Name :- Rohan Babulnath Kamble
Class :- S. Y. B. Sc. CS
PRN NO :- 2020420004
Subject Code :- USCS406

Practical No. 1

Aim:- Write C# programs for understanding C# basics involving:- a) Variables and Data Types b) Object-Based Manipulation c) Conditional Logic d) Loops e) Methods.

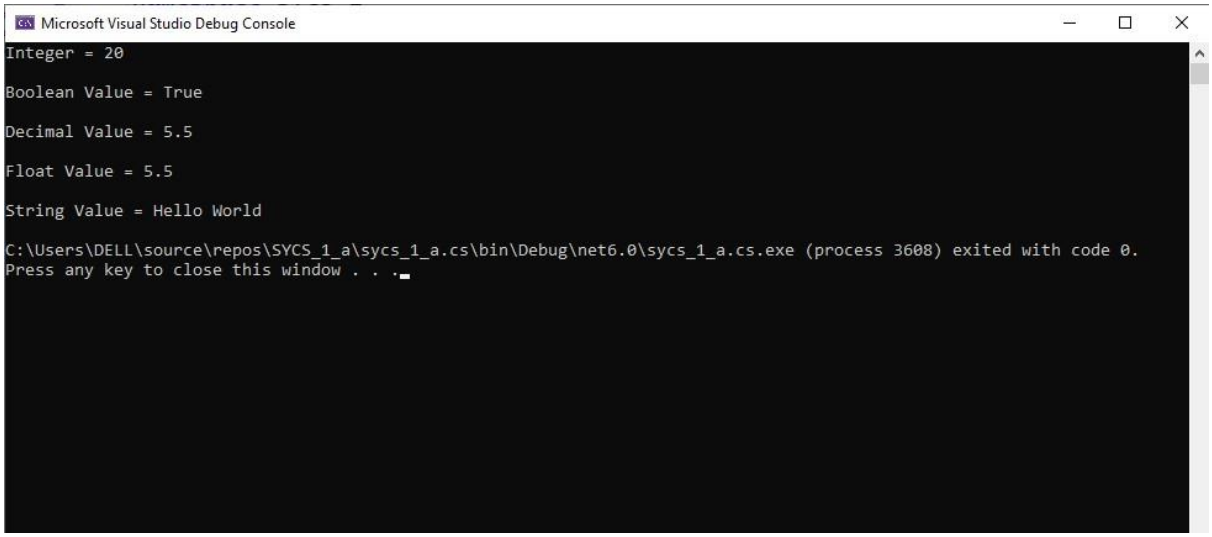
a)Variables and Data Types

Program :-

```
using System;
namespace sycs_1_a
{
  class sycs_1_a
  {
    static void Main(string[] args)
    {       int a = 20;
bool b = true;
double c = 5.5D;
float d = 5.5F;
     string val = "Hello World";
Console.WriteLine("Integer = " + a);
     Console.WriteLine("Boolean Value = " + b);
Console.WriteLine("Decimal Value = " + c);
     Console.WriteLine("Float Value = " + d);
      Console.WriteLine("String Value = " + val);
    }
  }
```

}

Output:-



b) Object-Based Manipulation

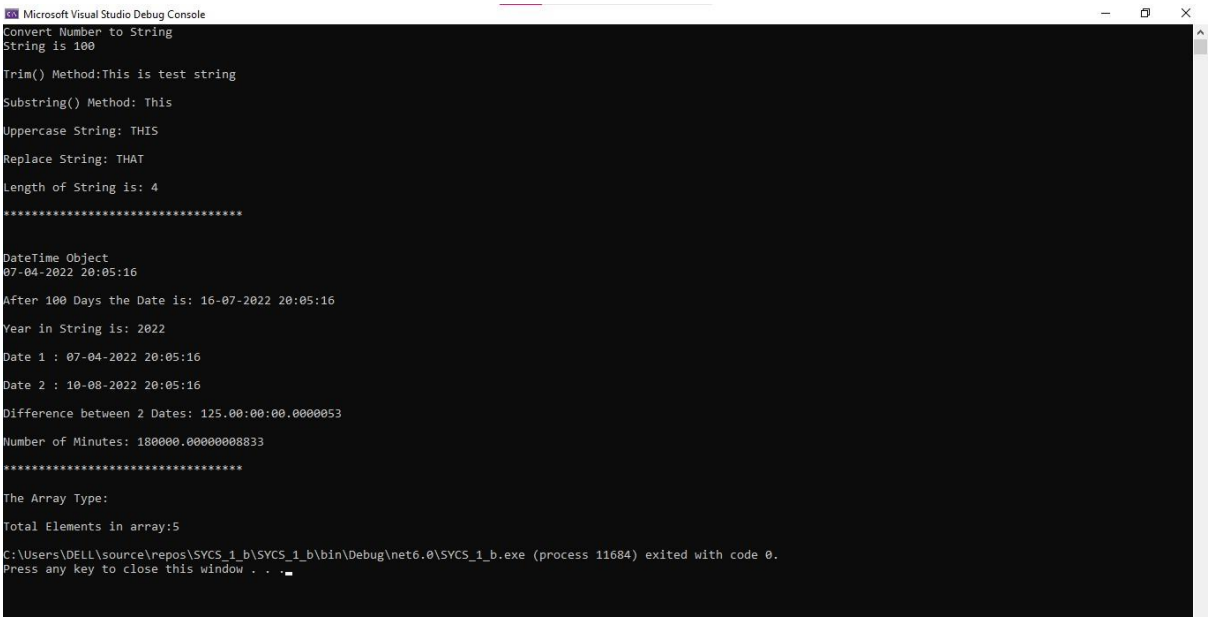
Program:-

```
using System;
namespace sycs_1_b
{
  class sycs_1_b
   {
      static void Main(string[] args)
      {
         string mystring;
         int a = 100;
         Console.WriteLine("Convert Number to String");
         mystring = a.ToString();
         Console.WriteLine("String is " + mystring);
```

```
        Console.WriteLine(mystring.GetType());

        string s = "This is test string";

        s = s.Substring(0, 4);
        Console.WriteLine("\nSubstring() Method: " + s);

        s = s.ToUpper();
        Console.WriteLine("\nUppercase String: " + s);

        s = s.Replace("IS", "AT");
        Console.WriteLine("\nReplace String: " + s);

        int length = s.Length;
        Console.WriteLine("\nLength of String is: " + length);

       Console.WriteLine("\n*********************************");

        Console.WriteLine("\n\nDateTime Object");
        DateTime myDate = DateTime.Now;
        Console.WriteLine(myDate);

        myDate = myDate.AddDays(100);
        Console.WriteLine("\nAfter 100 Days the Date is: " + myDate);
string dateString = myDate.Year.ToString();
        Console.WriteLine("\nYear in String is: " + dateString);

        DateTime myDate1 = DateTime.Now;
        DateTime myDate2 = DateTime.Now.AddHours(3000);
        Console.WriteLine("\nDate 1 : " + myDate1);
        Console.WriteLine("\nDate 2 : " + myDate2);

        TimeSpan difference;
        difference = myDate2.Subtract(myDate1);
        Console.WriteLine("\nDifference between 2 Dates: " + difference);

        double numberOfMinutes;
        numberOfMinutes = difference.TotalMinutes;
        Console.WriteLine("\nNumber of Minutes: " + numberOfMinutes);
```

```
        Console.WriteLine("\n**********************************");

        Console.WriteLine("\nThe Array Type:");
int[] myArray = { 1, 2, 3, 4, 5, 6, 7 , 8, 9 };          int
numberOfElemnts;
        numberOfElemnts = myArray.Length;
        Console.WriteLine("\nTotal Elements in array:" + numberOfElemnts);
      }
   }
}
```

Output :-



c) Conditional Logic

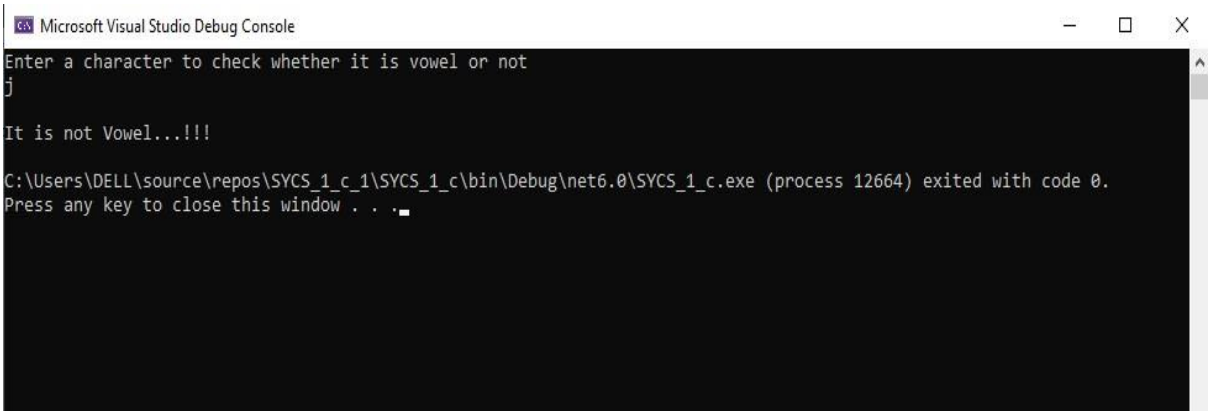
1) If…Else Condition:-

Program:-

```
using System;
namespace SYCS_1_c_a
{
   class SYCS_1_c_a
   {
      static void Main(string[] args)
      {
         char ch;
```

```
        Console.WriteLine("Enter a character to check whether it is vowel or
not");
        ch = Convert.ToChar(Console.ReadLine());

        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')
{
            Console.WriteLine("\nIt is Vowel...!!!");
        }
else          {
           Console.WriteLine("\nIt is not Vowel...!!!");
        }
    }
  }
}
```

Output:-



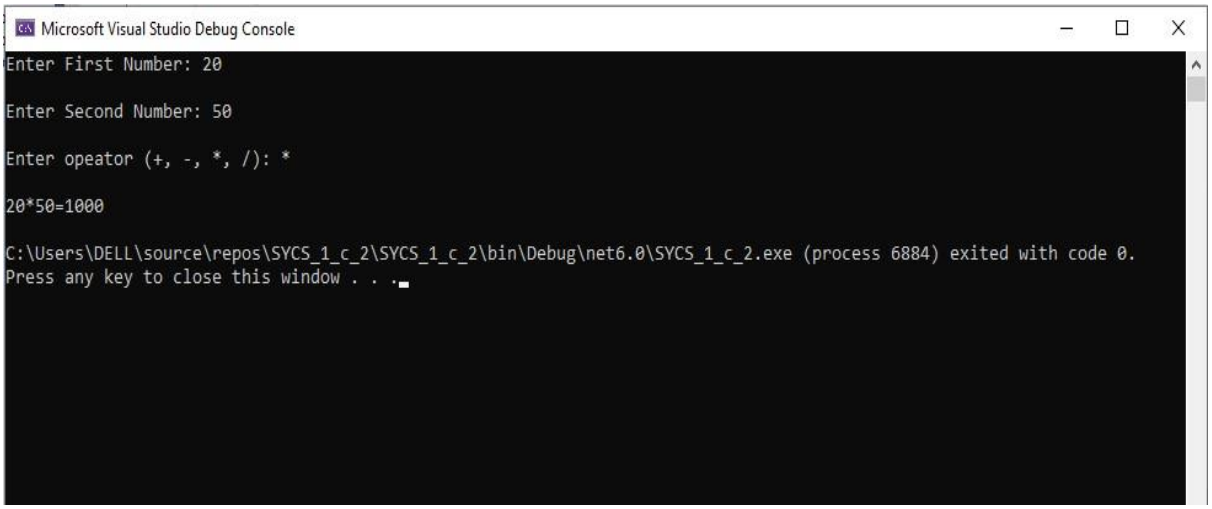
2) Switch Case:-

Program:-

```
using System;
namespace SYCS_1_c_2
{
   class SYCS_1_c_2
   {
      static void Main(string[] args)
      {
char op;
```

```
        int first, second, result;

        Console.Write("Enter First Number: ");
first = Convert.ToInt32(Console.ReadLine());
Console.Write("\nEnter Second Number: ");
second = Convert.ToInt32(Console.ReadLine());
Console.Write("\nEnter opeator (+, -, *, /): ");
op = (char)Console.Read();

        switch (op)
        {
            case
'+':
              result = first + second;
              Console.WriteLine("\n" + first + "+" + second + "=" + result);
break;
            case '-
':
              result = first - second;
              Console.WriteLine("\n" + first + "-" + second + "=" + result);
break;
            case
'*':
              result = first * second;
              Console.WriteLine("\n" + first + "*" + second + "=" + result);
break;
            case
'/':
              result = first / second;
              Console.WriteLine("\n" + first + "/" + second + "=" + result);
break;

default:
              Console.WriteLine("\nInvalid Operator");
break;
        }
    }
  }
}
```

Output:-



d) Loops

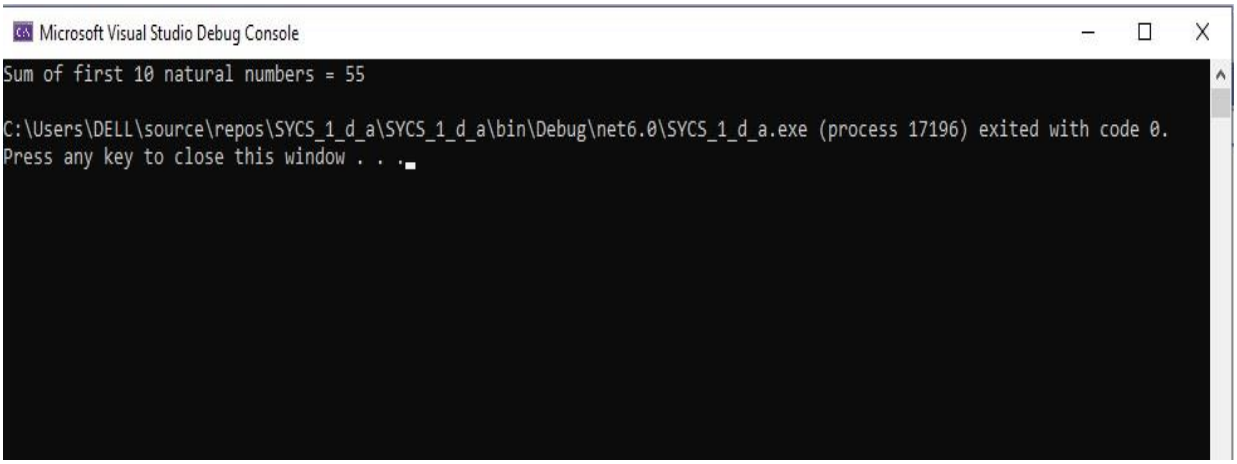
1) For Loop:-

Program:-

using System; namespace
sycs_1_d_1

```
{
   class sycs_1_d_1
   {
      public static void Main(string[] args)
      {
         int n = 10, sum = 0;
         for (int i = 1; i <= n; i++)
         {
            sum = sum + i;
         }
         Console.WriteLine("Sum of first {0} natural numbers = {1}", n, sum);
      }
}
}
```

Output:-



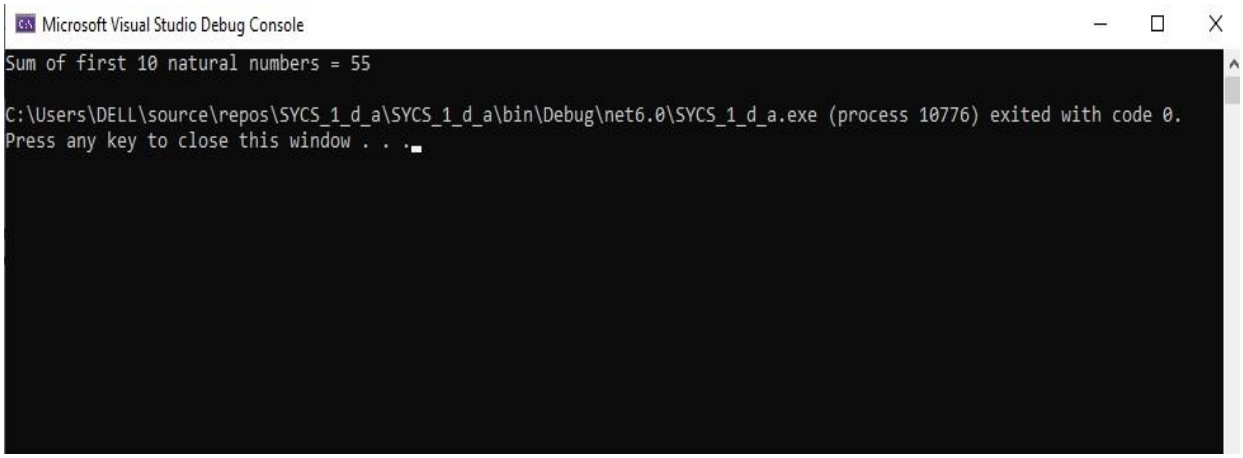
2) While Loop:-

Program:-

```
using System;
namespace sycs_1_d_2
{
   class sycs_1_d_2
   {
```

```
        public static void Main(string[] args)
        {
            int n = 10, sum = 0, i = 1;
while (i <= n)
            {
                sum = sum + i;
                i++;
}
            Console.WriteLine("Sum of first {0} natural numbers = {1}", n, sum);
        }

    }
}
```

Output:-



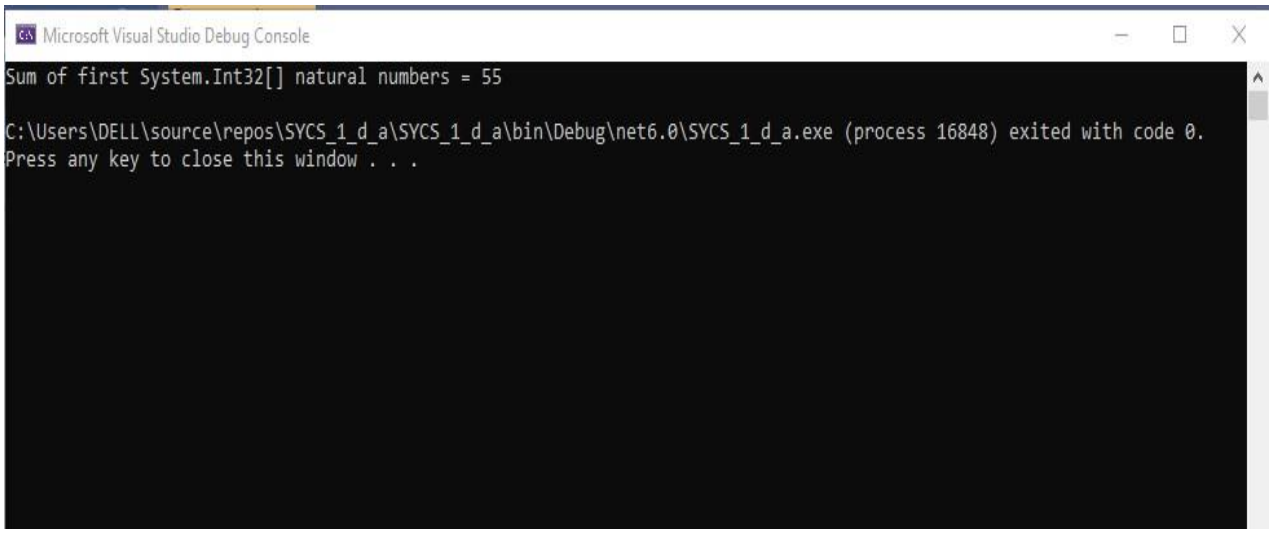
3) Foreach Loop:-

Program:-

```
using System; namespace
sycs_1_d_3
{
    class sycs_1_d_3
    {
```

```
        public static void Main(string[] args)
        {
            int sum = 0;
            int[] n = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
            foreach (int number in n)
            {
                sum = sum + number;
            }
            Console.WriteLine("Sum of first {0} natural numbers = {1}", n, sum);
        }

    }
}
```

Output:-



e) Methods

Method Overloading:-

Program:-

```
using System; namespace
SYCS_1_e
{
```

```
   class SYCS_1_e
   {

      // method with int parameter
      void display(int a)
      {
         Console.WriteLine("int type: " + a);
      }
      // method with string parameter
      void display(string b)
      {
         Console.WriteLine("string type: " + b);
      }
      static void Main(String[] args)
      {
         SYCS_1_e s1 = new SYCS_1_e();
s1.display(100);          s1.display("SYCS
Class");
         Console.ReadLine();
      }
   }
}
```

Output:-

Practical No. 2

Aim:- Write C# programs for Object oriented concepts of C# such as:- a) Program using classes b) Constructor and Function Overloading c) Inheritance d) Namespaces

a) Program using Classes:-

Program:-

```
using System;
namespace sycs_2_a
{
   class Employee
   {
      public string name;
      public void work(string work)
      {
        Console.WriteLine("Work: " + work);
      }

   }
   class EmployeeDrive
   {
      static void Main(string[] args)
      {
```

```
        // create Employee object
        Employee e1 = new Employee();

        Console.WriteLine("Employee 1");

        // set name of the Employee
e1.name = "Gloria";
         Console.WriteLine("\nName: " + e1.name);

        // call method of the Employee
e1.work("Coding");          Console.ReadLine();
      }
}
}
```

Output:-

b) Constructor and Function Overloading

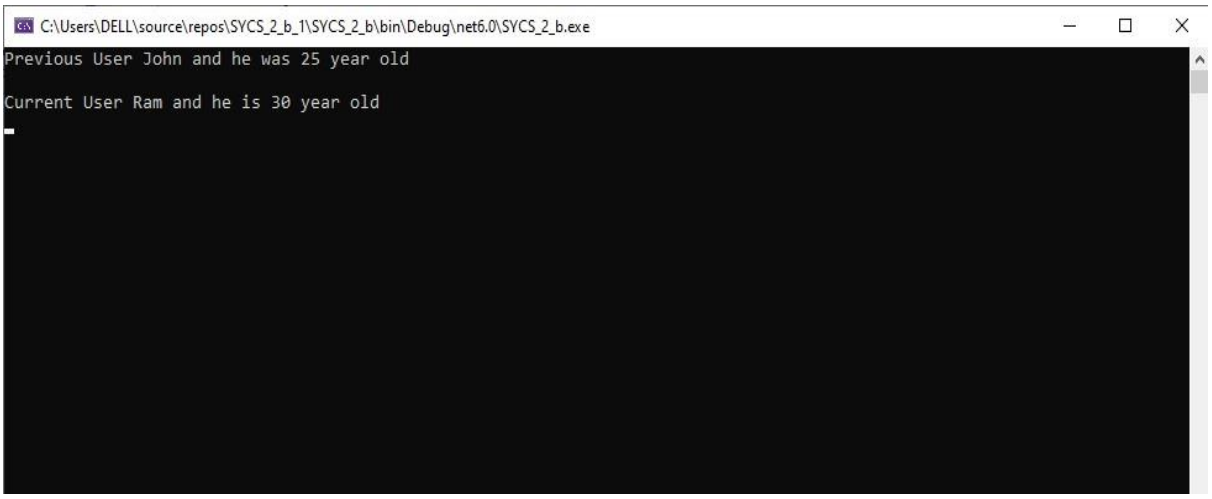
1) Constructor Overloading:-

Program:-

```
using System;
namespace sycs_2_b
{
   class gamescore
   {        string
user;
       int age;
       //Default Constructor
       public gamescore()
       {
          user = "John";
age = 25;
          Console.WriteLine("Previous User {0} and he was {1} year old", user,
age);
       }
       //Parameterized Constructor
       public gamescore(string name,int age1)
       {
          user = name;
age = age1;
          Console.WriteLine("\nCurrent User {0} and he is {1} year old", user,
age);
       }
       class Program
       {
          static void Main(string[] args)
          {
```

```
            //Default Constructor Called
            gamescore gs = new gamescore();

            //Overloaded Constructor
            gamescore gs1 = new gamescore("Ram", 30);
            Console.ReadLine();
        }
    }
  }
}
```

Output:-



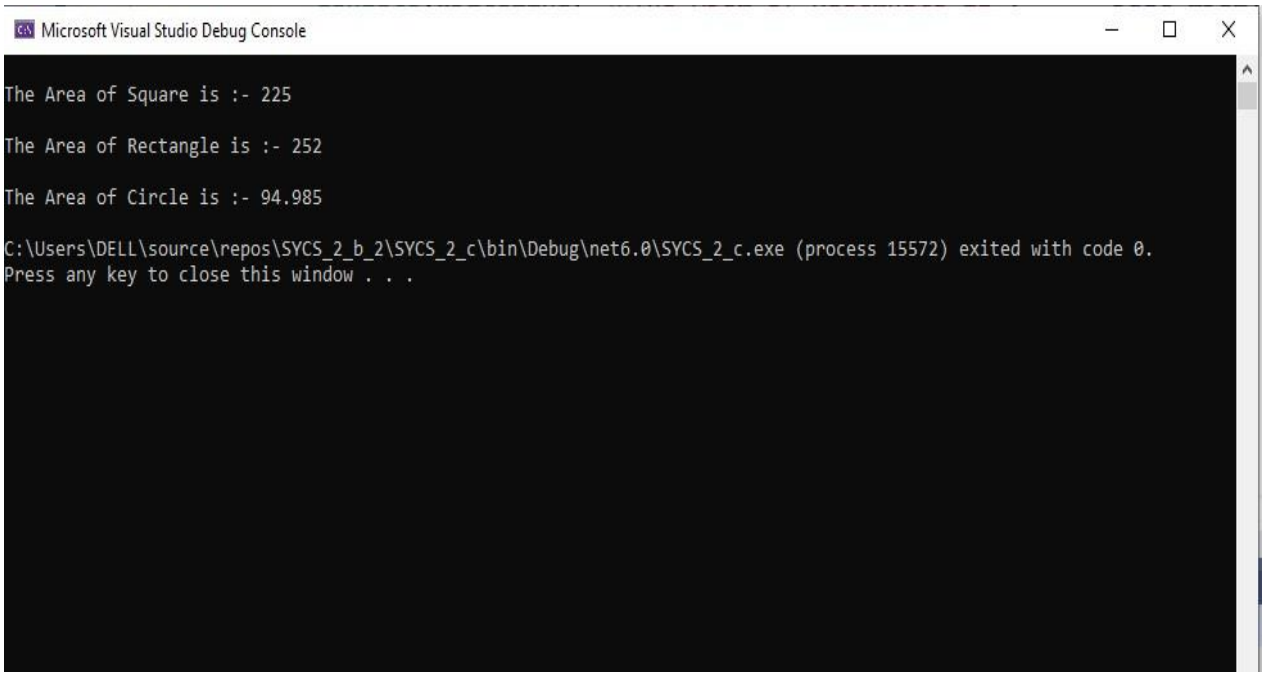
2. Function Overloading:-

Program:-

```
using System; namespace
SYCS_1_b
{
   class shape
   {

      public void Area(int side)
      {
         int square_area = side * side;
         Console.WriteLine("\nThe Area of Square is :- " + square_area);
      }
      public void Area(int length, int breadth)
      {
         int rect_area = length * breadth;
         Console.WriteLine("\nThe Area of Rectangle is :- " + rect_area);
      }
      public void Area(double radius)
      {
        double circle_area = 3.14 * radius * radius;
         Console.WriteLine("\nThe Area of Circle is :- " + circle_area);
      }
      class SYCS_1_b
      {
         static void Main(string[] args)
         {
          shape s = new shape();
s.Area(15);
          s.Area(14, 18);
          s.Area(5.5);
          Console.ReadKey();
         }
```

```
        }
    }
}
```

Output:-


Microsoft Visual Studio Debug Console
The Area of Square is :- 225
The Area of Rectangle is :- 252
The Area of Circle is :- 94.985
C:\Users\DELL\source\repos\SYCS_2_b_2\SYCS_2_c\bin\Debug\net6.0\SYCS_2_c.exe (process 15572) exited with code 0.
Press any key to close this window . . .

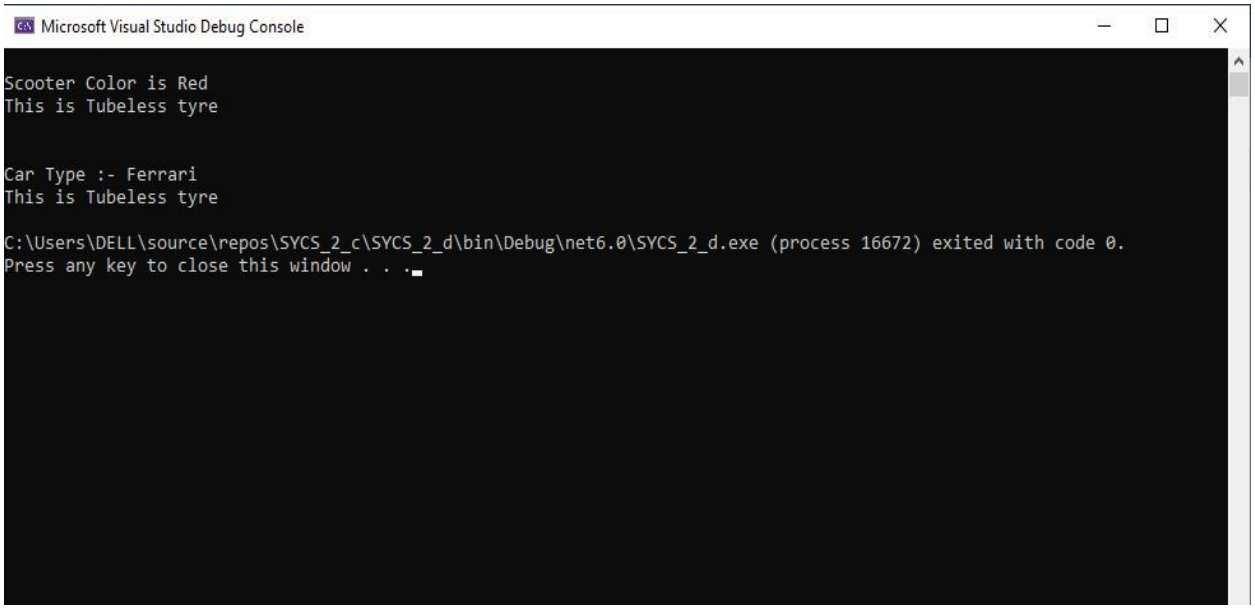
c) Inheritance:-

Program:-

```
using System;
namespace SYCS_2_d
{
   class SYCS_2_d
   {
     static void Main(string[] args)
     {
         Scooter sc = new Scooter();
         sc.ScooterType();

         Car c = new Car();
c.CarType();

         Console.ReadKey();
     }
   }
   //Creating Base Class
   class Tyre
   {

      protected void TyreType()
      {
         Console.WriteLine("This is Tubeless tyre");
      }
   }
   //Creating Child Class
   class Scooter : Tyre
   {

      public void ScooterType()
      {
        Console.WriteLine("\nScooter Color is Red");
        TyreType();
      }
   }
```

```
    //Creating Child Class
    class Car : Tyre
    {

        public void CarType()
        {
            Console.WriteLine("\n\nCar Type :- Ferrari");
            TyreType();
        }
    }
}
```

Output:-



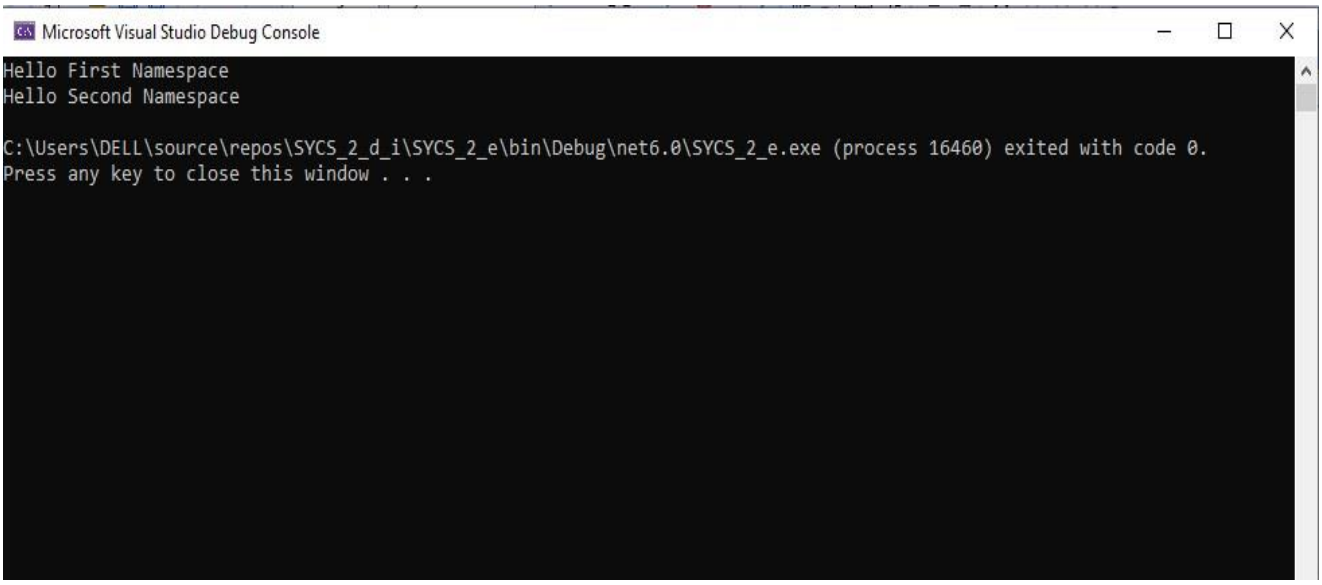
d) Namespaces:-

1) Example of namespace in C# where one namespace program accesses another namespace program.

Program:-

```
using System; namespace
First
{

   public class Hello
   {
      public void sayHello()
      {
         Console.WriteLine("Hello First Namespace");
      }
   }
}
namespace Second
{

   public class Hello
   {
      public void sayHello()
      {
         Console.WriteLine("Hello Second Namespace");
      }
   } }
public class TestNamespace
{

   public static void Main(String[] args)
   {
     First.Hello h1 = new First.Hello();
Second.Hello h2 = new Second.Hello();
     h1.sayHello();
h2.sayHello();
   }
}
```

Output:-



2) Example of namespace where we are using "using" keyword so that we don't have to use a complete name for accessing a namespace program.

Program:-

```
using System;
using First; using
```

```
Second;
namespace First
{
   public class Hello
   {
      public void sayHello()
      {
         Console.WriteLine("Hello Namespace");
      }
   }
}
namespace Second
{
   public class Welcome
   {
      public void sayWelcome()
      {
       Console.WriteLine("\n\nWelcome Namespace");
      }
   } }
public class TestNamespace
{
   public static void Main(String[] args)
   {
    Hello h1 = new Hello();
    Welcome w1 = new Welcome();
h1.sayHello();
    w1.sayWelcome();
   }
}
```

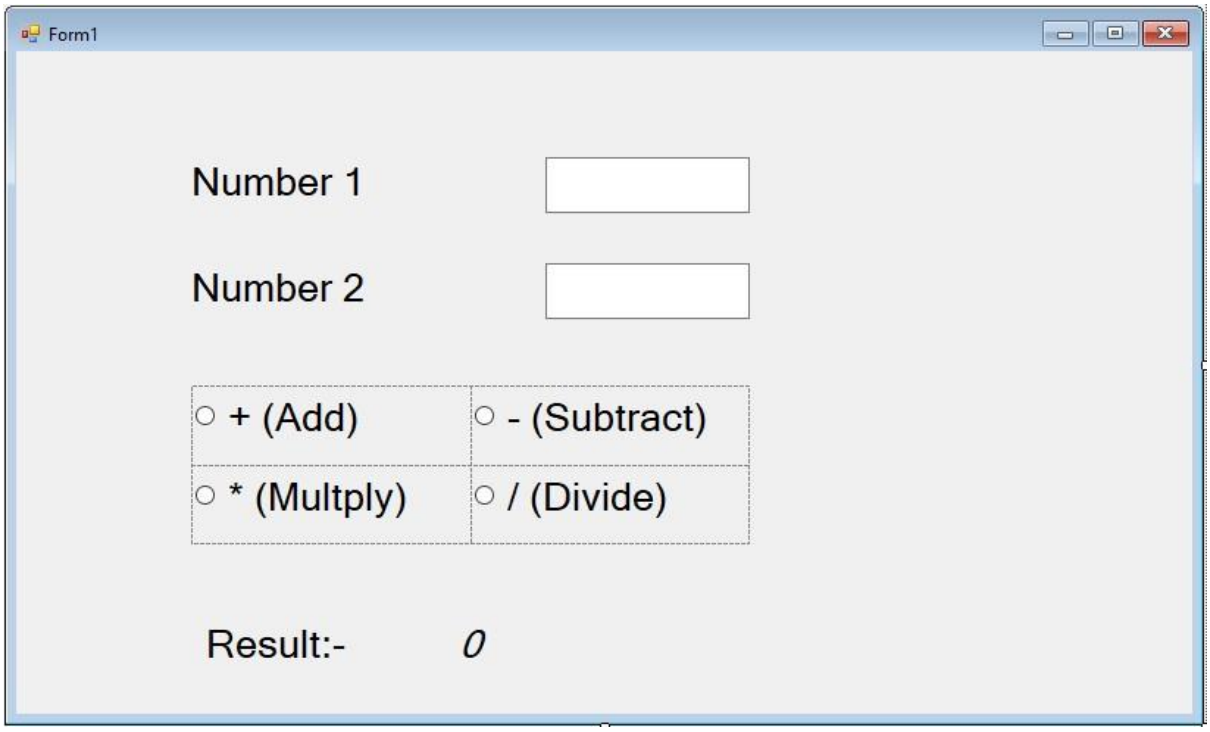
Output:-

Practical No. 3

Aim:- Design Desktop Application Page with a) Server controls b) Web controls and demonstrate the use of AutoPostBack

a)Server Controls:-

Form1.cs [Design] Page:-



Properties Table:-

Control	ID (Name)	Text
Label	label1	Number_1
Label	label2	Number_2
TextBox	textBox1	-
TextBox	textBox2	-
RadioButton	radioButton1	+ (Add)
RadioButton	radioButton2	- (Subtract)
RadioButton	radioButton3	* (Multiply)
RadioButton	radioButton4	/ (Divide)

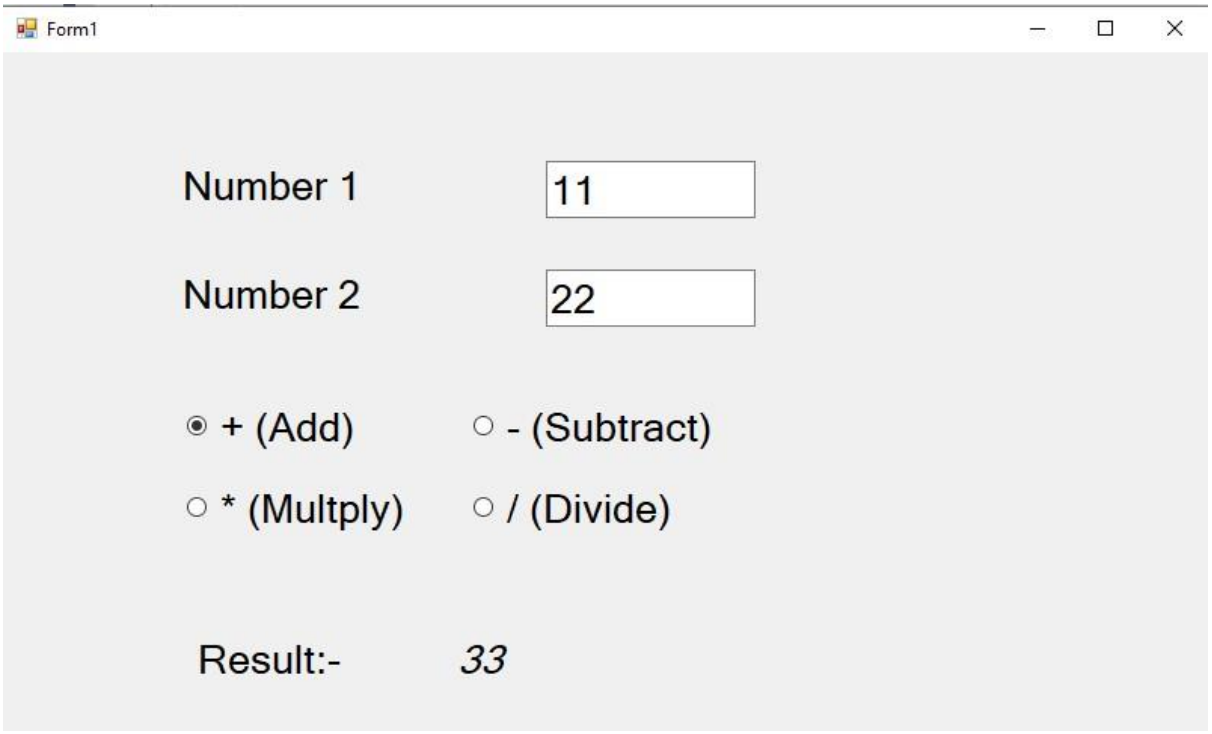
Label	label3	Result
Label	label4	0

Form1.cs Page:-

```
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;

namespace SYCS_3_1_a
{
   public partial class Form1 : Form
   {        public
Form1()
      {
         InitializeComponent();
      }

      int number1, number2, result;         private void
radioButton3_CheckedChanged(object sender, EventArgs e)
      {
         number1 = int.Parse(textBox1.Text);
number2 = int.Parse(textBox2.Text);

         result = number1 * number2;
         label4.Text = result.ToString();
      }

      private void radioButton4_CheckedChanged(object sender, EventArgs e)
      {
         number1 = int.Parse(textBox1.Text);
number2 = int.Parse(textBox2.Text);
```

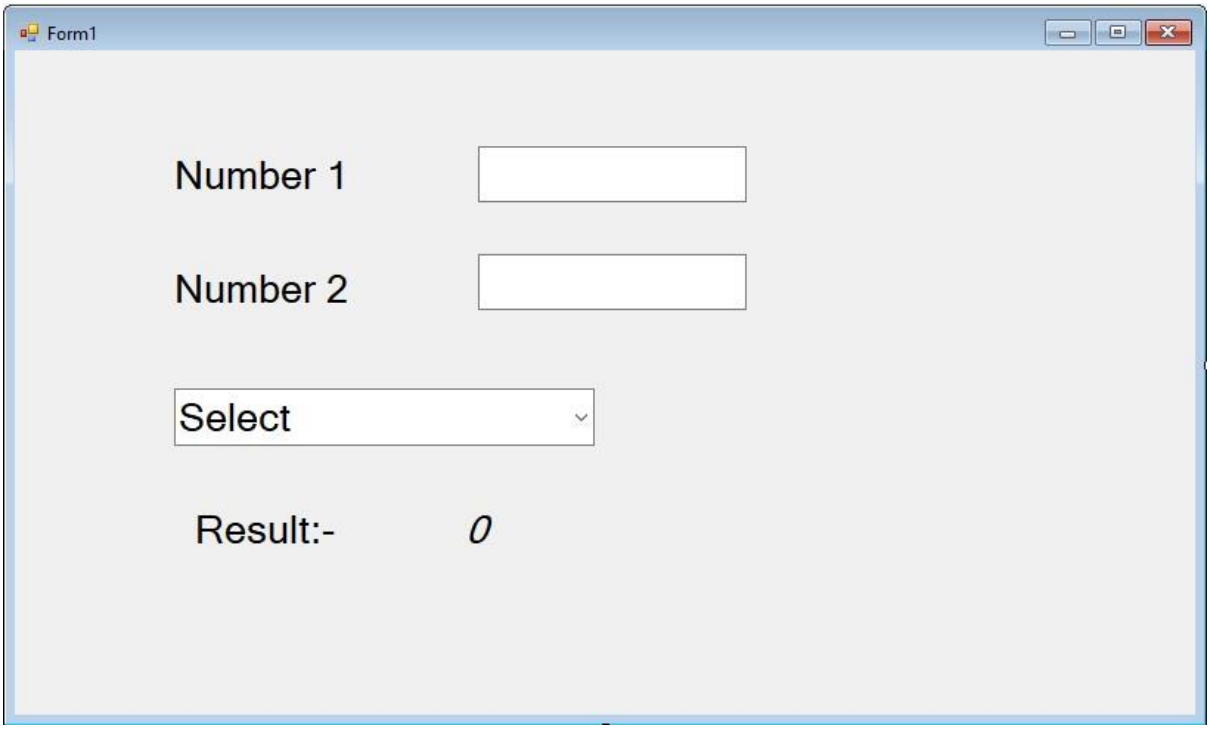
```
            result = number1 / number2;
label4.Text = result.ToString();
        }

        private void radioButton2_CheckedChanged(object sender, EventArgs e)
        {
            number1 = int.Parse(textBox1.Text);
number2 = int.Parse(textBox2.Text);

            result = number1 - number2;
            label4.Text = result.ToString();
        }

        private void radioButton1_CheckedChanged(object sender, EventArgs e)
        {
            number1 = int.Parse(textBox1.Text);
number2 = int.Parse(textBox2.Text);

            result = number1 + number2;
            label4.Text = result.ToString();
        }
    }
}
```

Output:-



b) Web controls and demonstrate the use of AutoPostBack:-

Form1.cs [Design] Page:-



Properties Table:-

Control	ID (Name)	Text
Label	label1	Number1
Label	label2	Number2
ComboBox	comboBox1	Select
Label	label3	Result
Label	label4	0

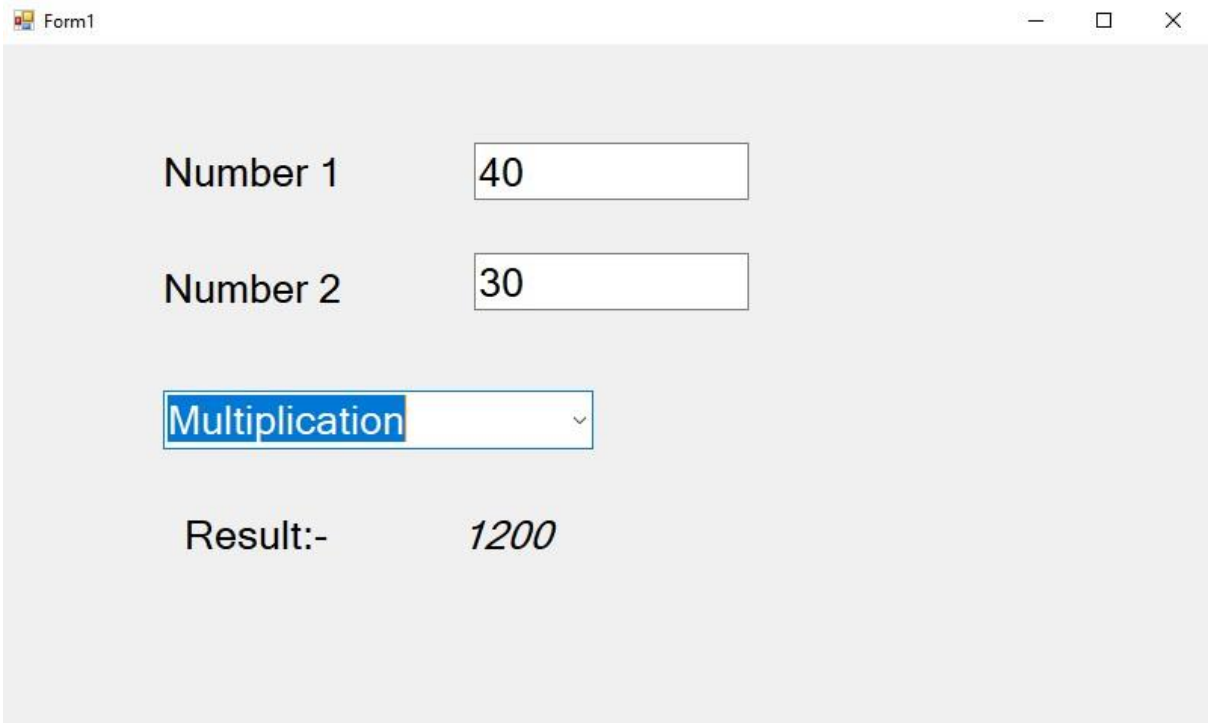
Form1.cs Page:-

```
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;

namespace SYCS_3_b
{
   public partial class Form1 : Form
   {
      public Form1()
      {
         InitializeComponent();
      }

      private void label2_Click(object sender, EventArgs e)
      {

      }
      private void comboBox1_SelectedIndexChanged(object sender, EventArgs
e)       {            string s;
         int number1, number2;

         number1 = int.Parse(textBox1.Text);
number2 = int.Parse(textBox2.Text);

         s = comboBox1.SelectedItem.ToString();

         if (s == "Addition")
         {
            label4.Text = (number1 + number2).ToString();
         }

         if (s == "Subtraction")
         {
            label4.Text = (number1 - number2).ToString();
         }

         if (s == "Multiplication")
         {
            label4.Text = (number1 * number2).ToString();
         }
```

```
            if (s == "Division")
            {
                label4.Text = (number1 / number2).ToString();
            }
        }
    }
}
```

Output:-

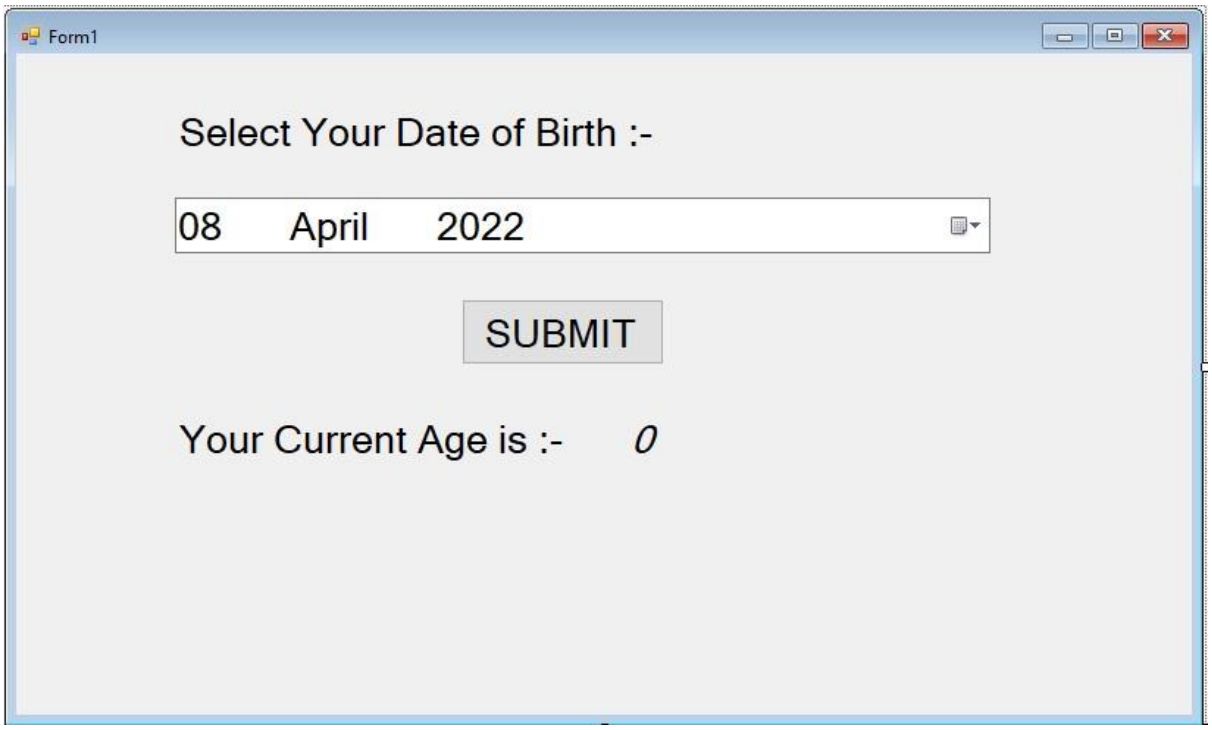


Practical No. 4

Aim:- Design Desktop Application Page with:- a) Calendar b) Validation Control

a) Calendar:-

Form1.cs [Design] Page:-



Properties Table:-

Control	ID (Name)	Text
Label	label1	Select Your Date of Birth:-
DateTimePicker	dateTimePicker1	-
Button	button1	SUBMIT
Label	label2	Your Current Age is:-
Label	label3	0

Form1.cs Page:-

```
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;
```

```
namespace SYCS_4_1
{
   public partial class Form1 : Form
   {
      public Form1()
      {
         InitializeComponent();
      }

      private void button1_Click(object sender, EventArgs e)
      {
         DateTime dob;          dob =
dateTimePicker1.Value;
         int age = (DateTime.Now.Year - dob.Year);

         label3.Text = age.ToString();

      }
   }
}
```

Output:-

b) Validation Control:-

Form1.cs [Design] Page:-

Properties Table:-

Control	ID (Name)	Text
Label	label1	Name:-
TextBox	textBox1	Go to Events tab → Focus → Validating → Write 'textBox1_Validating'
Button	button1	SUBMIT
ErrorProvider	errorProvider1	-

Form1.cs Page:-

```
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;

namespace WindowsFormsApp1
{
   public partial class Form1 : Form
   {
      public Form1()
      {
         InitializeComponent();
      }

      private void textBox1_Validating(object sender, CancelEventArgs e)
      {
         if (string.IsNullOrWhiteSpace(textBox1.Text))
         {
            e.Cancel = true;
textBox1.Focus();
            errorProvider1.SetError(textBox1, "Name should not be left blank!");
         }
else
         {
            e.Cancel = false;
errorProvider1.SetError(textBox1, "");
         }
      }
      private void button1_Click(object sender, EventArgs e)
      {
         if (ValidateChildren(ValidationConstraints.Enabled))
         {
            MessageBox.Show(textBox1.Text, "Demo App - Message!");
         }
```

```
        }
    }
}
```

Output:-