



**1) Check Whether the Entered Year is a Leap Year or No.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace pgm3
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Enter Year : ");
            int Year = int.Parse(Console.ReadLine());
            if (((Year % 4 == 0) && (Year % 100 != 0)) || (Year % 400 == 0))
                Console.WriteLine("{0} is a Leap Year.", Year);
            else Console.WriteLine("{0} is not a Leap Year.", Year);
            Console.ReadLine();
        }
    }
}
```


**OUTPUT** file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm3/pgm3/bin/Debug/pgm3.EXE

```
Enter Year :  
1995  
1995 is not a Leap Year.
```


 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm3/pgm3/bin/Debug/pgm3.EXE

```
Enter Year :  
2008  
2008 is a Leap Year.
```

---

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm3/pgm3/bin/Debug/pgm3.EXE


```
Enter Year :  
2006  
2006 is not a Leap Year.
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm3/pgm3/bin/Debug/pgm3.EXE

```
Enter Year :
```

```
2012
```

```
2012 is a Leap Year.
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm3/pgm3/bin/Debug/pgm3.EXE

```
Enter Year :
```

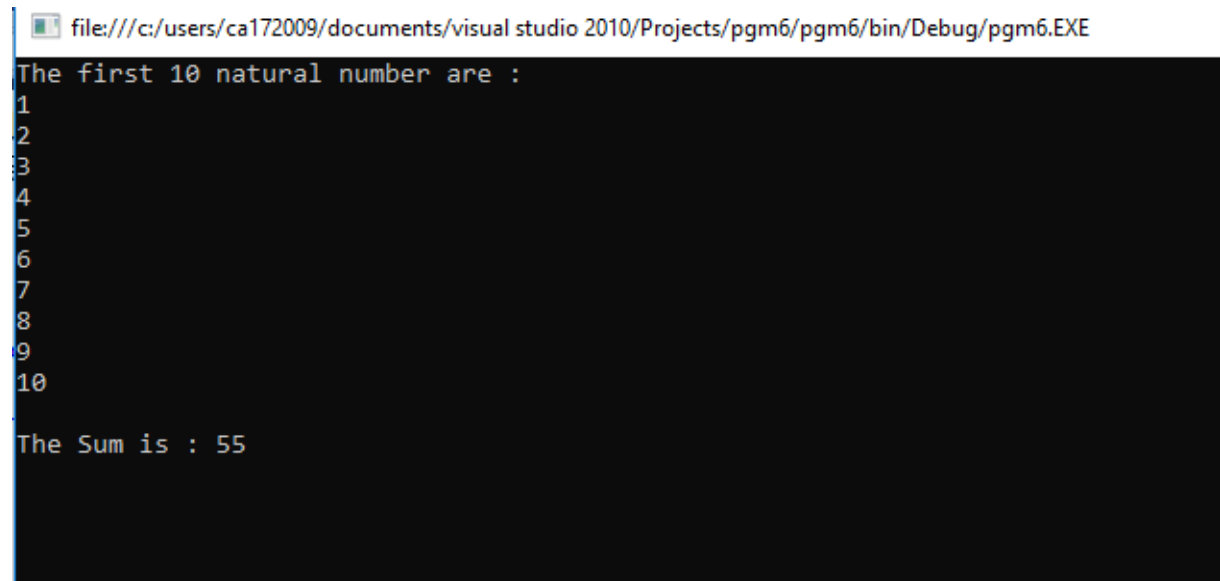
```
2018
```

```
2018 is not a Leap Year.
```

**2) Program to display the first 10 natural numbers and their sum using console application.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace pgm6
{
    class Program
    {
        static void Main(string[] args)
        {
            int j, sum = 0;
            Console.WriteLine("The first 10 natural number are :\n");
            for (j = 1; j <= 10; j++)
            {
                sum = sum + j;
                Console.Write("{0} ", j);
                Console.WriteLine();
            }
            Console.WriteLine("\nThe Sum is : {0}\n", sum);
            Console.ReadLine();
        }
    }
}
```

**OUTPUT**

file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm6/pgm6/bin/Debug/pgm6.EXE

The first 10 natural number are :

1  
2  
3  
4  
5  
6  
7  
8  
9  
10


The Sum is : 55

**3) Program to display the addition, subtraction, multiplication and division of two number using console applications.**


```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ArthmaticOperation
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("This Program is developed by Shubham Sajannavar");
            Console.WriteLine("Roll No : CA172007, Rani Channamma University, Belgavi");
            int add, sub, mul, num1, num2;
            float div;
            Try
            {
                Console.WriteLine("Enter 1st Number : ");
                num1 = Convert.ToInt32(Console.ReadLine());
                Console.WriteLine("Enter 2nd Number : ");
                num2 = Convert.ToInt32(Console.ReadLine());
                add = num1 + num2;
                sub = num1 - num2;
                mul = num1 * num2;
                div = num1 / num2;
                Console.WriteLine("Addition of \t\t"+num1+"and" + num2 + " = " + add);
                Console.WriteLine("\nSubstration of \t\t"+num1+"and"+num2 + " = " + sub);
                Console.WriteLine("Multiplication of \t"+num1+"and"+ num2 + " = " + mul);
                Console.WriteLine("\nDivision of \t\t" +num1+"and"+num2 + " = " + div);
            }
        }
    }
}
```


```
catch (Exception ex)
{
    Console.WriteLine("Enter valid Number");
}
Console.ReadKey();
    }
}
}
```

**OUTPUT** file:///c:/users/ca172009/documents/visual studio 2010/Projects/cal/cal/bin/Debug/cal.EXE

```
Roll No : CA172009, Rani Channamma University, Belgavi
Enter 1st Number :
10
Enter 2nd Number :
20
Addition of          10 and 20 = 30
Substraction of      10 and 20 = -10
Multiplication of    10 and 20 = 200
Division of          10 and 20 = 0
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/cal/cal/bin/Debug/cal.EXE

```
Roll No : CA172009, Rani Channamma University, Belgavi
Enter 1st Number :
78
Enter 2nd Number :
95
Addition of          78 and 95 = 173
Substraction of      78 and 95 = -17
Multiplication of    78 and 95 = 7410
Division of          78 and 95 = 0
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/cal/cal/bin/Debug/cal.EXE

```
Roll No : CA172009, Rani Channamma University, Belgavi
Enter 1st Number :
asd
Enter valid Number
```



```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/cal/cal/bin/Debug/cal.EXE

Roll No : CA172009, Rani Channamma University, Belgavi
Enter 1st Number :
25585
Enter 2nd Number :
12548
Addition of          25585 and 12548 = 38133
Substraction of      25585 and 12548 = 13037
Multiplication of    25585 and 12548 = 321040580
Division of          25585 and 12548 = 2
```

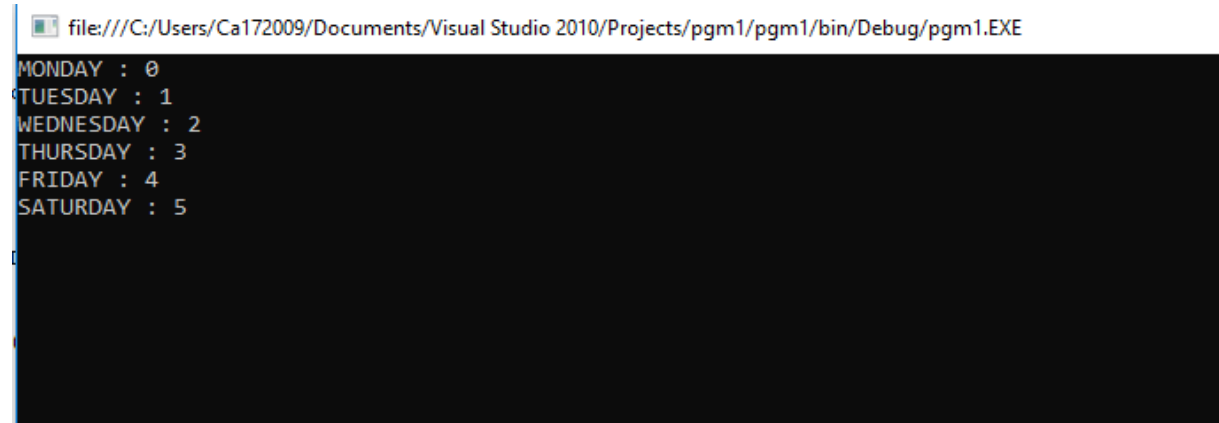
```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/cal/cal/bin/Debug/cal.EXE

Roll No : CA172009, Rani Channamma University, Belgavi
Enter 1st Number :
165
Enter 2nd Number :
dvd
Enter valid Number
```

**4) Describe the enumerations programming constructs, which provides a human-readable form of a series of related constant values in C#.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace EnumerationDemo
{
    class ProgramOne
    {
        enum CollegeDays
        {
            MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY,
SATURDAY
        }
        static void Main(string[] args)
        {
            foreach (var day in Enum.GetValues(typeof(CollegeDays)))
            {
                Console.WriteLine("{0} : {1}", day, (int)day);
            }
            Console.Read();
        }
    }
}
```

**OUTPUT**

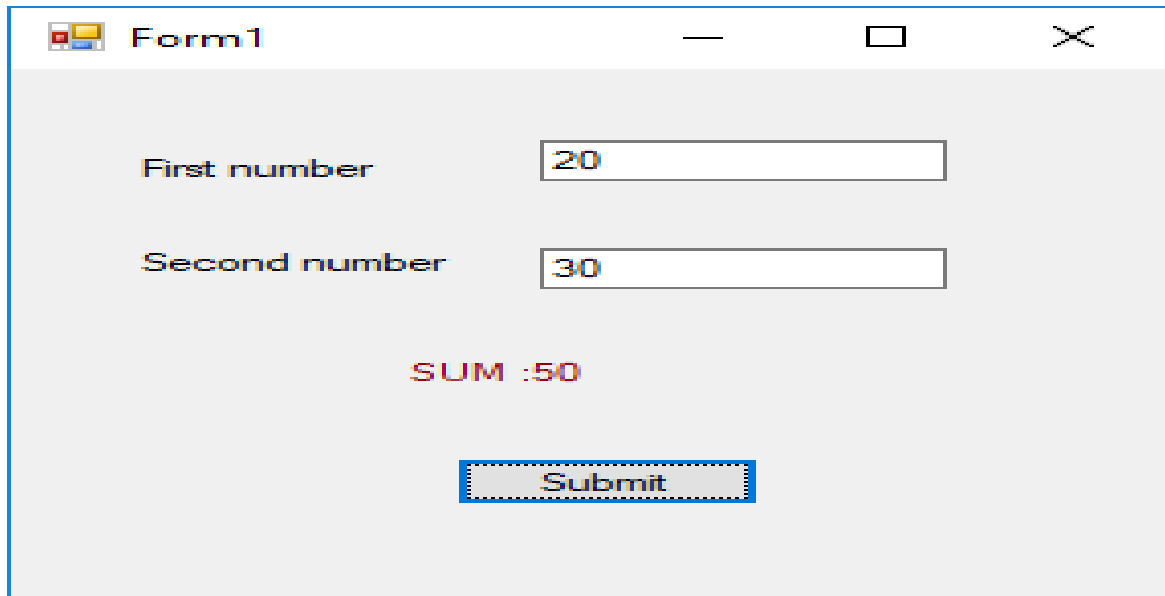
```
file:///C:/Users/Ca172009/Documents/Visual Studio 2010/Projects/pgm1/pgm1/bin/Debug/pgm1.EXE
MONDAY : 0
TUESDAY : 1
WEDNESDAY : 2
THURSDAY : 3
FRIDAY : 4
SATURDAY : 5
```

**5) Program to display the addition using the windows application.**

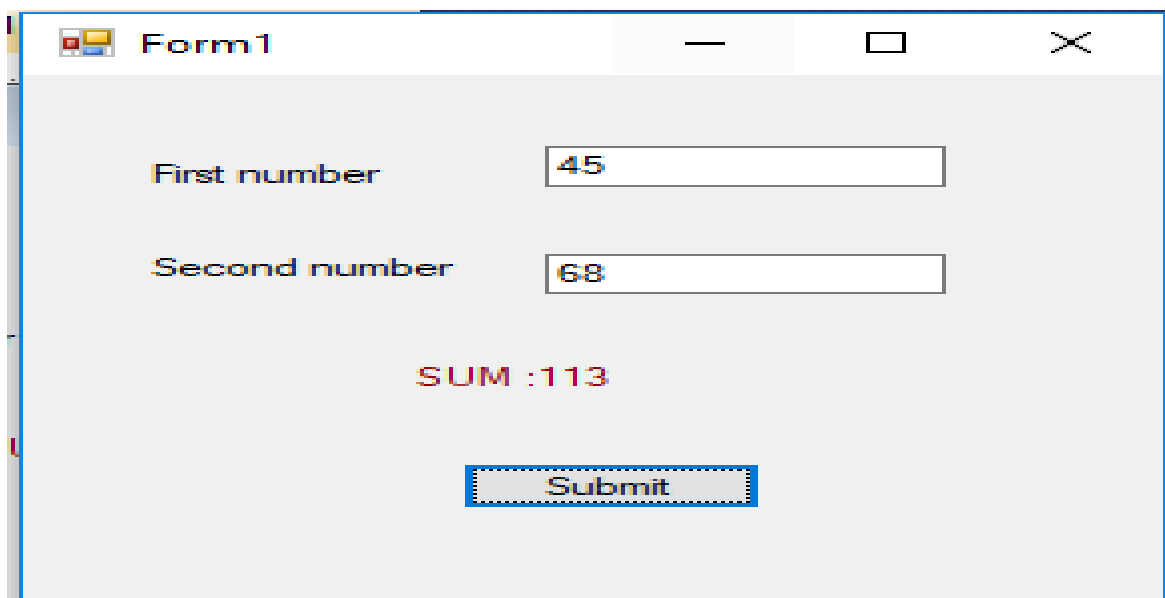
```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace pgm7
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();

            private void button1_Click(object sender, EventArgs e)
            {
                float a;
                float b;
                float c;
                a = Convert.ToInt32(textBox1.Text);
                b = Convert.ToInt32(textBox2.Text);
                c = a + b;
                label3.Text = "SUM :" + c;
            }
        }
    }
}
```

**OUTPUT**

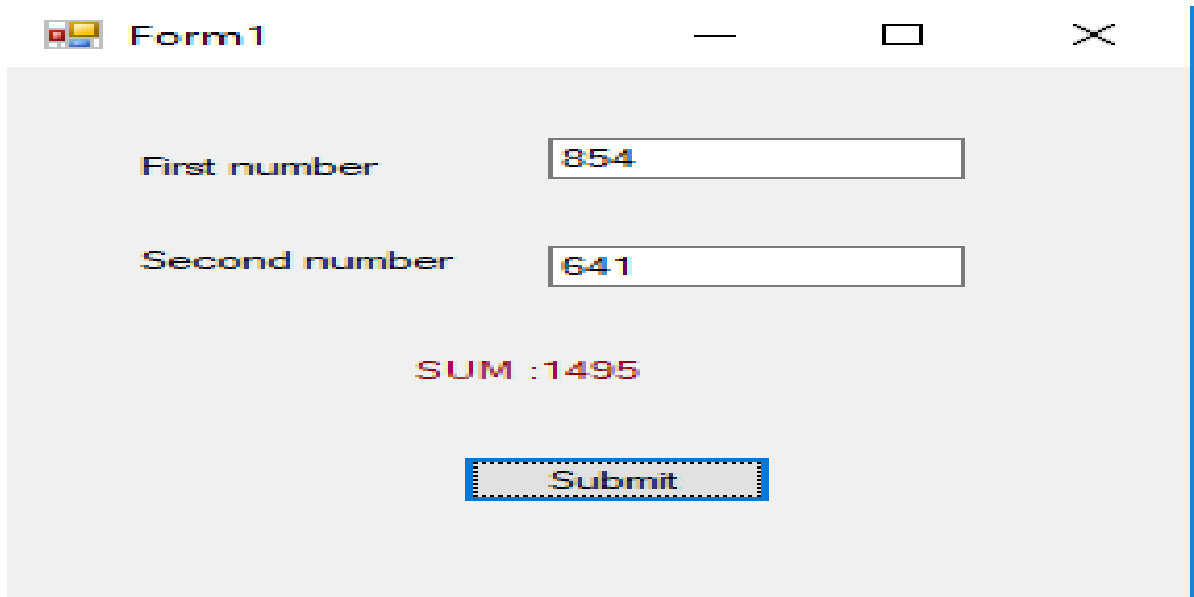
A screenshot of a Windows Form titled "Form1". The form has a light gray background. It contains two labels: "First number" and "Second number". The "First number" label is positioned to the left of a text box containing the value "20". The "Second number" label is positioned to the left of a text box containing the value "30". Below these text boxes, the text "SUM :50" is displayed in a red font. At the bottom center of the form, there is a button labeled "Submit".



A screenshot of a Windows Form titled "Form1". The form has a light gray background. It contains two labels: "First number" and "Second number". The "First number" label is positioned to the left of a text box containing the value "45". The "Second number" label is positioned to the left of a text box containing the value "68". Below these text boxes, the text "SUM :113" is displayed in a red font. At the bottom center of the form, there is a button labeled "Submit".

A screenshot of a Windows Form titled "Form1". The form has a light gray background. It contains two text boxes for input. The first text box is labeled "First number" and contains the value "5985". The second text box is labeled "Second number" and contains the value "9999". Below these text boxes, the text "SUM :15984" is displayed in a red font. At the bottom center of the form, there is a button labeled "Submit" with a dotted border.

A screenshot of a Windows Form titled "Form1". The form has a light gray background. It contains two text boxes for input. The first text box is labeled "First number" and contains the value "98268". The second text box is labeled "Second number" and contains the value "96587". Below these text boxes, the text "SUM :194855" is displayed in a red font. At the bottom center of the form, there is a button labeled "Submit" with a dotted border.



The screenshot shows a Windows Form titled "Form1" with a standard Windows title bar (minimize, maximize, close buttons). The form has a light gray background. It contains the following elements:

- A label "First number" followed by a text box containing the value "854".
- A label "Second number" followed by a text box containing the value "641".
- A label "SUM :1495" displayed in red text.
- A button labeled "Submit" with a dotted border.

**6) Write a program to convert input string from lower to upper and upper to lower case.**


```
using System;

using System.Collections.Generic;
using System.Linq;
using System.Text;
namespace LowUpp
{
    public class Exercise15
    {
        public static void Main()
        {
            string str1;
            char[] arr1;
            int l, i;
            l = 0;
            char ch;
            Console.WriteLine("\n\nReplace lowercase characters by uppercase and vice-versa :\n");
            Console.WriteLine("Input the string : ");
            str1 = Console.ReadLine();
            l = str1.Length;
            arr1 = str1.ToCharArray(0, l);
            Console.WriteLine("\nAfter conversion, the string is : ");
            for (i = 0; i < l; i++)
            {
                ch = arr1[i];
                if (Char.IsLower(ch))
                    Console.Write(Char.ToUpper(ch));
```




```
        else
            Console.Write(Char.ToLower(ch));
    }
    Console.Write("\n\n");

    Console.ReadLine();
}
}
```


**OUTPUT** file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm9/pgm9/bin/Debug/pgm9.EXE

```
Replace lowercase characters by uppercase and vice-versa :  
Input the string : VINU  
  
After conversion, the string is : vinu
```


---

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm9/pgm9/bin/Debug/pgm9.EXE


```
Replace lowercase characters by uppercase and vice-versa :  
Input the string : ABHISHEK  
  
After conversion, the string is : abhishek
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm9/pgm9/bin/Debug/pgm9.EXE

```
Replace lowercase characters by uppercase and vice-versa :  
Input the string : shubam  
  
After conversion, the string is : SHUBAM
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm9/pgm9/bin/Debug/pgm9.EXE

```
Replace lowercase characters by uppercase and vice-versa :  
Input the string : hiii how are you?  
  
After conversion, the string is : HIII HOW ARE YOU?
```

 file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm9/pgm9/bin/Debug/pgm9.EXE

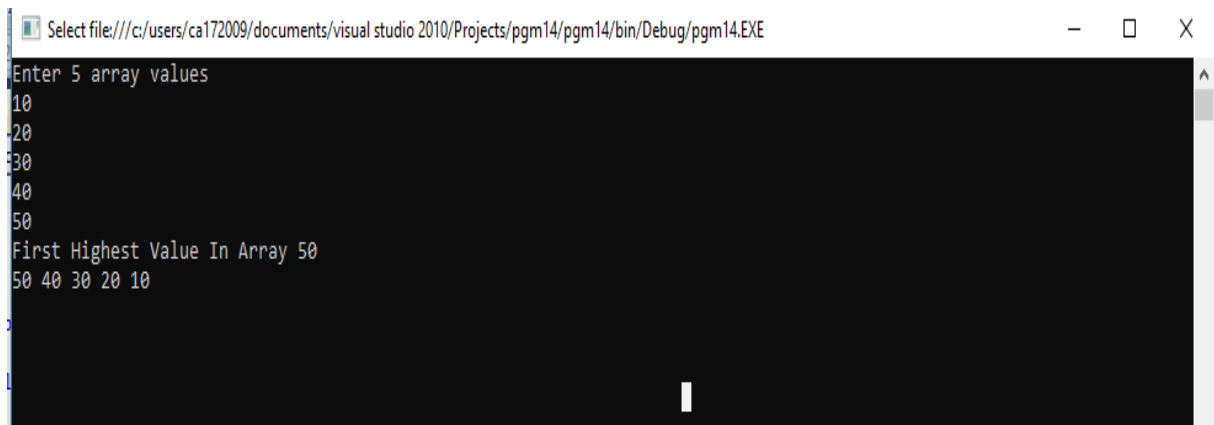
```
Replace lowercase characters by uppercase and vice-versa :  
Input the string : HIII i am vinayak  
  
After conversion, the string is : hiii I AM VINAYAK
```

**7) Find the second largest element in a single dimensional array.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

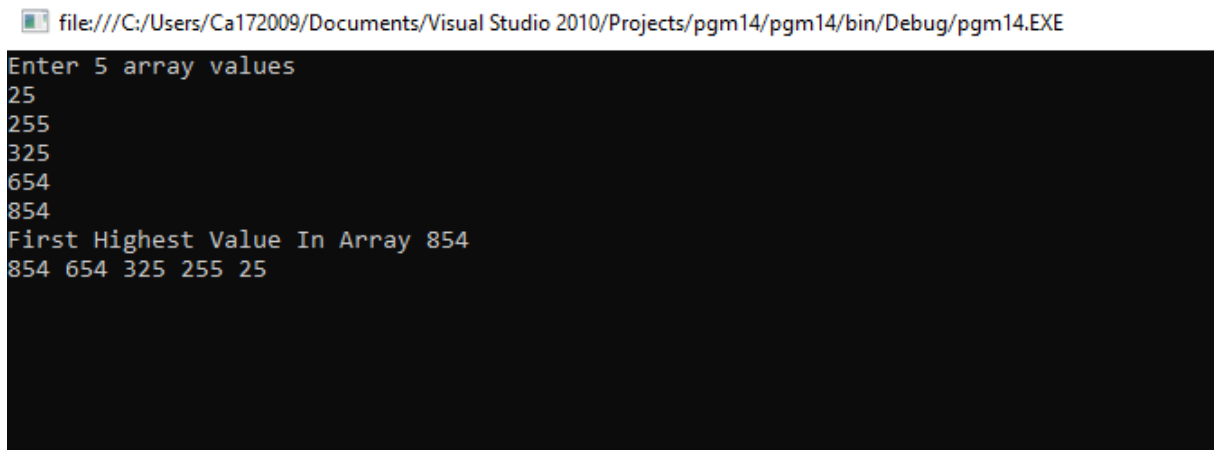
namespace pgm14
{
    class Program
    {
        static void Main(string[] args)
        {
            int[] arr = new int[5];
            Console.WriteLine("Enter 5 array values");
            for(int i=0;i<5;i++)
            {
                //Console.WriteLine(i);
                arr[i] = int.Parse(Console.ReadLine());
            }
            Array.Sort(arr);
            Array.Reverse(arr);
            Console.WriteLine("Second Highest Value In Array " + arr[1]);

            foreach (var result in arr)
            {
                Console.Write(result + " ");
            }
            Console.ReadLine();
        }
    }
}
```

**OUTPUT**

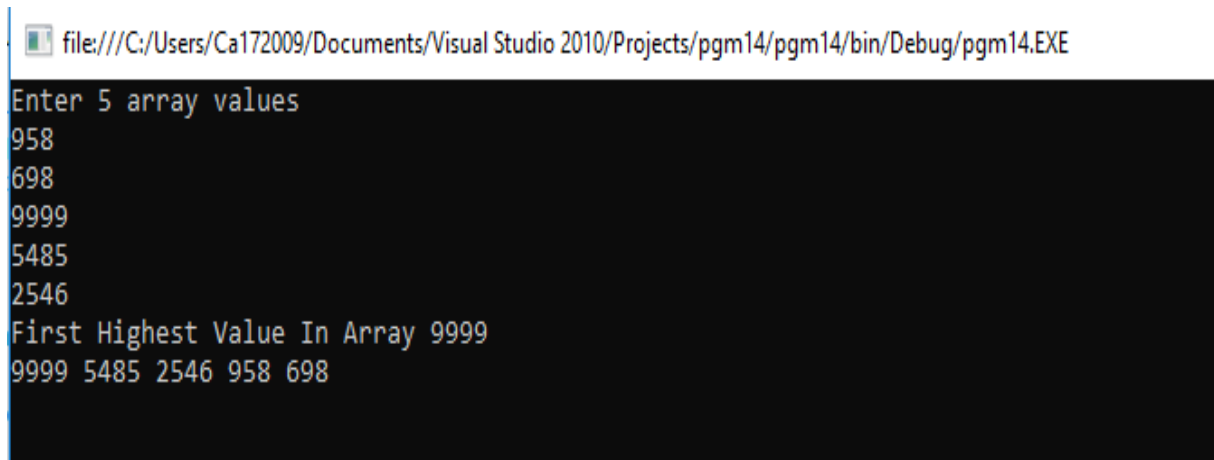
Select file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm14/pgm14/bin/Debug/pgm14.EXE

```
Enter 5 array values
10
20
30
40
50
First Highest Value In Array 50
50 40 30 20 10
```



file:///C:/Users/Ca172009/Documents/Visual Studio 2010/Projects/pgm14/pgm14/bin/Debug/pgm14.EXE

```
Enter 5 array values
25
255
325
654
854
First Highest Value In Array 854
854 654 325 255 25
```



file:///C:/Users/Ca172009/Documents/Visual Studio 2010/Projects/pgm14/pgm14/bin/Debug/pgm14.EXE

```
Enter 5 array values
958
698
9999
5485
2546
First Highest Value In Array 9999
9999 5485 2546 958 698
```

file:///C:/Users/Ca172009/Documents/Visual Studio 2010/Projects/pgm14/pgm14/bin/Debug/pgm14.EXE

Enter 5 array values

658

654

585

239

958

First Highest Value In Array 958

958 658 654 585 239

file:///C:/Users/Ca172009/Documents/Visual Studio 2010/Projects/pgm14/pgm14/bin/Debug/pgm14.EXE

Enter 5 array values

1235

9548

5862

9652

2546

First Highest Value In Array 9652

9652 9548 5862 2546 1235

**8) Program to illustrate the use of different properties in C#.**

```
using System;

namespace ProgramFifteen
{
    class PropertiesDemo
    {
        private string name;
        private int age;

        public string Name
        {
            set
            {
                name = value;
            }
            get
            {
                return name;
            }
        }

        public int Age
        {
            set
            {
                if (value > 0)
                    age = value;
            }
        }
    }
}
```

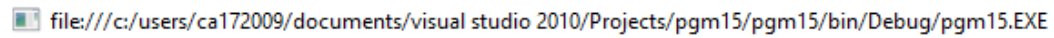
```
        get
        {
            return age;
        }
    }

    static void Main(string[] args)
    {
        PropertiesDemo p = new PropertiesDemo();
        p.Name = "Vinayak";
        p.Age = 23;

        PropertiesDemo d = new PropertiesDemo();
        d.Name = "Abhishek";
        d.Age = -1;

        Console.WriteLine("{0} : {1}", p.Name, p.Age);
        Console.WriteLine("{0} : {1}", d.Name, d.Age);
        Console.ReadLine();
    }
}
```



**OUTPUT**The screenshot shows a Windows command prompt window with a title bar that reads "file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm15/pgm15/bin/Debug/pgm15.EXE". The window has a black background and white text. The first line of output is "Vinayak : 23" and the second line is "Abhishek : 0".

file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm15/pgm15/bin/Debug/pgm15.EXE

Vinayak : 23  
Abhishek : 0

**9) Demonstrate Command line arguments processing.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace pgm16
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Argument length: " + args.Length);
            Console.WriteLine("Given Arguments are:");
            foreach (Object obj in args)
            {
                Console.WriteLine(obj);
            }
            Console.ReadLine();
        }
    }
}
```

**OUTPUT**

Command line arguments:

Working directory:  ...

☐ Use remote machine

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm16/pgm16/bin/Debug/pgm16.EXE
Argument length: 5
Given Arguments are:
12
15
13
14
10
```

Command line arguments:

Working directory:  ...

☐ Use remote machine

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm16/pgm16/bin/Debug/pgm16.EXE
Argument length: 3
Given Arguments are:
HI
Hello
Bye
```

Command line arguments:

Working directory:  ...

☐ Use remote machine

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm16/pgm16/bin/Debug/pgm16.EXE
Argument length: 4
Given Arguments are:
abc
123
def
456
```

Command line arguments:

Working directory:  ...

☐ Use remote machine

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm16/pgm16/bin/Debug/pgm16.EXE
Argument length: 11
Given Arguments are:
160
182
176
146
225
148
478
254
369
965
458
```

Command line arguments:

Working directory:  ...

☐ Use remote machine

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm16/pgm16/bin/Debug/pgm16.EXE
Argument length: 9
Given Arguments are:
abc
def
ghi
jkl
mno
pqr
stu
vwx
yz
```

- 10) Create classes, they are reference type in C# and hence are allocated on the heap. Classes provide object-oriented constructs such as encapsulation, Polymorphism, and inheritance. For instance, the program should print john. doe twice, illustrating that objects are reference types, allocated on the heap implement the same using C#.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace pgmtow
{
    class Program
    {
        static void Main(string[] args)
        {
            User user1 = new User("joy");
            Admin user2 = new Admin("Vinayak", "Vinayak@gmail.com", "Kolaki");

            Console.WriteLine("User 1:");
            Console.WriteLine("Name: {0}", user1.getName());
            Console.WriteLine("Email: {0}", user1.getEmail());

            Console.WriteLine();

            Console.WriteLine("User 2 (Admin):");
            Console.WriteLine("Name: {0}", user2.getName());
            Console.WriteLine("Email: {0}", user2.getEmail());
            Console.WriteLine("Password: {0}", user2.getPassword());

            Console.Read();
        }
    }
}

class User {
    private string name;
    private string email;

    public User(String name) {
        this.name = name;
    }

    public User(String name, String email)
    {
        this.name = name;
        this.email = email;
    }
}
```

```
public string getName() {
    return name;
}

public string getEmail()
{
    return email;
}

public void setName(string name)
{
    this.name = name;
}

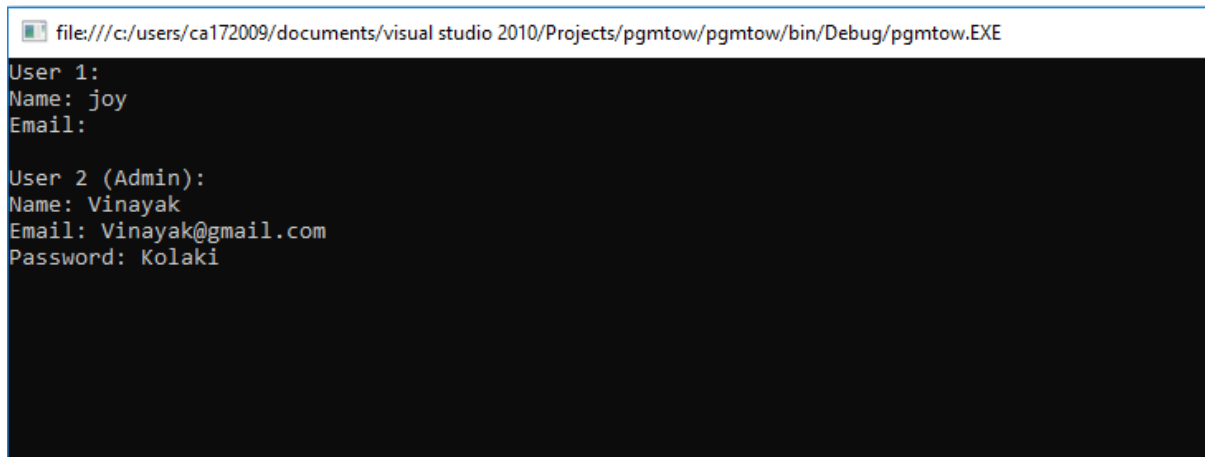
public void setEmail(string email)
{
    this.email = email;
}
}

class Admin : User {
    private string password;
    public Admin(string name, string email, string password): base(name, email)
    {
        this.password = password;
    }

    public void setPassword(string password) {
        this.password = password;
    }

    public string getPassword() {
        return password;
    }
}
```

## OUTPUT

A screenshot of a Windows debugger window showing the execution of a C# program. The title bar indicates the file path: file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgmtow/pgmtow/bin/Debug/pgmtow.EXE. The main area of the window is black, with white text representing the program's output. The output shows two users being processed. User 1 has a name of 'joy' and an empty email field. User 2 is identified as an 'Admin' with a name of 'Vinayak', an email of 'Vinayak@gmail.com', and a password of 'Kolaki'.

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgmtow/pgmtow/bin/Debug/pgmtow.EXE
User 1:
Name: joy
Email:

User 2 (Admin):
Name: Vinayak
Email: Vinayak@gmail.com
Password: Kolaki
```

11) Describe Arrays and Strings methods with suitable C# program.



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
namespace pgm4
{
    class Program
    {
        static void Main(string[] args)
        {
            int[] array = { 1, 4, 6, 2, 8, 9, 7 };

            Console.WriteLine("Properties & Methods of an Array: ");
            displayArray(array);
            Console.WriteLine();
            Console.WriteLine("Length: {0}", array.Length);
            Console.WriteLine("Rank: {0}", array.Rank);
            Console.WriteLine("Max(): {0}", array.Max());
            Console.WriteLine("Min(): {0}", array.Min());
            Console.WriteLine("Sum(): {0}", array.Sum());
            Console.WriteLine("Array.Reverse()");
            Array.Reverse(array);
            displayArray(array);
            Console.WriteLine("Array.Sort()");
            Array.Sort(array);
            displayArray(array);
            Console.WriteLine();
            Console.WriteLine("Properties & Methods of a String: ");
            String str1 = "Hello World!, I am Vinayak!. ";
            Console.WriteLine();
```

```
String str2 = "Full-Stack Android & Web Developer.";

Console.WriteLine("String 1: {0}", str1);

Console.WriteLine("String 2: {0}", str2);

Console.WriteLine("str1.Length: {0}", str1.Length);

Console.WriteLine("str1.IndexOf('J'): {0}", str1.IndexOf('J'));

Console.WriteLine("str2.Contains(\"Developer\"): {0}", str2.Contains("Developer"));

Console.WriteLine("str1.Insert(19 + 6, \"-Kolaki\"): {0}", str1.Insert(str1.IndexOf('J')
+ 6, "-Kolaki"));

Console.WriteLine("str1.Replace(\"I am\", \"This is\"): {0}", str1.Replace("I am",
"This is"));

Console.WriteLine("str1.Remove(str1.IndexOf(','): {0}",
str1.Remove(str1.IndexOf(',')));

Console.WriteLine("str1.Substring(str1.IndexOf(','): {0}",
str1.Substring(str1.IndexOf(',') + 1));

Console.WriteLine("String.Concat(str1, str2): {0}", String.Concat(str1, str2));

Console.WriteLine("String.Equals(str1, str2): {0}", String.Equals(str1, str2));

Console.WriteLine("String.Compare(str1, str2): {0}", String.Compare(str1, str2));

Console.ReadLine();
}

static void displayArray(int[] a)    {

    Console.Write("[");

    for (int i = 0; i < a.Length; i++)

    {

        Console.Write(" {0} ", a[i]);

    }

    Console.WriteLine("]");

}

}
```

## OUTPUT

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm4/pgm4/bin/Debug/pgm4.EXE
Properties & Methods of an Array:
[ 1 4 6 2 8 9 7 ]

Length: 7
Rank: 1
Max(): 9
Min(): 1
Sum(): 37
Array.Reverse()
[ 7 9 8 2 6 4 1 ]
Array.Sort()
[ 1 2 4 6 7 8 9 ]

Properties & Methods of a String:
String 1: Hello World!, I am Vinayak!.
String 2: Full-Stack Android & Web Developer.
str1.Length: 29
str1.IndexOf('J'): -1
str2.Contains("Developer"): True
str1.Insert(19 + 6, "-Kolaki"): Hello-Kolaki World!, I am Vinayak!.
str1.Replace("I am", "This is"): Hello World!, This is Vinayak!.
str1.Remove(str1.IndexOf(',')): Hello World!
str1.Substring(str1.IndexOf(',')): I am Vinayak!.
String.Concat(str1, str2): Hello World!, I am Vinayak!. Full-Stack Android & Web Developer.
String.Equals(str1, str2): False
String.Compare(str1, str2): 1
```

**12) Work with page using ASP.Net****C#.net page**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;

public partial class _Default : System.Web.UI.Page
{
    protected void Page_Load(object sender, EventArgs e)
    {

    }

    protected void Button1_Click(object sender, EventArgs e)
    {
        object value = ViewState["HitCount"];
        int i = (value == null) ? 1 : (int)value + 1;
        Label1.Text = string.Format("You score is: {0}", i);
        ViewState["HitCount"] = i;
    }
}
```

**ASP.net Page**

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs"
Inherits="_Default" %>
```

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
```

```
<head runat="server">
```

```
<title></title>
```

```
</head>
```

```
<body style="width: 625px; margin-left: 203px">
```

```
<form id="form1" runat="server">
```

```
<div class="container">
```

```
<h1>Welcome to the page!</h1>
```

```
<br />
```

```
<asp:Label ID="Label1" Text="You clicked button 0 times" runat="server" />
```

```
<br />
```

```
<br />
```

```
<asp:button id="clickMeButton" runat="server" text="Click me"
onClick="Button1_Click" />
```

```
<div class="space"> <br /> <footer>
```

```
<br />
```

```
<br />
```

```
Vinayak Kolaki(CA172009)</footer></div>
```

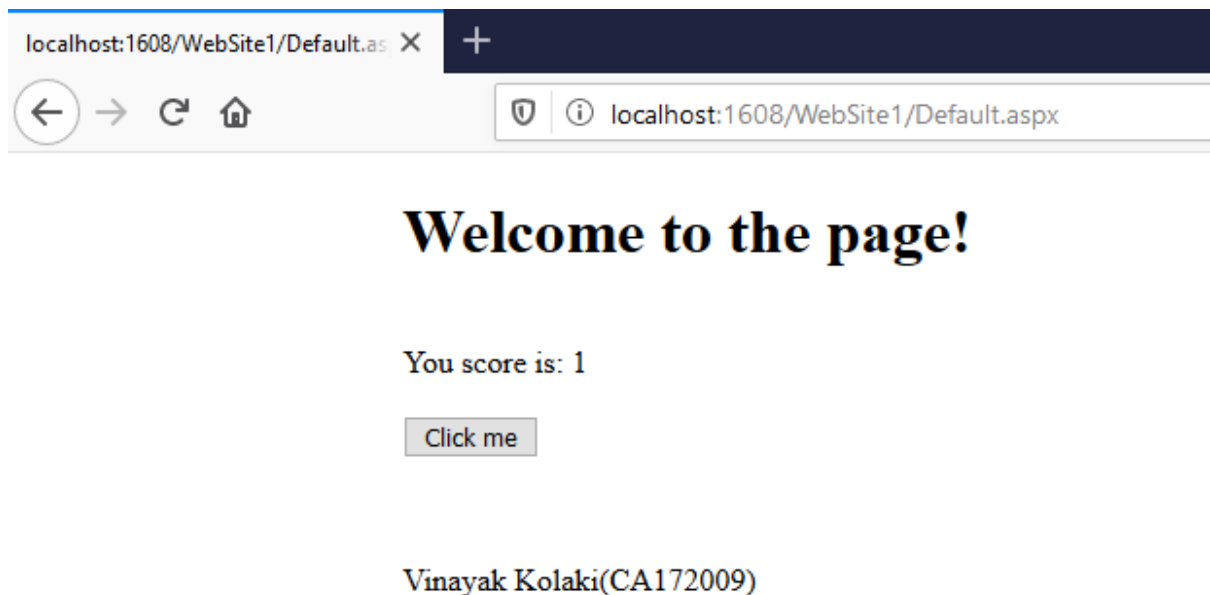
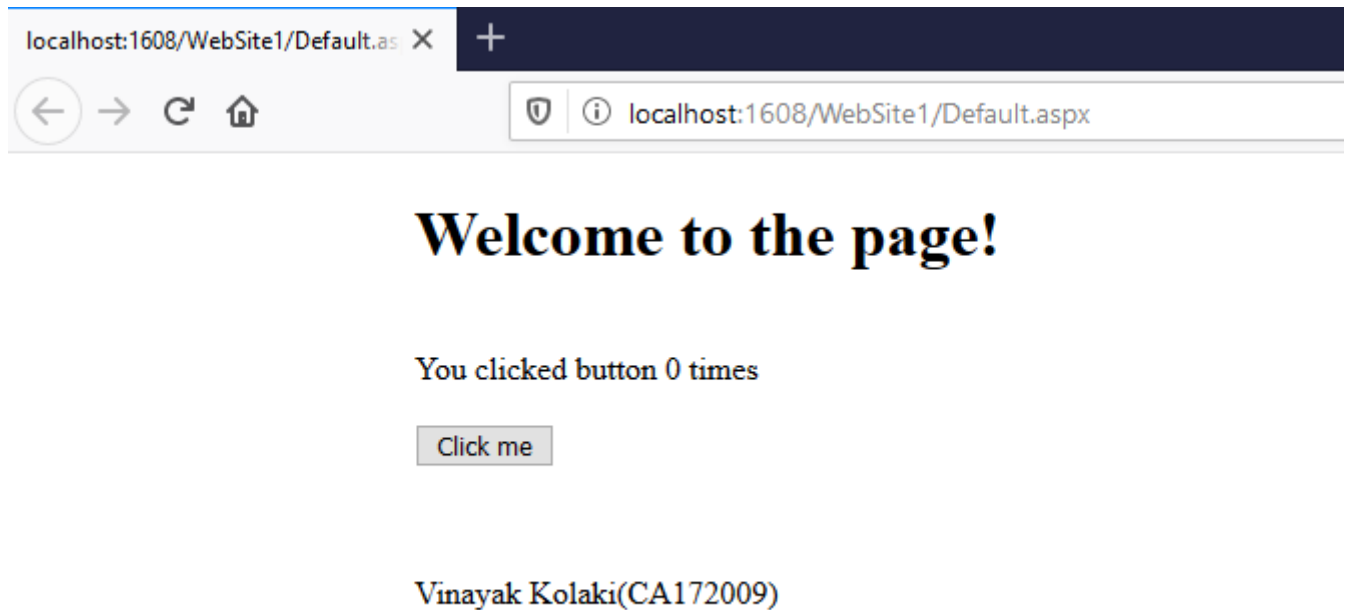
```
</div>
```

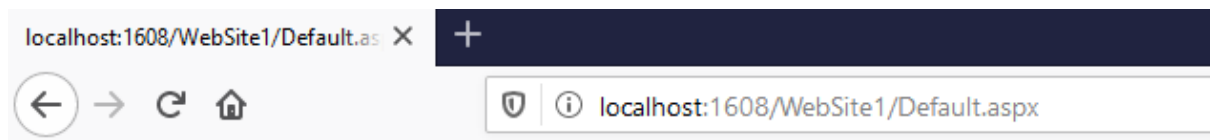
```
</form>
```

```
</body>
```

```
</html>
```

## Output





# Welcome to the page!

You score is: 27

[Click me](#)

Vinayak Kolaki(CA172009)

**13) Describe delegates, events, errors and exceptions.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace pgm13
{
    class Car
    {
        public delegate void EventHandler(string msg);

        public event EventHandler explodeListener;
        public event EventHandler aboutToBlowListener;

        private string name;
        private bool isExhausted;
        private int currentSpeed;
        private const int maxSpeed = 140;

        public Car(String name)
        {
            this.name = name;
        }

        public void accelerate(int delta)
        {
            if (isExhausted)
            {
                if (explodeListener != null)
                    explodeListener("Sorry, the car is dead!");
            }
            else
            {
                currentSpeed += delta;

                if (10 >= maxSpeed - currentSpeed && aboutToBlowListener != null)
                {
                    aboutToBlowListener("Be Careful, Gonna blow!");
                }

                if (currentSpeed >= maxSpeed)
                    isExhausted = true;
                else
                    Console.WriteLine("-> Current Speed: {0}", currentSpeed);
            }
        }
    }

    class Program
    {

```



```
static void Main(string[] args)
{
    Car car = new Car("Tesla");
    car.aboutToBlowListener += new Car.EventHandler(aboutToBlow);

    car.explodeListener += new Car.EventHandler(exploded);
    Console.WriteLine("*****Speeding Up*****");

    try
    {
        for (int i = 0; i < 20; i++)
        {
            car.accelerate(20);
        }
    }
    catch (Exception e)
    {
        Console.WriteLine("Exception: Car is dead already!");
    }
    Console.ReadLine();
}

public static void aboutToBlow(string msg)
{
    Console.WriteLine("-> Reporting: {0}", msg);
}

public static void exploded(string msg)
{
    Console.WriteLine("-> Reporting: {0}", msg);
    throw new Exception("Car dead");
}
}
```

## Output

file:///c:/users/ca172009/documents/visual studio 2010/Projects/pgm13/pgm13/bin/Debug/pgm13.EXE

```
*****Speeding Up*****  
-> Current Speed: 20  
-> Current Speed: 40  
-> Current Speed: 60  
-> Current Speed: 80  
-> Current Speed: 100  
-> Current Speed: 120  
-> Reporting: Be Careful, Gonna blow!  
-> Reporting: Sorry, the car is dead!  
Exception: Car is dead already!
```

**14) Work with forms using ASP.Net.**

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace pgm1011
{
    public partial class Form1 : Form
    {
        string[] names;
        string[] passs;
        int rows;

        public Form1()
        {
            InitializeComponent();

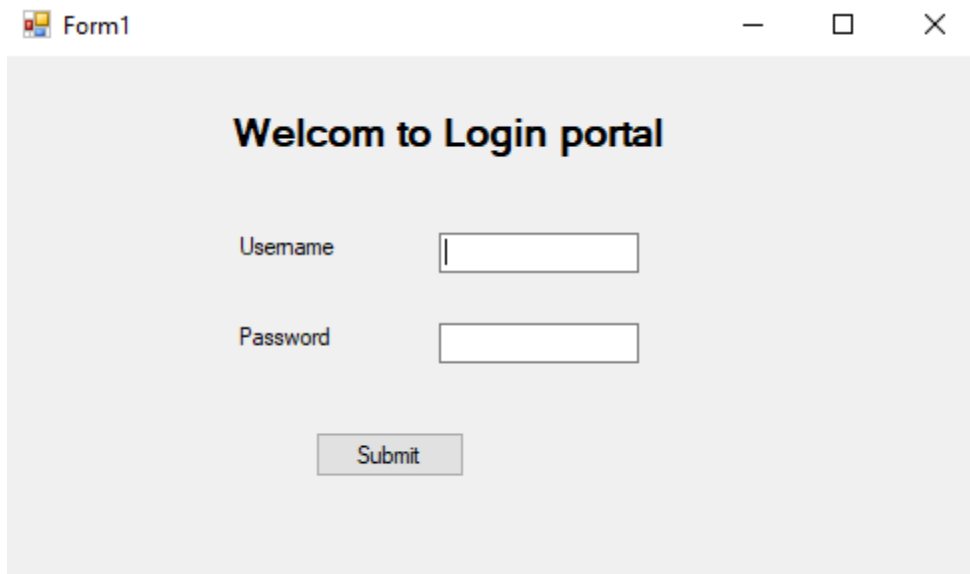
            names = new string[10];
            passs = new string[10];

            names[0] = "admin";
            names[1] = "user";
            names[2] = "tony";

            passs[0] = "admin";
            passs[1] = "user";
            passs[2] = "stark";
            rows = 3;
        }
        private void button1_Click(object sender, EventArgs e)
        {
            string username = textBox1.Text.Trim();
            string password = textBox2.Text.Trim();

            if (username.Equals("") || password.Equals(""))
            {
                MessageBox.Show("Fields cannot be empty!");
                return;
            }
            for (int i = 0; i < rows; i++)
            {
                if (names[i].Equals(username) && passs[i].Equals(password))
                {
                    MessageBox.Show("Login Successfull!");
                }
            }
        }
    }
}
```

```
        return;  
    }  
}  
MessageBox.Show("Incorrect username/password!");  
}  
}
```

**Output**

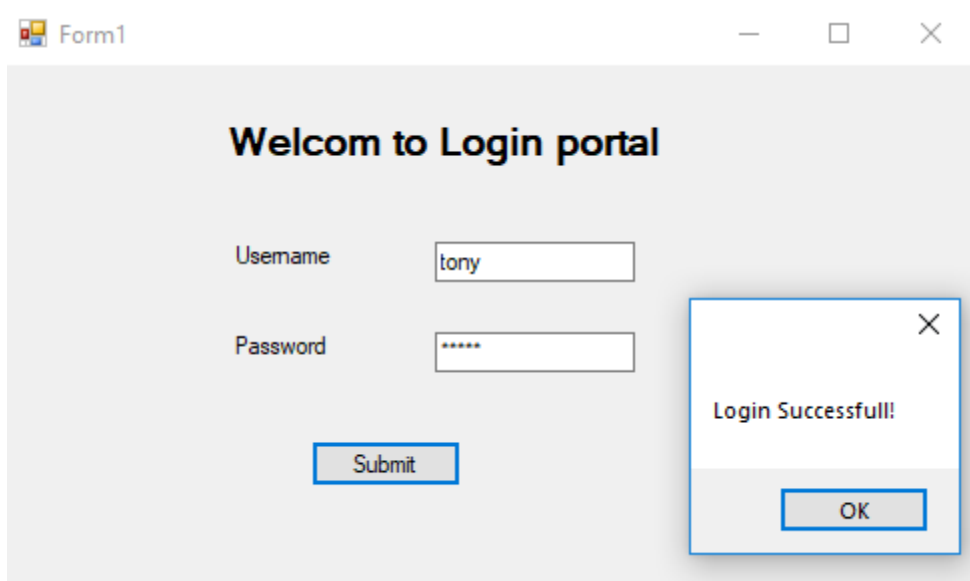
Form1

Welcom to Login portal

Username

Password

Submit



Form1

Welcom to Login portal

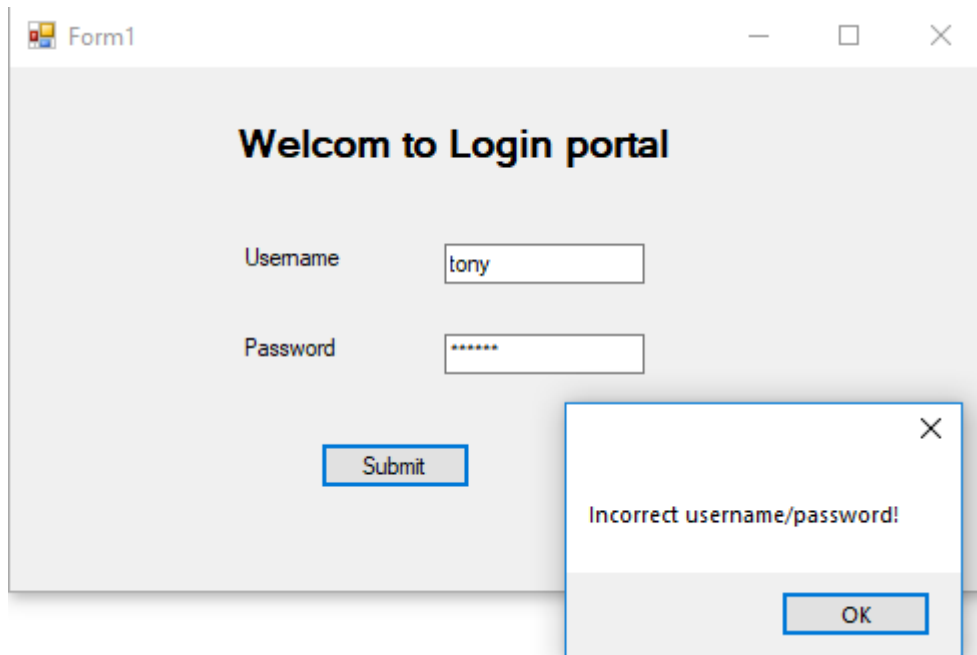
Username

Password

Submit

Login Successfull!

OK



**15) Perform Operator Overloading.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace operator_overriding
{
    class Rectangle
    {
        int width;
        int height;

        Rectangle(int width, int height)
        {
            this.width = width;
            this.height = height;
        }

        public static Rectangle operator +(Rectangle a, Rectangle b)
        {
            int totalWidth = a.width + b.width;
            int totalHeight = a.height + b.height;
            return new Rectangle(totalWidth, totalHeight);
        }

        static void Main(string[] args)
        {
            Rectangle r1 = new Rectangle(95, 54);
            Rectangle r2 = new Rectangle(53, 90);
            Console.WriteLine("-----");
            Console.WriteLine("First Rectangle");
            Console.WriteLine("-----");
            Console.WriteLine("");
            Console.WriteLine("Rectangle Width: {0}", r1.width);
            Console.WriteLine("Rectangle Height: {0}", r1.height);

            Console.WriteLine();

            Console.WriteLine("-----");
            Console.WriteLine("Second Rectangle");
            Console.WriteLine("-----");
            Console.WriteLine("");
            Console.WriteLine("Rectangle Width: {0}", r2.width);
            Console.WriteLine("Rectangle Height: {0}", r2.height);

            Console.WriteLine();
        }
    }
}
```

```
Console.WriteLine("-----");
Console.WriteLine("Output");
Console.WriteLine("-----");
Console.WriteLine("");

Rectangle r3 = r1 + r2;
Console.WriteLine("Total Width: {0}", r3.width);
Console.WriteLine("Total Height: {0}", r3.height);
Console.ReadKey();
    }
}
}
```



## Output

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/operator_overriding/operator_overriding/bin/Debug/operator_overriding.EXE
-----
First Rectangle
-----
Rectangle Width: 40
Rectangle Height: 60
-----
Second Rectangle
-----
Rectangle Width: 65
Rectangle Height: 50
-----
Output
-----
Total Width: 105
Total Height: 110
```

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/operator_overriding/operator_overriding/bin/Debug/operator_overriding.EXE
-----
First Rectangle
-----
Rectangle Width: 45
Rectangle Height: 60
-----
Second Rectangle
-----
Rectangle Width: 25
Rectangle Height: 50
-----
Output
-----
Total Width: 70
Total Height: 110
```

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/operator_overriding/operator_overriding/bin/Debug/operator_overriding.EXE
-----
First Rectangle
-----
Rectangle Width: 95
Rectangle Height: 10
-----
Second Rectangle
-----
Rectangle Width: 55
Rectangle Height: 50
-----
Output
-----
Total Width: 150
Total Height: 60
```

file:///c:/users/ca172009/documents/visual studio 2010/Projects/operator\_overriding/operator\_overriding/bin/Debug/operator\_overriding.EXE

```
-----  
First Rectangle  
-----  
  
Rectangle Width: 95  
Rectangle Height: 40  
  
-----  
Second Rectangle  
-----  
  
Rectangle Width: 55  
Rectangle Height: 90  
  
-----  
Output  
-----  
  
Total Width: 150  
Total Height: 130
```

file:///c:/users/ca172009/documents/visual studio 2010/Projects/operator\_overriding/operator\_overriding/bin/Debug/operator\_overriding.EXE

```
-----  
First Rectangle  
-----  
  
Rectangle Width: 95  
Rectangle Height: 54  
  
-----  
Second Rectangle  
-----  
  
Rectangle Width: 53  
Rectangle Height: 90  
  
-----  
Output  
-----  
  
Total Width: 148  
Total Height: 144
```

**16) Program to Multiply to matrices using Rectangle arrays.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Matrices_Multiplication
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Title = ("Matix Multiplication");
            int[,] mat1 = new int[2, 2];
            int[,] mat2 = new int[2, 2];
            int[,] mat3 = new int[2, 2];

            Console.WriteLine("Enter Element for 1st Array ");
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    mat1[i, j] = Convert.ToInt32(Console.ReadLine());
                }
            }
            Console.WriteLine("Matrix one element are stored.\n");
            Console.WriteLine("Enter Element for 2nd Array.");
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    mat2[i, j] = Convert.ToInt32(Console.ReadLine());
                }
            }
            int r1 = mat1.GetLength(0);
            int c1 = mat1.GetLength(1);
            int r2 = mat2.GetLength(0);
            int c2 = mat1.GetLength(1);

            //Console.WriteLine("\n\t\tRows \tColumn");
            //Console.WriteLine("Matrix 1\t" + r1.ToString() + "\t" + c1.ToString());
            //Console.WriteLine("Matrix 2\t" + r2.ToString() + "\t" + c2.ToString());
            //Console.WriteLine("\n");

            Console.WriteLine("Matrix two element are stored.");
            Console.WriteLine("First Array");
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
```

```
        {
            Console.Write("\t" + mat1[i, j]);
        }
        Console.WriteLine();
    }
    Console.WriteLine("Second Array");

    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 2; j++)
        {
            Console.Write("\t" + mat2[i, j]);
        }
        Console.WriteLine();
    }
    Console.WriteLine("\n");

    Console.WriteLine("Multiplication of two matrix");

    for (int i = 0; i < r1; i++)
    {
        for (int j = 0; j < c2; j++)
        {
            for (int k = 0; k < c1; k++)
            {
                mat3[i, j] += mat1[i, k] * mat2[k, j];
            }
        }
    }
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 2; j++)
        {
            Console.Write("\t" + mat3[i, j]);
        }
        Console.WriteLine();
    }
    Console.ReadKey();
}
}
```

## Output

file:///c:/users/ca172009/documents/visual studio 2010/Projects/mat/mat/bin/Debug/mat.EXE

```
Enter Element for 1st Array
10
20
30
40
Matrix one element are stored.
```

```
Enter Element for 2nd Array.
50
60
70
80
Matrix two element are stored.
```

First Array

10	20
30	40

Second Array

50	60
70	80

```
Multiplication of two matrix
1900    2200
4300    5000
```

file:///c:/users/ca172009/documents/visual studio 2010/Projects/mat/mat/bin/Debug/mat.EXE

```
Enter Element for 1st Array
15
16
18
17
Matrix one element are stored.
```

```
Enter Element for 2nd Array.
```

```
18
19
17
13
Matrix two element are stored.
```

First Array

15	16
18	17

Second Array

18	19
17	13

```
Multiplication of two matrix
542     493
613     563
```

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/mat/mat/bin/Debug/mat.EXE
Enter Element for 1st Array
78
955
699
458
Matrix one element are stored.

Enter Element for 2nd Array.
956
3258
452
963
Matrix two element are stored.
First Array
    78    955
    699   458
Second Array
    956   3258
    452   963

Multiplication of two matrix
    506228  1173789
    875260  2718396
```

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/mat/mat/bin/Debug/mat.EXE
Enter Element for 1st Array
15
16
18
94
Matrix one element are stored.

Enter Element for 2nd Array.
65
48
gt
Enter the numric values only
```

```
file:///c:/users/ca172009/documents/visual studio 2010/Projects/mat/mat/bin/Debug/mat.EXE
Enter Element for 1st Array
65
98
25
63
Matrix one element are stored.

Enter Element for 2nd Array.
14
52
65
efsf
Enter the numric values only
```

**17) Demonstrate Use of Virtual and Override keyword in C# with a simple Program.**

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace va
{
    class A
    {
        public virtual void show()
        {
            Console.WriteLine("Hello: Base Class!");
            Console.Write("\nPress Enter...");
            Console.ReadLine();
        }
    }
    class B : A
    {
        public override void show()
        {
            Console.WriteLine("Hello: Derived Class!");
            Console.Write("\nPress Enter...");
            Console.ReadLine();
        }
    }
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("\nClass A is Base Class & Class B is derived from A.\n");
            Console.WriteLine("Creating Object of Class A.");
            A a1 = new A();
            a1.show();
            Console.WriteLine("-----\n");
            Console.WriteLine("Creating Object of Class B.");
            B b1 = new B();
            b1.show();
            Console.WriteLine("-----\n");
            Console.WriteLine("Creating Object of Class A and Calling Method of Class B.");
            A a2 = new B();
            a2.show();

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

## Output

file:///c:/users/ca172009/documents/visual studio 2010/Projects/virtual/virtual/bin/Debug/@virtual.EXE

```
Class A is Base Class & Class B is derived from A.
```

```
Creating Object of Class A.
```

```
Hello: Base Class!
```

```
Press Enter...
```

file:///c:/users/ca172009/documents/visual studio 2010/Projects/virtual/virtual/bin/Debug/@virtual.EXE

```
Class A is Base Class & Class B is derived from A.
```

```
Creating Object of Class A.
```

```
Hello: Base Class!
```

```
Press Enter...
```

```
Creating Object of Class B.
```

```
Hello: Derived Class!
```

```
Press Enter...
```

file:///c:/users/ca172009/documents/visual studio 2010/Projects/virtual/virtual/bin/Debug/@virtual.EXE

```
Class A is Base Class & Class B is derived from A.
```

```
Creating Object of Class A.
```

```
Hello: Base Class!
```

```
Press Enter...
```

```
Creating Object of Class B.
```

```
Hello: Derived Class!
```

```
Press Enter...
```

```
Creating Object of Class A and Calling Method of Class B.
```

```
Hello: Derived Class!
```

```
Press Enter...
```