surya Teja
* Purpose: Physics Library
* ************************************************************************/

namespace Surya
{
    public class Physics
    {
        public int d;
        public int t;
        /// <summary>
        /// User Input
        /// </summary>
        public void ReadData()
        {
            Console.Write("Enter Distance: ");
            d = Convert.ToInt32(Console.ReadLine());
            Console.Write("Enter Time: ");
            t = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Caliculate Speed
        /// </summary>
        /// <returns>Return Speed Value</returns>
        public int Speed()
        {
```

```csharp
            int s = 0;
            try
            {
                s = d / t;
            }
            catch (DivideByZeroException)
            {
                Console.WriteLine("Time cannot be zero");
            }
            return s;
        }
    }
}


Main:


using System;
using Surya;

namespace Subject
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Chemistry c = new Chemistry();
            Mathematics m = new Mathematics();
            Physics p = new Physics();

            Console.WriteLine("\n*****Chemistry*****\n");
            c.ReadData();
            c.Output();

            Console.WriteLine("\n*****Mathematics*****\n");
            m.ReadNumber();
            Console.WriteLine($"Factorial of {m.input} is {m.GetFact()}");

            Console.WriteLine("\n*****Physics*****\n");
            p.ReadData();
            Console.WriteLine($"Speed is { p.Speed()}");

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

Output:

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```
*****Chemistry*****

Enter Water formula: H2O
Enter Acid formula: HCL
Water formula is H2O
Acid formula is HCL

*****Mathematics*****

Enter Number: 5
Factorial of 5 is 120

*****Physics*****

Enter Distance: 10
Enter Time: 2
Speed is 5
```

6. WACP to print multable table of a number

Code:

```csharp
using System;

/************************************************************************
 * Author: Surya Teja
 * Purpose: Table
 * ***********************************************************************/

namespace TableOOPS
{
    class Table
    {
        int input;
        /// <summary>
        /// Read User Input
        /// </summary>
        public void ReadData()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Print Table
        /// </summary>
        public void PrintTable()
        {
            for (int i = 1; i <= 10; i++)
                Console.WriteLine($"{input} * {i} = {input * i}");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Table t = new Table();
            t.ReadData();
            t.PrintTable();

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

Output:

```
S:\NB\Assi\Day1 Morning assignr
Enter Number: 5
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

7. WACP to check if the given is number is Palindrome or not

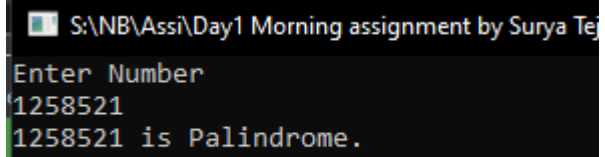**Code:**

```csharp
using System;

/*************************************************************************
* Author: Surya Teja
* Purpose: Palindrome
* *********************************************************************/

namespace PalindromeOOPS
{
    class Palindrome
    {
        int num, rem, temp, sum = 0;
        /// <summary>
        /// Read User Input
        /// </summary>
        public void ReadNumber()
        {
            Console.WriteLine("Enter Number");
            num = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Print Palindrome or not
        /// </summary>
        public void PrintPalindrome()
        {
            temp = num;
            while (num > 0)
            {
                rem = num % 10;
                sum = (sum * 10) + rem;
                num = num / 10;
            }
            if (temp == sum)
                Console.Write($"{temp} is Palindrome.");
            else
                Console.Write($"{temp} is not Palindrome");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Palindrome p = new Palindrome();
            p.ReadNumber();
            p.PrintPalindrome();

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

Output

8. Create a solution "MyProject" Add three projects

Code:

Mathematics:

```csharp
using System;

/************************************************************************
 * Author: Surya Teja
 * Purpose: Mathematics Library
 * ***********************************************************************/

namespace Surya
{
    public class Mathematics
    {
        public int input;
        /// <summary>
        /// Read data from user
        /// </summary>
        public void ReadNumber()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }
        /// <summary>
        /// Factorial logic
        /// </summary>
        /// <returns>Factorial value</returns>
        public int GetFact()
        {
            int fact = 1;

            for (int i = 2; i <= input; i++)
                fact = fact * i;
            return fact;
        }
    }
}


Operations:

using System;

/************************************************************************
 * Author: Surya Teja
 * Purpose: Operations
 * ***********************************************************************/

namespace Operations
{
    public class Opp1
    {
```

```csharp
        int a, b;
        /// <summary>
        /// Adding two numbers
        /// </summary>
        /// <returns>Sum of 2 Numbers</returns>
        public int Add(int a, int b)
        {
            return a + b;
        }
        /// <summary>
        /// Subract Two numbers
        /// </summary>
        /// <returns>Sub of 2 Numbers</returns>
        public int Sub(int a, int b)
        {
            return a - b;
        }
    }
}
```

Clint:

```csharp
using System;
using Surya;
using Operations;

/************************************************************************
* Author: Surya Teja
* Purpose: Clint
* ************************************************************************/

namespace Clint
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Mathematics m = new Mathematics();
            Opp1 op1 = new Opp1();

            Console.WriteLine("\n*****Mathematics*****\n");
            m.ReadNumber();
            Console.WriteLine($"Factorial of {m.input} is {m.GetFact()}");

            Console.WriteLine("\n*****Operations*****\n");
            Console.WriteLine($"Addition of A and B is {op1.Add(10, 20)}");
            Console.WriteLine($"Subraction of A and B is {op1.Sub(20, 10)}");

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

Output:

```
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*****Mathematics*****

Enter Number: 5
Factorial of 5 is 120

*****Operations*****

Addition of A and B is 30
Subraction of A and B is 10
```

9. Windows Application
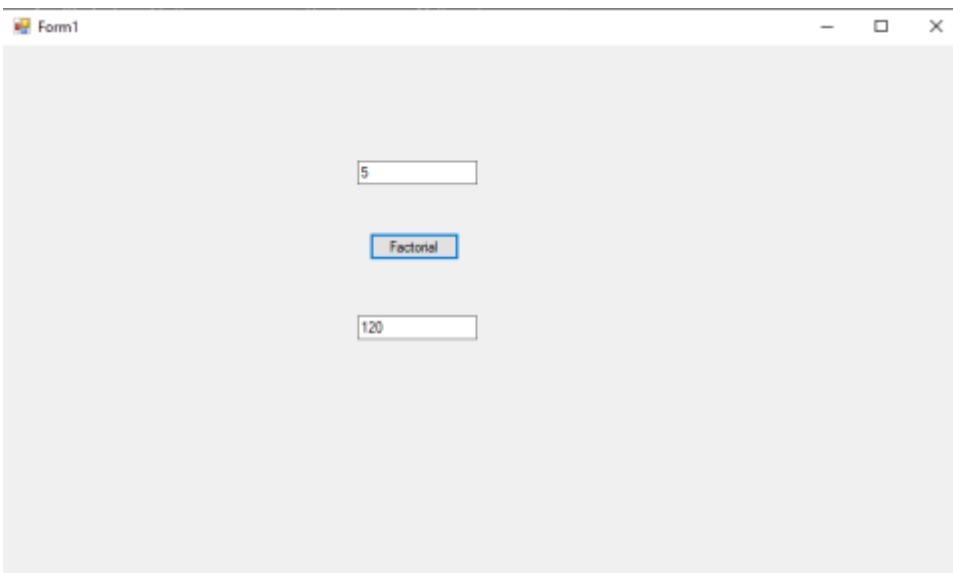
Code:

```csharp
using System;
using System.Windows.Forms;
using Surya;

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

        private void button1_Click(object sender, EventArgs e)
        {
            Mathematics m = new Mathematics();
            int input = Convert.ToInt32(textBox1.Text);
            m.input = input;
            int fact = m.GetFact();

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

Output:

10. What is the use of partial classes in C#

Partial Class: 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. A partial class is created by using a partial keyword. This keyword is also useful to split the functionality of methods, interfaces, or structure into multiple files.

Code:

Opp1:

```csharp
/************************************************************************
* Author: Surya Teja
* Purpose: Operations
* ************************************************************************/

namespace Operations
{
    public partial class Opp1
    {
        int a, b;
        /// <summary>
        /// Adding two numbers
        /// </summary>
        /// <returns>Sum of 2 Numbers</returns>
        public int Add(int a, int b)
        {
            return a + b;
        }
        /// <summary>
        /// Subract Two numbers
        /// </summary>
        /// <returns>Sub of 2 Numbers</returns>
        public int Sub(int a, int b)
        {
            return a - b;
        }
    }
}


Opp2:


/************************************************************************
* Author: Surya Teja
* Purpose: Operations
* ************************************************************************/

namespace Operations
{
    public partial class Opp2
    {/// <summary>
    /// Multiplaction of Two Numbers
    /// </summary>
    /// <param name="a"></param>
    /// <param name="b"></param>
```

```csharp
    /// <returns>Mul of 2 Numbers</returns>
    public int Mul(int a, int b)
    {
        return a * b;
    }
    /// <summary>
    /// Division of Two Numbers
    /// </summary>
    /// <param name="a"></param>
    /// <param name="b"></param>
    /// <returns>Div of 2 Numbers</returns>
    public int Div(int a, int b)
    {
        return a / b;
    }
    }
}
```

Main:

```csharp
using System;
using Surya;
using Operations;

/*********************************************************************
* Author: Surya Teja
* Purpose: Clint
* *******************************************************************/

namespace Clint
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Mathematics m = new Mathematics();
            Opp1 op1 = new Opp1();
            Opp2 op2 = new Opp2();

            Console.WriteLine("\n*****Mathematics*****\n");
            m.ReadNumber();
            Console.WriteLine($"Factorial of {m.input} is {m.GetFact()}");

            Console.WriteLine("\n*****Operations*****\n");
            Console.WriteLine($"Addition of A and B is {op1.Add(20, 10)}");
            Console.WriteLine($"Subraction of A and B is {op1.Sub(20, 10)}");
            Console.WriteLine($"Multiplation of A and B is {op2.Mul(20, 10)}");
            Console.WriteLine($"Divison of A and B is {op2.Div(20, 10)}");

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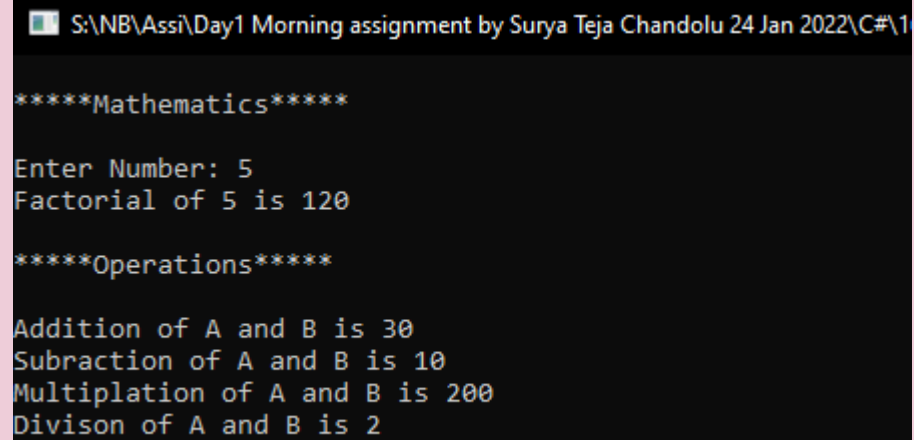
Output:

```
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*****Mathematics*****

Enter Number: 5
Factorial of 5 is 120

*****Operations*****

Addition of A and B is 30
Subraction of A and B is 10
Multiplation of A and B is 200
Divison of A and B is 2
```