Feb 3rd Morning Assignment

By Surya Teja Chandolu

1. Write a C# program to read input from user and print
   a. factorial of a number
   b. factors of a number
   c. check if it prime or not

Code:

```csharp
using System;

/***********************************************************************
* Author: Surya Teja
* Purpose: Write a C# program to read input from user and print
                a. factorial of a number
                b. factors of a number
                c. check if it prime or not
* **********************************************************************/


namespace MathProblems
{
    public class Problems
    {
        private int input;

        /// <summary>
        /// User input for MathProblems.
        /// </summary>
        public void ReadData()
        {
            Console.Write("Enter Number: ");
            input = Convert.ToInt32(Console.ReadLine());
        }

        /// <summary>
        /// Factorial of user input
        /// </summary>
        public void Factorial()
        {
            int fact = 1;
            for (int i = 1; i <= input; i++)
                fact = fact * i;
            Console.WriteLine($"Factorial of {input} is {fact}.");
        }
        /// <summary>
        /// Factors of user input
        /// </summary>
        public void Factors()
        {
            Console.Write($"Factors of {input} are ");
            for (int i = 1; i <= input; i++)
            {
                if (input % i == 0)
                    Console.Write($"{i} ");
            }
            Console.WriteLine();
        }
        /// <summary>
```
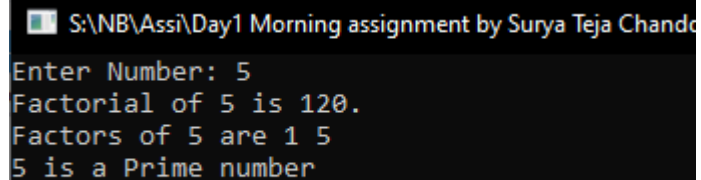
```csharp
        /// Prime of user input
        /// </summary>
        public void Prime()
        {
            int i;
            for(i = 2;i <= input; i++)
            {
                if (input % i == 0)
                    break;
            }
            if (i == input)
                Console.WriteLine($"{input} is a Prime number");
            else
                Console.WriteLine($"{input} is not a Prime number");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Problems prob = new Problems();
            prob.ReadData();
            prob.Factorial();
            prob.Factors();
            prob.Prime();

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

Output:

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

```
Enter Number: 5
Factorial of 5 is 120.
Factors of 5 are 1 5
5 is a Prime number
```

2. Write C# program to read two numbers from use and print
   a. sum of two numbers.
   b. difference of two numbers.
   c. product of two numbers.
   d. division of two numbers.

Code:

```csharp
using System;

/********************************************************************
* Author: Surya Teja
* Purpose: Write C# program to read two numbers from use and print
              a. sum of two numbers
              b. difference of two numbers
              c. product of two numbers
              d. division of two numbers.
* ********************************************************************/

namespace MathOperations
{
    public class Operators
    {
        private int firstNumber;
        private int secondNumber;
        /// <summary>
        /// Reading Numbers from user
        /// </summary>
        public void ReadData()
        {
            Console.Write("Enter First Number: ");
            firstNumber = Convert.ToInt32(Console.ReadLine());

            Console.Write("Enter Second Number: ");
            secondNumber = Convert.ToInt32(Console.ReadLine());
        }

        /// <summary>
        /// Adding two numbers
        /// </summary>
        /// <returns>sum of two numbers</returns>

        public int Addition()
        {
            return firstNumber + secondNumber;
        }

        /// <summary>
        /// Subract two numbers
        /// </summary>
        /// <returns>Difference of two numbers</returns>

        public int Difference()
        {
            return firstNumber – secondNumber;
        }

        /// <summary>
        /// Multiply two numbers
        /// </summary>
        /// <returns>Product of two numbers</returns>

        public int Product()
        {
```

```csharp
            return firstNumber * secondNumber;
        }/// <summary>
        /// Divide two numbers
        /// </summary>
        /// <returns>Division of two numbers</returns>

        public int Division()
        {
            return firstNumber / secondNumber;
        }

    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Operators op = new Operators();
            op.ReadData();
            Console.WriteLine($"Addition of two numbers are {op.Addition()}.");
            Console.WriteLine($"Difference of two numbers are
{op.Difference()}.");
            Console.WriteLine($"Product of two numbers are {op.Product()}.");
            Console.WriteLine($"Divison of two numbers are {op.Division()}.");

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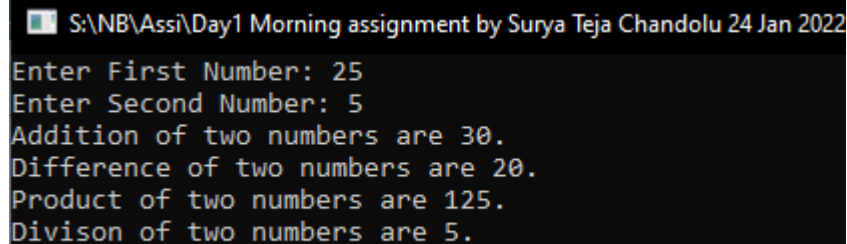
Output:


```
S:\NB\Assi\Day1 Morning assignment by Surya Teja Chandolu 24 Jan 2022
Enter First Number: 25
Enter Second Number: 5
Addition of two numbers are 30.
Difference of two numbers are 20.
Product of two numbers are 125.
Divison of two numbers are 5.
```

3. Create an employee class with below variables id, name, salary, company write methods to read data and print data.

Code:

```csharp
using System;

/************************************************************************
* Author: Surya Teja
* Purpose: Create an employee class with below variables id, name, salary,
company write methods to read data and print data.
* ************************************************************************/

namespace EmployeeDetails
{
    class Employee
    {
        private int id;
        private string name;
        private int salary;

        public static string company = "NationsBenefits";

        /// <summary>
        /// Get input employee details
        /// </summary>

        public void ReadData()
        {
            Console.Write("Enter Emloyee Id: ");
            id = Convert.ToInt32(Console.ReadLine());

            Console.Write("Enter Emloyee Name: ");
            name = Console.ReadLine();

            Console.Write("Enter Emloyee Salary: ");
            salary = Convert.ToInt32(Console.ReadLine());
        }

        /// <summary>
        /// Print the employee details
        /// </summary>

        public void Printdata()
        {
            Console.WriteLine($"\nEmployee Id {id}, Employee Name {name},
Employee Salary {salary}, Company name {company}.");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Employee emp = new Employee();
            emp.ReadData();
            emp.Printdata();

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

Output:

```
Enter Emloyee Id: 2
Enter Emloyee Name: Surya
Enter Emloyee Salary: 5000

Employee Id 2, Employee Name Surya, Employee Salary 5000, Company name NationsBenefits.
```

4. Research and find the difference between normal variable and static variable.

Normal Variable	Static Variable
Normal variables can be accessed using instance of a class.	Static variables can be accessed using class name.
Normal variables cannot be accessed inside a static method.	Static variables can be accessed by static and normal methods.
Normal method do not reduce the memory used.	Static method reduce the memory used.
Normal variables are used in same instance of a class.	Static variables are shared among all instance.
Normal variable is like local variable.	Static Variable is like Global Variable.

5. Write five points discussed about constructor

a. A Constructor is used to initialize class variables while creating an object.

b. By default, we will have default constructor which will initialize to default values.

c. After creating user define constructor the default constructor will be gone.

d. If you need a default constructor with the user define constructor, create your own default constructor.

e. Constructor name should be same as your class name.

f. If your using same variables in constructor variables as that of the class variables, use this. to differentiate with the class variables.

g. EX: this.id = id

Code:

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

/***********************************************************************
* Author: Surya Teja
* Purpose: Create Employee class with two constructors as discussed in the
class.
* ***********************************************************************/

namespace EmployeeDetailsUsingConstructor
{
    class Employee
    {
        private int id;
        private string name;
        private int salary;

        public static string company = "NationsBenefits";

        /// <summary>
        /// Default Constructor
        /// </summary>

        public Employee()
        {
            this.id = 0;
            this.name = null;
            this.salary = 0;
        }

        /// <summary>
        /// User Define Constructor
        /// </summary>
        /// <param name="id"></param>
        /// <param name="name"></param>
        /// <param name="salary"></param>

        public Employee(int id, string name, int salary)
        {
            this.id = id;
            this.name = name;
            this.salary = salary;
        }

        /// <summary>
        /// Get input employee details
        /// </summary>

        public void ReadData()
        {
            Console.Write("Enter Emloyee Id: ");
            id = Convert.ToInt32(Console.ReadLine());

            Console.Write("Enter Emloyee Name: ");
            name = Console.ReadLine();
```

```
            Console.Write("Enter Emloyee Salary: ");
            salary = Convert.ToInt32(Console.ReadLine());
        }

        /// <summary>
        /// Print the employee details
        /// </summary>

        public void Printdata()
        {
            Console.WriteLine($"\nEmployee Id {id}, Employee Name {name},
Employee Salary {salary}, Company name {company}.");
        }
    }
    internal class Program
    {
        static void Main(string[] args)
        {
            Employee emp = new Employee();
            emp.ReadData();
            emp.Printdata();

            Employee emp1 = new Employee(2, "Surya", 5000);
            emp1.Printdata();

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

Output:

```
S:\NB\Assi\Day1 Morning assignment by Surya Teja Chandolu 24 Jan 2022\C#\Feb3Morning\EmployeeDetailsUsingConstructor\bin\Debug\
Enter Emloyee Id: 1
Enter Emloyee Name: Teja
Enter Emloyee Salary: 2000

Employee Id 1, Employee Name Teja, Employee Salary 2000, Company name NationsBenefits.

Employee Id 2, Employee Name Surya, Employee Salary 5000, Company name NationsBenefits.
```