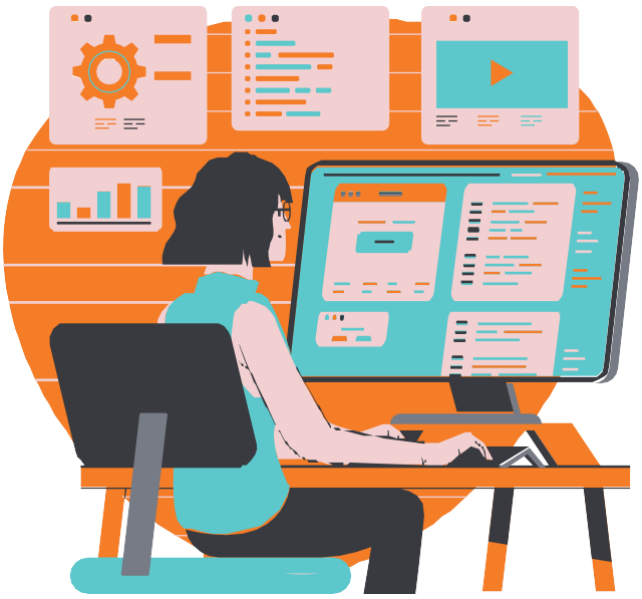

Demo document

Phase - I

Prepared By:
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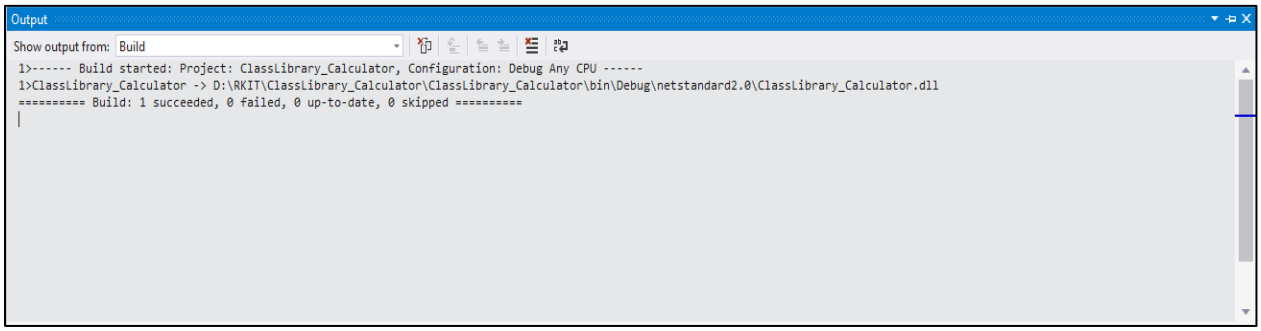
Windows App, Class Library

Class Library

Calculator.cs

```
using System;

namespace ClassLibrary_Calculator
{
    public class Calculator
    {
        #region Method_Addtion
        public double Addition(double Number1 , double Number2)
        {
            return Number1 + Number2;
        }
        #endregion Method_Addition

        #region Method_Subtraction
        public double Subtraction(double Number1, double Number2)
        {
            return Number1 - Number2;
        }
        #endregion Method_Subtraction

        #region Method_Multiplication
        public double Multiplication(double Number1, double Number2)
        {
            return Number1 * Number2;
        }
        #endregion Method_Multiplication

        #region Method_Division
        public double Division(double Number1, double Number2)
        {
            return Number1 / Number2;
        }
        #endregion Method_Division

        #region Method_Modulo
        public double Modulo(double Number1, double Number2)
        {
            return Number1 % Number2;
        }
        #endregion Method_Modulo
    }
}
```

Output:



Windows Application

- Here Windows Application (Calculator) is using Class Library (Calculator.cs).

FormCalculator.cs

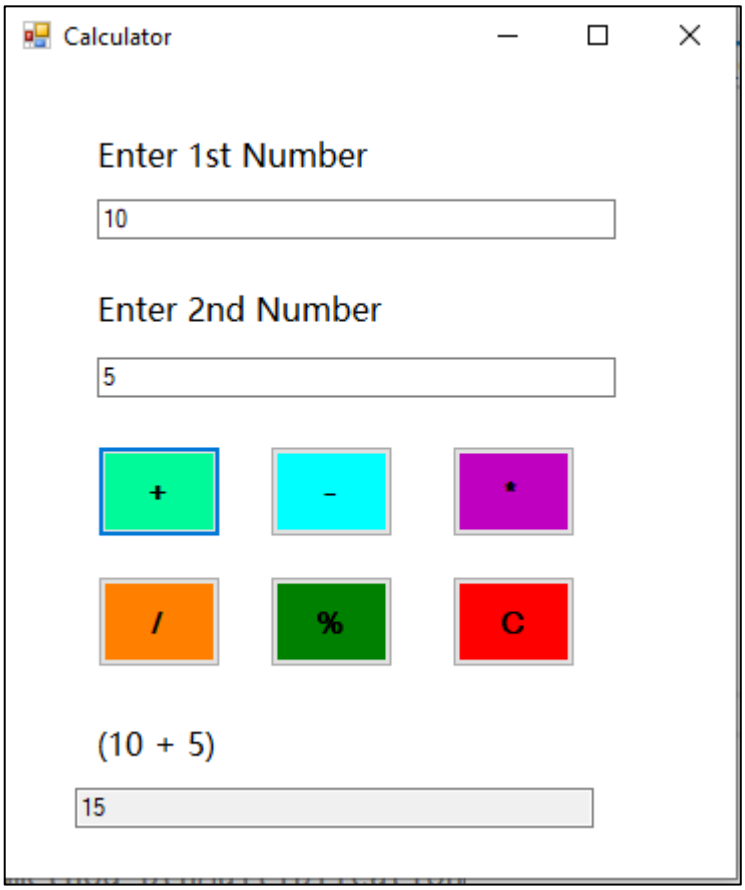
```
using System;
using System.Windows.Forms;
using ClassLibrary_Calculator;

namespace WindowsFormsApp_Calculator
{
    public partial class FormCalculator : Form
    {
        #region Constructor
        public FormCalculator()
        {
            InitializeComponent();
        }
        #endregion Constructor

        #region objects_declaration
        Calculator objcalculator = new Calculator();
        #endregion objects_declaration

        #region method_btnAddition
        private void btnAddition_Click(object sender, EventArgs e)
        {
            if (string.IsNullOrEmpty(txtNumber1.Text) || string.IsNullOrEmpty
            (txtNumber2.Text))
            {
                txtAnswer.Text = "Number can't be blank";
            }
            else if (Convert.ToDouble(txtNumber1.Text) < 0 || Convert.ToDouble
           (txtNumber2.Text) < 0)
            {
                txtAnswer.Text = "Invalid Input";
            }
            else
            {
                double answer;
                lblAnswer.Text = "(" + txtNumber1.Text.ToString().Trim() + " + " +
              txtNumber2.Text.ToString().Trim() + ")";
```

```
            answer = objcalculator.Addition(Convert.ToDouble(txtNumber1.Text),
            Convert.ToDouble(txtNumber2.Text));

                txtAnswer.Text = Convert.ToString(answer);
            }
        }
        #endregion method_btnAddition

        #region method_btnSubtraction
        private void btnSubtraction_Click(object sender, EventArgs e)
        {
            if (string.IsNullOrEmpty(txtNumber1.Text) || string.IsNullOrEmpty
            (txtNumber2.Text))
            {
                txtAnswer.Text = "Number can't be blank";
            }
            else if (Convert.ToDouble(txtNumber1.Text) < 0 || Convert.ToDouble
            (txtNumber2.Text) < 0)
            {
                txtAnswer.Text = "Invalid Input";
            }
            else
            {
                double answer;
                lblAnswer.Text = "(" + txtNumber1.Text.ToString().Trim() + " -
                " + txtNumber2.Text.ToString().Trim() + ")";

                answer = objcalculator.Subtraction(Convert.ToDouble(txtNumber1.Text),
                Convert.ToDouble(txtNumber2.Text));

                txtAnswer.Text = Convert.ToString(answer);
            }
        }
        #endregion method_btnSubtraction

        #region method_btnClear
        private void btnClear_Click(object sender, EventArgs e)
        {
            txtNumber1.Text = String.Empty;
            txtNumber2.Text = String.Empty;
            txtAnswer.Text = String.Empty;
            lblAnswer.Text = String.Empty;
        }
        #endregion method_btnClear

        #region method_btnMultiplication
        private void btnMultiplication_Click(object sender, EventArgs e)
        {
            if (string.IsNullOrEmpty(txtNumber1.Text) || string.IsNullOrEmpty
            (txtNumber2.Text))
            {
                txtAnswer.Text = "Number can't be blank";
            }
            else if (Convert.ToDouble(txtNumber1.Text) < 0 || Convert.ToDouble
            (txtNumber2.Text) < 0)
            {
                txtAnswer.Text = "Invalid Input";
            }
```

```
            else
            {
                double answer;
                lblAnswer.Text = "(" + txtNumber1.Text.ToString().Trim() + " * " +
                txtNumber2.Text.ToString().Trim() + ")";

                answer = objcalculator.Multiplication(Convert.ToDouble
                (txtNumber1.Text), Convert.ToDouble(txtNumber2.Text));

                txtAnswer.Text = Convert.ToString(answer);
            }
        }
        #endregion method_btnMultiplication

        #region method_btnDivision
        private void btnDivision_Click(object sender, EventArgs e)
        {
            if (string.IsNullOrEmpty(txtNumber1.Text) || string.IsNullOrEmpty
            (txtNumber2.Text))
            {
                txtAnswer.Text = "Number can't be blank";
            }
            else if (Convert.ToDouble(txtNumber1.Text) < 0 || Convert.ToDouble
            (txtNumber2.Text) < 0)
            {
                txtAnswer.Text = "Invalid Input";
            }
            else
            {
                double answer;
                lblAnswer.Text = "(" + txtNumber1.Text.ToString().Trim() + " / " +
                txtNumber2.Text.ToString().Trim() + ")";

                answer = objcalculator.Division(Convert.ToDouble(txtNumber1.Text),
                Convert.ToDouble(txtNumber2.Text));

                txtAnswer.Text = Convert.ToString(answer);
            }
        }
        #endregion method_btnDivision

        #region method_btnModulo
        private void btnModulo_Click(object sender, EventArgs e)
        {
            if (string.IsNullOrEmpty(txtNumber1.Text) || string.IsNullOrEmpty
            (txtNumber2.Text))
            {
                txtAnswer.Text = "Number can't be blank";
            }
            else if (Convert.ToDouble(txtNumber1.Text) < 0 || Convert.ToDouble
            (txtNumber2.Text) < 0)
            {
                txtAnswer.Text = "Invalid Input";
            }
            else
            {
                double answer;
                lblAnswer.Text = "(" + txtNumber1.Text.ToString().Trim() + " % " +
             txtNumber2.Text.ToString().Trim() + ")";
```

```
            answer = objcalculator.Modulo(Convert.ToDouble(txtNumber1.Text),
            Convert.ToDouble(txtNumber2.Text));

               txtAnswer.Text = Convert.ToString(answer);
            }
        }
        #endregion method_btnModulo
    }
}
```

Output:



Create First C# Program “Hello World”

What is Namespace?

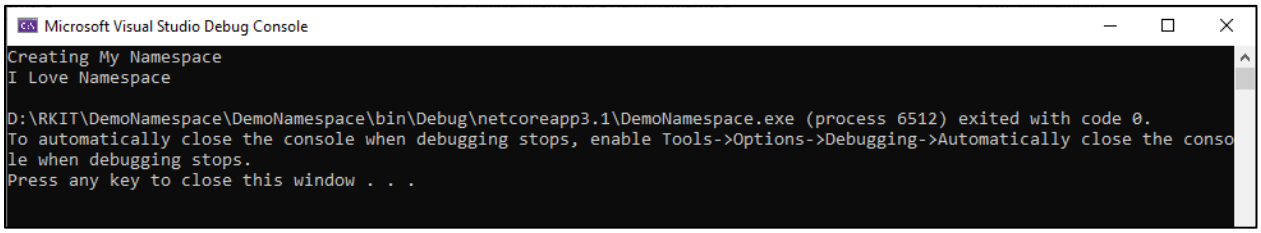
DemoNamespace.cs

```
using System;

namespace MyNewNamespace
{
    class DemoNamespace
    {
        public static void MyMethod()
        {
            System.Console.WriteLine("Creating My Namespace");
        }

        public void ILoveNamespace()
        {
            System.Console.WriteLine("I Love Namespace");
        }
    }
}
```

Using_Namespace.cs

```
using System;
using MyNewNamespace;

namespace Using_DemoNamespace
{
    class Using_Namespace
    {
        static void Main(string[] args)
        {
            // Method-1 to use namespace methods
            MyNewNamespace.DemoNamespace.MyMethod();

            //Method-2 to use namespace methods
            DemoNamespace objNamespace = new DemoNamespace();
            objNamespace.ILoveNamespace();

        }
    }
}
```

Output:

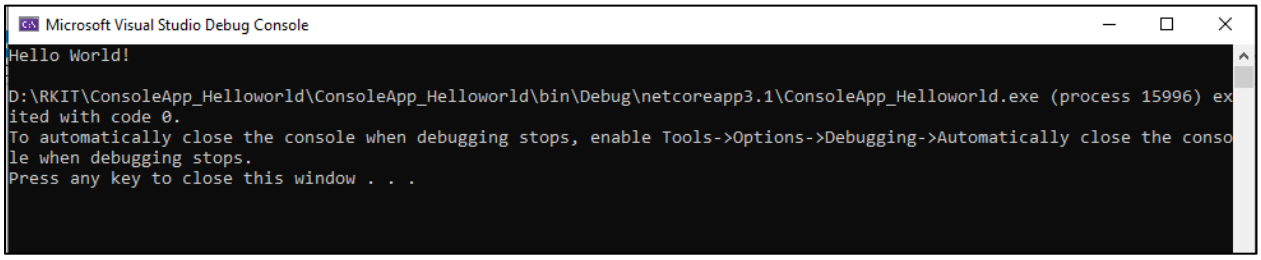


What is Class?

Helloworld.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Helloworld
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello World!");
        }
    }
}
```

Output:

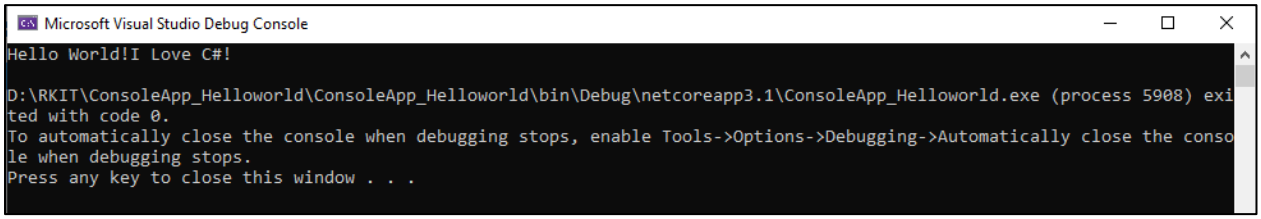


Variable And Method Declaration

Helloworld.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Helloworld
    {
        static void Main(string[] args)
        {
            //declaring string variable newword
            string newwords;

            //Assigning value to the variable newword
            newwords = "I Love C#!";

            //declaring a method printConsole
            void printConsole()
            {
                Console.WriteLine("Hello World!" + newwords);
            }

            //calling method printConsole
            printConsole();

        }
    }
}
```

Output:



Understanding datatypes & variables with conversion

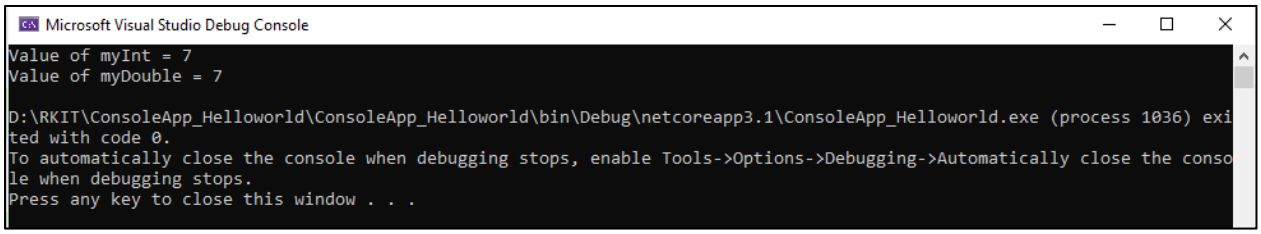
Datatype Conversion

Implicit / Automatic Type Conversion:

Datatype_conversion.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Datatype_conversion
    {
        static void Main(string[] args)
        {
            int myInt = 7;
            double myDouble = myInt;    // Implicit casting: int to double

            Console.WriteLine("Value of myInt = " + myInt);
            Console.WriteLine("Value of myDouble = " + myDouble);
        }
    }
}
```

Output:

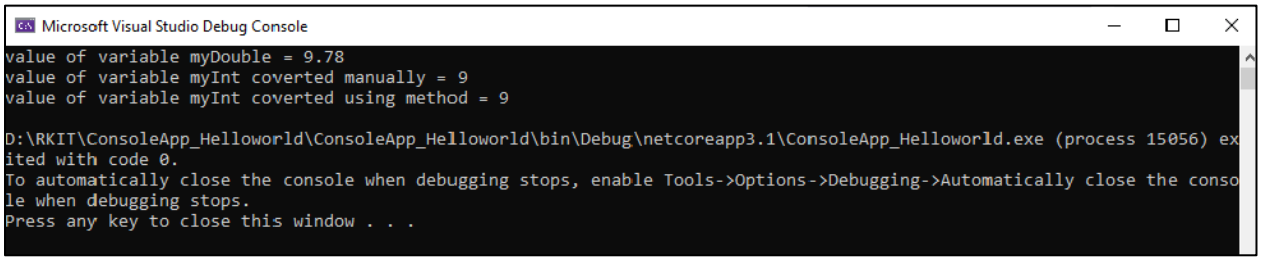


Explicit Type conversion:

Datatype_conversion.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Datatype_conversion
    {
        static void Main(string[] args)
        {
            double myDouble = 9.78;
            int myInt = (int)myDouble;    // Explicit casting manually:
            double to int

            Console.WriteLine("value of variable myDouble = " + myDouble);

            Console.WriteLine("value of variable myInt coverted
            manually = " + myInt);

            Console.WriteLine("value of variable myInt coverted
            using method = " + Convert.ToString(myInt));    // Explicit
            casting using method: int to string
        }
    }
}
```

Output:



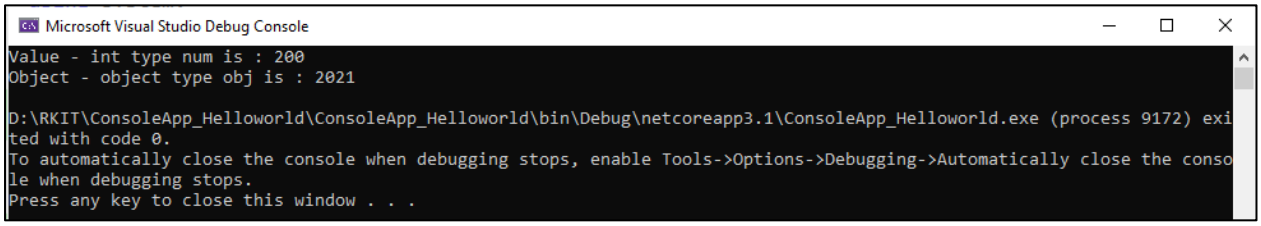
Boxing/Unboxing

Boxing

Boxing_Unboxing.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Boxing_Unboxing
    {
        static void Main(string[] args)
        {
            int num = 2021;

            // boxing
            object obj = num;

            // value of num to be change
            num = 200;

            System.Console.WriteLine("Value - int type num is : " + num);

            System.Console.WriteLine("Object - object type obj is : " + obj);
        }
    }
}
```

Output:

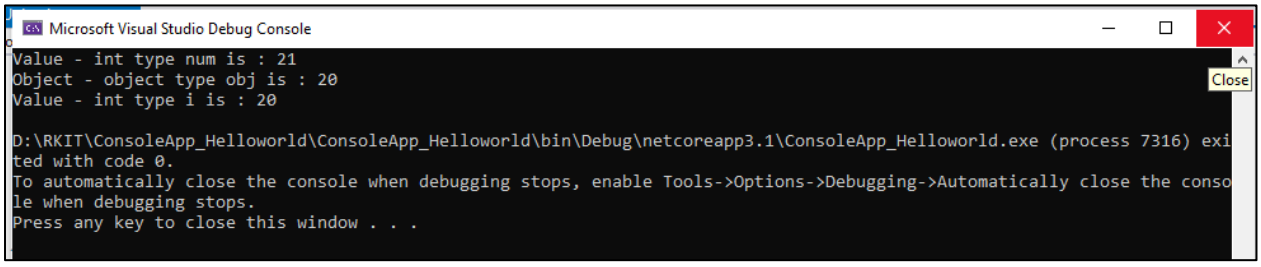


Unboxing

Boxing_Unboxing.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class Boxing_Unboxing
    {
        static void Main(string[] args)
        {
            int num = 20;

            // boxing
            object obj = num;

            //unboxing
            int i = (int)obj;

            //assigning new value to num
            num = 21;

            System.Console.WriteLine("Value - int type num is : " + num);

            System.Console.WriteLine("Object - object type obj is : " + obj);

            System.Console.WriteLine("Value - int type i is : " + i);
        }
    }
}
```

Output:



Understanding Decision making & statements

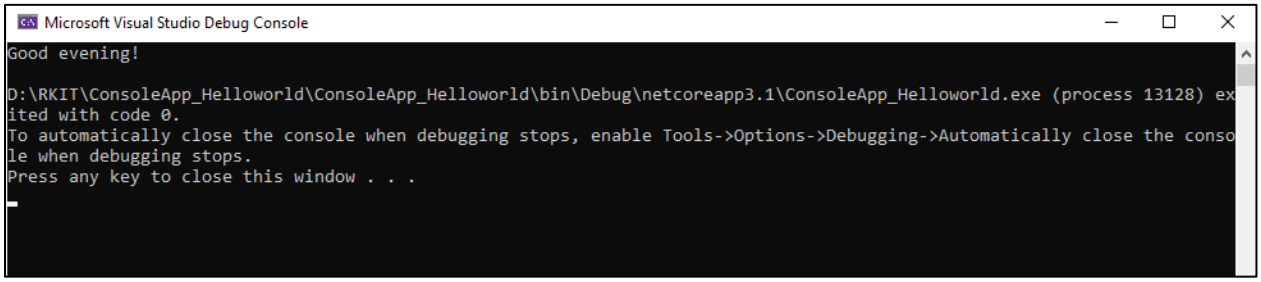
if-else

if-else statement

If_else.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class if_else
    {
        static void Main(string[] args)
        {
            int time = 20;
            if (time < 17)
            {
                Console.WriteLine("Have a good day!");
            }
            else
            {
                Console.WriteLine("Good evening!");
            }
        }
    }
}
```

Output:

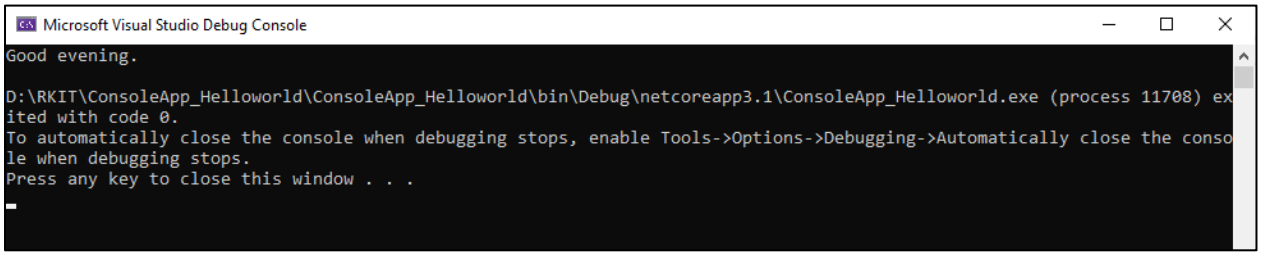


else-if statement

If_else.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class if_else
    {
        static void Main(string[] args)
        {
            int time = 22;
            if (time < 10)
            {
                Console.WriteLine("Good morning.");
            }
            else if (time < 20)
            {
                Console.WriteLine("Good day.");
            }
            else
            {
                Console.WriteLine("Good evening.");
            }
        }
    }
}
```

Output:



Switch

Switch_case.cs

```
using System;

namespace ConsoleApp_Helloworld
{
    class switch_case
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Enter a day number:");
            int day = Convert.ToInt32(Console.ReadLine());
            switch (day)
            {
                case 1:
                    Console.WriteLine("Monday");
                    break;
                case 2:
                    Console.WriteLine("Tuesday");
                    break;
                case 3:
                    Console.WriteLine("Wednesday");
                    break;
                case 4:
                    Console.WriteLine("Thursday");
                    break;
                case 5:
                    Console.WriteLine("Friday");
                    break;
                case 6:
                    Console.WriteLine("Saturday");
                    break;
                case 7:
                    Console.WriteLine("Sunday");
                    break;
                default:
                    Console.WriteLine("Invalid input!");
                    break;
            }
        }
    }
}
```

Output: