Homework – Week 4 – Programming

Name:

Question 4.1 - Write a program that reads in a series of numbers and adds them up until the user enters zero. (This stopping value is often called a **rogue value**.). HINT: Use an inputbox (see example in Notes) that can be utilised in a loop.

Designer file:

```
namespace Homework_4._1
{
    partial class Homework4b
    {
        /// <summary>
        ///  Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        ///  Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        ///  Required method for Designer support - do not modify
        ///  the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
```

```
{
    this.BTNRun = new System.Windows.Forms.Button();
    this.TBInput = new System.Windows.Forms.TextBox();
    this.LBOutput = new System.Windows.Forms.Label();
    this.label1 = new System.Windows.Forms.Label();
    this.SuspendLayout();
    //
    // BTNRun
    //
    this.BTNRun.Location = new System.Drawing.Point(13, 13);
    this.BTNRun.Name = "BTNRun";
    this.BTNRun.Size = new System.Drawing.Size(128, 23);
    this.BTNRun.TabIndex = 0;
    this.BTNRun.Text = "Input More Numbers";
    this.BTNRun.UseVisualStyleBackColor = true;
    this.BTNRun.Click += new System.EventHandler(this.button1_Click);
    //
    // TBInput
    //
    this.TBInput.Location = new System.Drawing.Point(12, 42);
    this.TBInput.Name = "TBInput";
    this.TBInput.Size = new System.Drawing.Size(100, 23);
    this.TBInput.TabIndex = 1;
    //
    // LBOutput
    //
    this.LBOutput.AutoSize = true;
    this.LBOutput.Location = new System.Drawing.Point(13, 73);
    this.LBOutput.Name = "LBOutput";
    this.LBOutput.Size = new System.Drawing.Size(45, 15);
    this.LBOutput.TabIndex = 2;
    this.LBOutput.Text = "Output";
    //
    // label1
    //
    this.label1.Location = new System.Drawing.Point(147, 7);
    this.label1.Name = "label1";
    this.label1.Size = new System.Drawing.Size(229, 58);
    this.label1.TabIndex = 3;
    this.label1.Text = "Due to the use of C# input boxes are not available easily, so when 0 is inputted " +
```

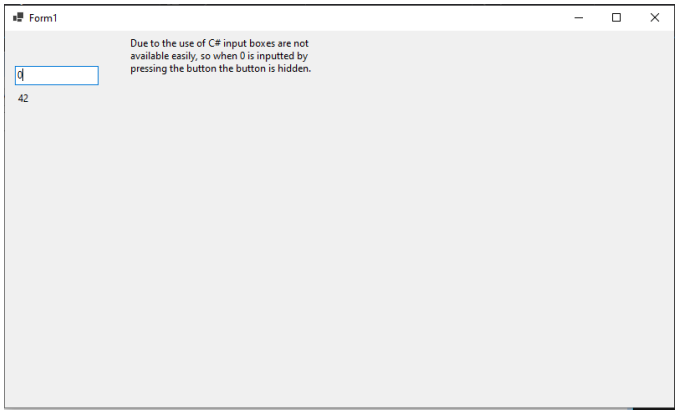
```
    "by pressing the button the button is hidden.";
            //
            // Homework4b
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 15F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(800, 450);
            this.Controls.Add(this.label1);
            this.Controls.Add(this.LBOutput);
            this.Controls.Add(this.TBInput);
            this.Controls.Add(this.BTNRun);
            this.Name = "Homework4b";
            this.Text = "Form1";
            this.Load += new System.EventHandler(this.Form1_Load);
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.Button BTNRun;
        private System.Windows.Forms.TextBox TBInput;
        private System.Windows.Forms.Label LBOutput;
        private System.Windows.Forms.Label label1;
    }
}
```

Code file:

```
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 Homework_4._1
{
    public partial class Homework4b : Form
    {
        public Homework4b()
        {
            InitializeComponent();
        }
        int cumulativeValue = 0;
        private void Form1_Load(object sender, EventArgs e)
        {

        }

        private void button1_Click(object sender, EventArgs e)
        {
            if (Convert.ToInt32(TBInput.Text) == 0)
            {
                BTNRun.Hide();
            }
            else
            {
                cumulativeValue += Convert.ToInt32(TBInput.Text);
                LBOutput.Text = cumulativeValue.ToString();
            }


        }


    }
}
```

Screenshot of running program:


Form1
Due to the use of C# input boxes are not available easily, so when 0 is inputted by pressing the button the button is hidden.
0
42

Question 4.2 - Write a program that asks a user for a number between 10 and 20 inclusive. The program should give the user a message if the number input is outside this range and ask for another number until the number input is within the range. HINT: Use an inputbox (see example in Notes) that can be utilised in a loop

Designer file:

```
namespace Homework_4._2
{
    partial class Heomwork4b
    {
        /// <summary>
        ///  Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        ///  Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        ///  Required method for Designer support - do not modify
        ///  the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.BTNRun = new System.Windows.Forms.Button();
            this.LBOutput = new System.Windows.Forms.Label();
            this.TBInput = new System.Windows.Forms.TextBox();
```

```
this.SuspendLayout();
//
// BTNRun
//
this.BTNRun.Location = new System.Drawing.Point(13, 13);
this.BTNRun.Name = "BTNRun";
this.BTNRun.Size = new System.Drawing.Size(202, 23);
this.BTNRun.TabIndex = 0;
this.BTNRun.Text = "Enter a number between 10 and 20";
this.BTNRun.UseVisualStyleBackColor = true;
this.BTNRun.Click += new System.EventHandler(this.BTNRun_Click);
//
// LBOutput
//
this.LBOutput.AutoSize = true;
this.LBOutput.Location = new System.Drawing.Point(12, 69);
this.LBOutput.Name = "LBOutput";
this.LBOutput.Size = new System.Drawing.Size(45, 15);
this.LBOutput.TabIndex = 1;
this.LBOutput.Text = "Output";
//
// TBInput
//
this.TBInput.Location = new System.Drawing.Point(13, 43);
this.TBInput.Name = "TBInput";
this.TBInput.Size = new System.Drawing.Size(100, 23);
this.TBInput.TabIndex = 2;
//
// Heomwork4b
//
this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 15F);
this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
this.ClientSize = new System.Drawing.Size(800, 450);
this.Controls.Add(this.TBInput);
this.Controls.Add(this.LBOutput);
this.Controls.Add(this.BTNRun);
this.Name = "Heomwork4b";
this.Text = "Form1";
this.ResumeLayout(false);
this.PerformLayout();
```

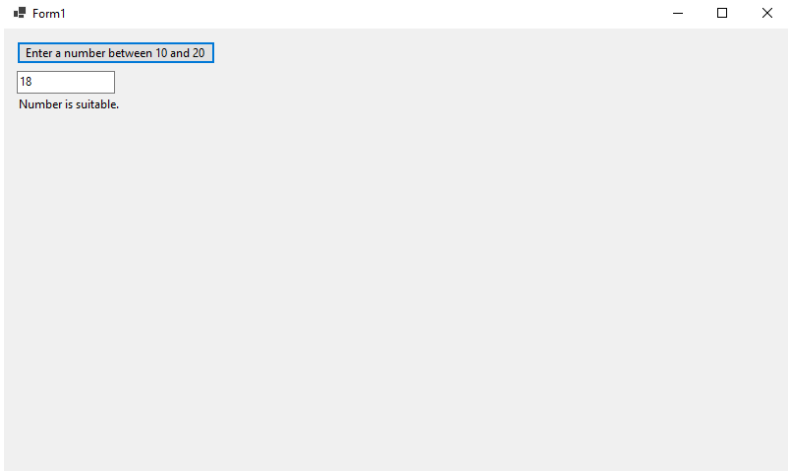
```
        }

        #endregion

        private System.Windows.Forms.Button BTNRun;
        private System.Windows.Forms.Label LBOutput;
        private System.Windows.Forms.TextBox TBInput;
    }
}
```

Code file:

```
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 Homework_4._2
{
    public partial class Heomwork4b : Form
    {
        public Heomwork4b()
        {
            InitializeComponent();
        }

        private void BTNRun_Click(object sender, EventArgs e)
        {
            if (Convert.ToInt32(TBInput.Text)>9 && (Convert.ToInt32(TBInput.Text)<21))
            {
                LBOutput.Text = "Number is suitable.";
            }
            else
```

```
            {
                LBOutput.Text = "Try a different number";
            }
        }
    }
}
```

Screenshot of running program:



Question 4.3 - Write a program that displays a conversion table for pounds to kilograms, ranging from 1 pound to 20 pounds [1 kg = 2.2 pounds].
HINT: use a multiline object e.g. listbox

Designer file:

```
namespace Homework_4._3
{
    partial class Form1
    {
        /// <summary>
        ///  Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        ///  Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        ///  Required method for Designer support - do not modify
        ///  the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.LBOutput = new System.Windows.Forms.ListBox();
            this.SuspendLayout();
            //
            // LBOutput
            //
```

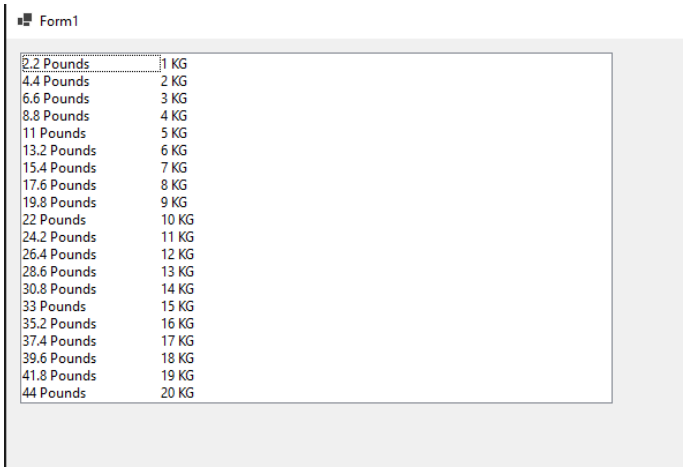
```
            this.LBOutput.FormattingEnabled = true;
            this.LBOutput.ItemHeight = 15;
            this.LBOutput.Location = new System.Drawing.Point(12, 12);
            this.LBOutput.Name = "LBOutput";
            this.LBOutput.Size = new System.Drawing.Size(514, 304);
            this.LBOutput.TabIndex = 0;
            this.LBOutput.SelectedIndexChanged += new System.EventHandler(this.listBox1_SelectedIndexChanged);
            //
            // Form1
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 15F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(800, 450);
            this.Controls.Add(this.LBOutput);
            this.Name = "Form1";
            this.Text = "Form1";
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.ListBox LBOutput;
    }
}
```

Code file:

```
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 Homework_4._3
```

```
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
            LBOutput.MultiColumn = true;
            for (int i = 1; i < 21; i++ )
            {
                double output = Math.Round(((i) * 2.2), 2);
                LBOutput.Items.Add(output.ToString() + " Pounds");
            }
            for (int i = 1; i < 21; i++)
            {
                LBOutput.Items.Add(i.ToString() + " KG");
            }
        }

        private void listBox1_SelectedIndexChanged(object sender, EventArgs e)
        {

        }
    }
}
```

Screenshot of running program:



Question 4.4 - Write a program that takes two letters as input and displays all the letters of the alphabet between the two supplied letters (inclusive). For example, EJ produces EFGHIJ. The letters are to be printed in the order in which the specified letters are supplied. GB should produce GFEDCB. HINT use ASC() and CHR().

Designer file:

```
namespace Homework_4._4
{
    partial class Homework4d
    {
        /// <summary>
        ///  Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        ///  Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        ///  Required method for Designer support - do not modify
        ///  the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.TBLetter1 = new System.Windows.Forms.TextBox();
            this.TBLetter2 = new System.Windows.Forms.TextBox();
            this.BTNRun = new System.Windows.Forms.Button();
```

```
this.LBLOutput = new System.Windows.Forms.Label();
this.label1 = new System.Windows.Forms.Label();
this.SuspendLayout();
//
// TBLetter1
//
this.TBLetter1.Location = new System.Drawing.Point(13, 13);
this.TBLetter1.Name = "TBLetter1";
this.TBLetter1.Size = new System.Drawing.Size(100, 23);
this.TBLetter1.TabIndex = 0;
//
// TBLetter2
//
this.TBLetter2.Location = new System.Drawing.Point(120, 13);
this.TBLetter2.Name = "TBLetter2";
this.TBLetter2.Size = new System.Drawing.Size(100, 23);
this.TBLetter2.TabIndex = 1;
//
// BTNRun
//
this.BTNRun.Location = new System.Drawing.Point(13, 43);
this.BTNRun.Name = "BTNRun";
this.BTNRun.Size = new System.Drawing.Size(75, 23);
this.BTNRun.TabIndex = 2;
this.BTNRun.Text = "Run";
this.BTNRun.UseVisualStyleBackColor = true;
this.BTNRun.Click += new System.EventHandler(this.BTNRun_Click);
//
// LBLOutput
//
this.LBLOutput.AutoSize = true;
this.LBLOutput.Location = new System.Drawing.Point(94, 47);
this.LBLOutput.Name = "LBLOutput";
this.LBLOutput.Size = new System.Drawing.Size(45, 15);
this.LBLOutput.TabIndex = 3;
this.LBLOutput.Text = "Output";
//
// label1
//
this.label1.AutoSize = true;
```

```
            this.label1.Location = new System.Drawing.Point(12, 80);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(234, 15);
            this.label1.TabIndex = 4;
            this.label1.Text = "Done in c# without asc() or other functions";
            //
            // Homework4d
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(7F, 15F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(800, 450);
            this.Controls.Add(this.label1);
            this.Controls.Add(this.LBLOutput);
            this.Controls.Add(this.BTNRun);
            this.Controls.Add(this.TBLetter2);
            this.Controls.Add(this.TBLetter1);
            this.Name = "Homework4d";
            this.Text = "Form1";
            this.ResumeLayout(false);
            this.PerformLayout();

        }

        #endregion

        private System.Windows.Forms.TextBox TBLetter1;
        private System.Windows.Forms.TextBox TBLetter2;
        private System.Windows.Forms.Button BTNRun;
        private System.Windows.Forms.Label LBLOutput;
        private System.Windows.Forms.Label label1;
    }
}
```

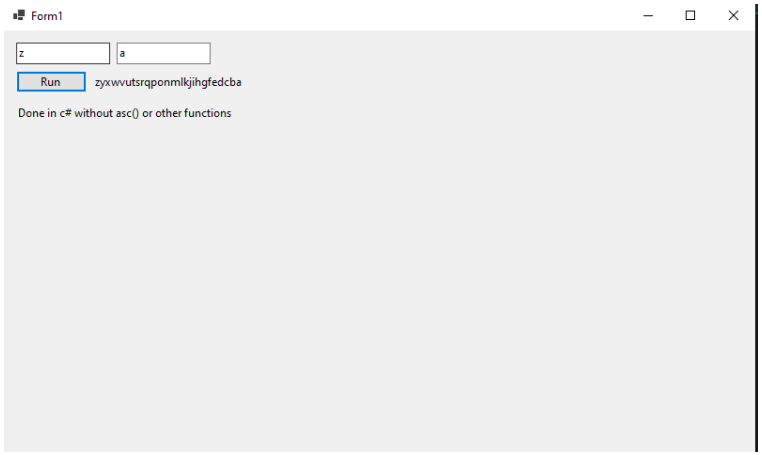
Code file:

```
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 Homework_4._4
{
    public partial class Homework4d : Form
    {
        public Homework4d()
        {
            InitializeComponent();
        }

        static string ReverseString(string alphabet)
        {
            char[] array = alphabet.ToCharArray();
            Array.Reverse(array);
            return new string(array);
        }
        private string alphabetSplitter(string Letter1, string  Letter2)
        {
            int letter1Pos = 0;
            int letter2Pos = 0;
            const string alphabet = "abcdefghijklmnopqrstuvwxyz";
            char[] alphabetList = alphabet.ToCharArray();//converts the string alphabet to an array of characters
            for (int i = 0; i < 26; i++)//iterates through the list of letters and checks if they are the desired ones.
            {
                if (alphabetList[i].ToString() == Letter1)
                {
                    letter1Pos = i;
                }
                else if (alphabetList[i].ToString() == Letter2)
                {
                    letter2Pos = i;
                }

            }
```

```
            if (letter2Pos > letter1Pos)//if the letters are entered in alphabetical order then it returns it as normal
            {
                return alphabet.Substring(letter1Pos, (letter2Pos - letter1Pos) + 1);
            }
            else//if the letters are not in alphabetical order then it re-runs the process with a reversed alphabet. should use
either a subroutine to aid decomposion, performance etc, or used a check before running the loop at all.
            {
                string reverseAlphabet = ReverseString(alphabet);
                char[] reverseAlphabetList = reverseAlphabet.ToCharArray();//converts the string alphabet to an array of characters
                for (int i = 0; i < 26; i++)//iterates through the list of letters and checks if they are the desired ones.
                {
                    if (reverseAlphabetList[i].ToString() == Letter1)
                    {
                        letter1Pos = i;
                    }
                    else if (reverseAlphabetList[i].ToString() == Letter2)
                    {
                        letter2Pos = i;
                    }

                }
                return reverseAlphabet.Substring(letter1Pos, (letter2Pos - letter1Pos) + 1);
            }
        }


        private void BTNRun_Click(object sender, EventArgs e)
        {
            string Letter1 = TBLetter1.Text;
            string Letter2 = TBLetter2.Text;
            LBLOutput.Text = alphabetSplitter(Letter1, Letter2);
        }
    }
}
```

Screenshot of running program:



Question 4.5 - Write a program that the user can type in any number of positive integers and displays the largest integer. Input will terminate with the rogue value of -1. HINT: Use an inputbox (see example in Notes) that can be utilised in a loop.

Designer file:

```
namespace Homework_4._5
{
    partial class HW4B
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.BTNEnterNum = new System.Windows.Forms.Button();
            this.TBNumInput = new System.Windows.Forms.TextBox();
            this.LBLOutput = new System.Windows.Forms.Label();
            this.SuspendLayout();
```

```
//
// BTNEnterNum
//
this.BTNEnterNum.Location = new System.Drawing.Point(13, 13);
this.BTNEnterNum.Name = "BTNEnterNum";
this.BTNEnterNum.Size = new System.Drawing.Size(75, 23);
this.BTNEnterNum.TabIndex = 0;
this.BTNEnterNum.Text = "Input";
this.BTNEnterNum.UseVisualStyleBackColor = true;
this.BTNEnterNum.Click += new System.EventHandler(this.BTNEnterNum_Click);
//
// TBNumInput
//
this.TBNumInput.Location = new System.Drawing.Point(95, 15);
this.TBNumInput.Name = "TBNumInput";
this.TBNumInput.Size = new System.Drawing.Size(100, 20);
this.TBNumInput.TabIndex = 1;
//
// LBLOutput
//
this.LBLOutput.AutoSize = true;
this.LBLOutput.Location = new System.Drawing.Point(13, 43);
this.LBLOutput.Name = "LBLOutput";
this.LBLOutput.Size = new System.Drawing.Size(13, 13);
this.LBLOutput.TabIndex = 2;
this.LBLOutput.Text = "0";
//
// HW4B
//
this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
this.ClientSize = new System.Drawing.Size(800, 450);
this.Controls.Add(this.LBLOutput);
this.Controls.Add(this.TBNumInput);
this.Controls.Add(this.BTNEnterNum);
this.Name = "HW4B";
this.Load += new System.EventHandler(this.Form1_Load);
this.ResumeLayout(false);
this.PerformLayout();
```

```
        }

        #endregion

        private System.Windows.Forms.Button BTNEnterNum;
        private System.Windows.Forms.TextBox TBNumInput;
        private System.Windows.Forms.Label LBLOutput;
    }
}
```

Code file:

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


namespace Homework_4._5
{
    public partial class HW4B : Form
    {
        public HW4B()
        {
            InitializeComponent();
        }

        private void Form1_Load(object sender, EventArgs e)
        {

        }

        private void BTNEnterNum_Click(object sender, EventArgs e)
        {
            int largestNum = Convert.ToInt32(LBLOutput.Text);
            if (Convert.ToInt32(TBNumInput.Text) == -1)
```

```
            {
                BTNEnterNum.Hide();
            }
            else if (Convert.ToInt32(TBNumInput.Text) > largestNum)
            {
                largestNum = Convert.ToInt32(TBNumInput.Text);
                LBLOutput.Text = largestNum.ToString();
            }

        }
    }
}
```

Screenshot of running program: