1)

using System;

using System.Text.RegularExpressions;

using System.Windows.Forms;

namespace WindowsFormsApplication1

{

public partial class Form1 : Form

{

public Form1()

{

InitializeComponent();

}

private void Form1\_Load(object sender, EventArgs e)

{

}

private void button1\_Click(object sender, EventArgs e)

{

string input1 = textBox1.Text;

string input2 = textBox2.Text;

if (!Regex.IsMatch(input1, @"\d+$") || !Regex.IsMatch(input2, @"\d+$"))

{

MessageBox.Show(" Please enter valid input for the operands") ;

}

if (radioButton1.Checked)

{

MessageBox.Show((int.Parse(input1) + int.Parse(input2)).ToString());

}

else if (radioButton2.Checked)

{

MessageBox.Show((int.Parse(input1) - int.Parse(input2)).ToString());

}

else if (radioButton3.Checked)

{

MessageBox.Show((int.Parse(input1) \* int.Parse(input2)).ToString());

}

else if (radioButton4.Checked)

{

MessageBox.Show((int.Parse(input1) / int.Parse(input2)).ToString());

}

else

{

MessageBox.Show("Please Select a valid Option");

}

}

}

}

Designer.cs

namespace WindowsFormsApplication1

{

partial class Form1

{

private System.ComponentModel.IContainer components = null;

protected override void Dispose(bool disposing)

{

if (disposing && (components != null))

{

components.Dispose();

}

base.Dispose(disposing);

}

#region Windows Form Designer generated code

private void InitializeComponent()

{

this.textBox1 = new System.Windows.Forms.TextBox();

this.textBox2 = new System.Windows.Forms.TextBox();

this.button1 = new System.Windows.Forms.Button();

this.radioButton1 = new System.Windows.Forms.RadioButton();

this.radioButton2 = new System.Windows.Forms.RadioButton();

this.radioButton3 = new System.Windows.Forms.RadioButton();

this.radioButton4 = new System.Windows.Forms.RadioButton();

this.SuspendLayout();

this.textBox1.Location = new System.Drawing.Point(146, 62);

this.textBox1.Name = "textBox1";

this.textBox1.Size = new System.Drawing.Size(125, 27);

this.textBox1.TabIndex = 0;

this.textBox2.Location = new System.Drawing.Point(367, 62);

this.textBox2.Name = "textBox2";

this.textBox2.Size = new System.Drawing.Size(125, 27);

this.textBox2.TabIndex = 1;

this.button1.Location = new System.Drawing.Point(270, 206);

this.button1.Name = "button1";

this.button1.Size = new System.Drawing.Size(94, 29);

this.button1.TabIndex = 6;

this.button1.Text = "Calculate";

this.button1.UseVisualStyleBackColor = true;

this.button1.Click += new System.EventHandler(this.button1\_Click);

this.radioButton1.AutoSize = true;

this.radioButton1.Location = new System.Drawing.Point(72, 133);

this.radioButton1.Name = "Addition";

this.radioButton1.Size = new System.Drawing.Size(117, 24);

this.radioButton1.TabIndex = 7;

this.radioButton1.TabStop = true;

this.radioButton1.Text = "Addition";

this.radioButton1.UseVisualStyleBackColor = true;

this.radioButton2.AutoSize = true;

this.radioButton2.Location = new System.Drawing.Point(238, 133);

this.radioButton2.Name = "Subtraction";

this.radioButton2.Size = new System.Drawing.Size(117, 24);

this.radioButton2.TabIndex = 8;

this.radioButton2.TabStop = true;

this.radioButton2.Text = "Subtraction";

this.radioButton2.UseVisualStyleBackColor = true;

this.radioButton3.AutoSize = true;

this.radioButton3.Location = new System.Drawing.Point(406, 133);

this.radioButton3.Name = "Multiplication";

this.radioButton3.Size = new System.Drawing.Size(117, 24);

this.radioButton3.TabIndex = 9;

this.radioButton3.TabStop = true;

this.radioButton3.Text = "Multiplication";

this.radioButton3.UseVisualStyleBackColor = true;

this.radioButton4.AutoSize = true;

this.radioButton4.Location = new System.Drawing.Point(560, 133);

this.radioButton4.Name = "Division";

this.radioButton4.Size = new System.Drawing.Size(117, 24);

this.radioButton4.TabIndex = 10;

this.radioButton4.TabStop = true;

this.radioButton4.Text = "Division";

this.radioButton4.UseVisualStyleBackColor = true;

this.AutoScaleDimensions = new System.Drawing.SizeF(8F, 20F);

this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;

this.ClientSize = new System.Drawing.Size(800, 450);

this.Controls.Add(this.radioButton4);

this.Controls.Add(this.radioButton3);

this.Controls.Add(this.radioButton2);

this.Controls.Add(this.radioButton1);

this.Controls.Add(this.button1);

this.Controls.Add(this.textBox2);

this.Controls.Add(this.textBox1);

this.Name = "Form1";

this.Text = "Form1";

this.Load += new System.EventHandler(this.Form1\_Load);

this.ResumeLayout(false);

this.PerformLayout();

}

#endregion

private System.Windows.Forms.TextBox textBox1;

private System.Windows.Forms.TextBox textBox2;

private System.Windows.Forms.Button button1;

private System.Windows.Forms.RadioButton radioButton1;

private System.Windows.Forms.RadioButton radioButton2;

private System.Windows.Forms.RadioButton radioButton3;

private System.Windows.Forms.RadioButton radioButton4;

}

}

Program.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace WindowsFormsApplication1

{

static class Program

{

[STAThread]

static void Main()

{

Application.SetHighDpiMode(HighDpiMode.SystemAware);

Application.EnableVisualStyles();

Application.SetCompatibleTextRenderingDefault(false);

Application.Run(new Form1());

}

}

}

2)

Form1.cs

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 WindowsFormsApplication2

{

public partial class Form1 : Form

{

public Form1()

{

InitializeComponent();

}

private void pictureBox1\_Click(object sender, EventArgs e)

{

}

private void button1\_Click(object sender, EventArgs e)

{

OpenFileDialog openFileDialog1 = new OpenFileDialog

{

InitialDirectory = @"D:\",

Filter = "image(\*.jpg) | \*.jpg"

};

if (openFileDialog1.ShowDialog() == DialogResult.OK)

{

pictureBox1.SizeMode = PictureBoxSizeMode.StretchImage;

pictureBox1.Image = new Bitmap(openFileDialog1.FileName);

}

}

}

}

Form1.Designer.cs

namespace WindowsFormsApplication2

{

partial class Form1

{

private System.ComponentModel.IContainer components = null;

protected override void Dispose(bool disposing)

{

if (disposing && (components != null))

{

components.Dispose();

}

base.Dispose(disposing);

}

#region Windows Form Designer generated code

private void InitializeComponent()

{

this.openFileDialog1 = new System.Windows.Forms.OpenFileDialog();

this.pictureBox1 = new System.Windows.Forms.PictureBox();

this.button1 = new System.Windows.Forms.Button();

((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).BeginInit();

this.SuspendLayout();

this.openFileDialog1.FileName = "openFileDialog1";

this.pictureBox1.Location = new System.Drawing.Point(59, 48);

this.pictureBox1.Name = "pictureBox1";

this.pictureBox1.Size = new System.Drawing.Size(700, 343);

this.pictureBox1.TabIndex = 0;

this.pictureBox1.TabStop = false;

this.pictureBox1.Click += new System.EventHandler(this.pictureBox1\_Click);

this.button1.Location = new System.Drawing.Point(320, 409);

this.button1.Name = "button1";

this.button1.Size = new System.Drawing.Size(94, 29);

this.button1.TabIndex = 1;

this.button1.Text = "button1";

this.button1.UseVisualStyleBackColor = true;

this.button1.Click += new System.EventHandler(this.button1\_Click);

this.AutoScaleDimensions = new System.Drawing.SizeF(8F, 20F);

this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;

this.ClientSize = new System.Drawing.Size(800, 450);

this.Controls.Add(this.button1);

this.Controls.Add(this.pictureBox1);

this.Name = "Form1";

this.Text = "Form1";

((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).EndInit();

this.ResumeLayout(false);

}

#endregion

private System.Windows.Forms.OpenFileDialog openFileDialog1;

private System.Windows.Forms.PictureBox pictureBox1;

private System.Windows.Forms.Button button1;

}

}

Program.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace WindowsFormsApplication2

{

static class Program

{ [STAThread]

static void Main()

{

Application.SetHighDpiMode(HighDpiMode.SystemAware);

Application.EnableVisualStyles();

Application.SetCompatibleTextRenderingDefault(false);

Application.Run(new Form1());

}

}

}

Nunit:

1)

EmployeeManager.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace CollectionsLib

{

public class Employee

{

public int EmpId { get; set; }

public string EmpName { get; set; }

public double Salary { get; set; }

public DateTime DOJ { get; set; }

}

public class EmployeeManager

{

private static readonly List<Employee> employees;

static EmployeeManager()

{

employees = new List<Employee>

{

new Employee { EmpId=100, EmpName="John",DOJ=DateTime.Now.AddYears(-5),Salary=30000},

new Employee { EmpId=101, EmpName="Mary",DOJ=DateTime.Now.AddYears(-2),Salary=10000},

new Employee { EmpId=102, EmpName="Steve",DOJ=DateTime.Now.AddYears(-2),Salary=10000},

new Employee { EmpId=103, EmpName="Allen",DOJ=DateTime.Now.AddYears(-7),Salary=50000},

};

}

public List<Employee> GetEmployees()

{

return employees;

}

public List<Employee> GetEmployeesWhoJoinedInPreviousYears()

{

return employees.FindAll(x=>x.DOJ<DateTime.Now);

}

}

}

EmployeeManagerTest.cs

using CollectionsLib;

using NUnit.Framework;

using System.Linq;

namespace UnitTestProject8

{

[TestFixture]

public class UnitTest1

{

[Test]

public void UnitUnderTest\_Scenario\_ExpectedOutcom()

{

EmployeeManager employeeManager = new EmployeeManager();

var containnull = employeeManager.GetEmployees().Contains(null);

Assert.AreEqual(containnull, false);

var l1 = employeeManager.GetEmployees();

int e100 = l1.Where(e => e.EmpId == 100).Count();

Assert.That(e100, Is.EqualTo(1));

var unique = l1.Distinct().Count();

Assert.That(unique, Is.EqualTo(l1.Count));

var ge = employeeManager.GetEmployees();

var gev = employeeManager.GetEmployeesWhoJoinedInPreviousYears();

Assert.That(ge, Is.EquivalentTo(gev));

}

}

}

2)

SeasonTeller.cs

using System;

namespace SeasonsLib

{

public class SeasonTeller

{

public string DisplaySeasonBy(string monthName)

{

string seasonName;

if (monthName.Equals("February", StringComparison.OrdinalIgnoreCase) || monthName.Equals("March", StringComparison.OrdinalIgnoreCase))

{

seasonName = "Spring";

}

else if (monthName.Equals("April", StringComparison.OrdinalIgnoreCase) || monthName.Equals("May", StringComparison.OrdinalIgnoreCase) || monthName.Equals("June", StringComparison.OrdinalIgnoreCase))

{

seasonName = "Summer";

}

else if (monthName.Equals("July", StringComparison.OrdinalIgnoreCase) || monthName.Equals("August", StringComparison.OrdinalIgnoreCase) || monthName.Equals("September", StringComparison.OrdinalIgnoreCase))

{

seasonName = "Monsoon";

}

else if (monthName.Equals("October", StringComparison.OrdinalIgnoreCase) || monthName.Equals("November", StringComparison.OrdinalIgnoreCase))

{

seasonName = "Autumn";

}

else if (monthName.Equals("December", StringComparison.OrdinalIgnoreCase) || monthName.Equals("January", StringComparison.OrdinalIgnoreCase))

{

seasonName = "Winter";

}

else

{

return "Invalid Season";

}

return seasonName;

}

}

}

SUT.cs

using NUnit.Framework;

using SeasonsLib;

namespace UnitTestProject5

{

[TestFixture]

public class SUT

{

[Test]

[TestCaseSource(nameof(str))]

public void UnitUnderTest\_Scenario\_ExpectedOutcome(string a, string b)

{

SeasonTeller st = new SeasonTeller();

Assert.That(b, Is.EqualTo(st.DisplaySeasonBy(a)));

}

static object[] str =

{

new object[] { "February", "Spring" },

new object[] {"July","Monsoon"}

};

}

}

3)

LeapYearCalculator.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace LeapYearCalculatorLib

{

public class LeapYearCalculator

{

public int IsLeapYear(int year)

{

int output;

if (year<1753||year>9999)

{

return -1;

}

if (((year % 4 == 0) && (year % 100 != 0)) || (year % 400 == 0))

output = 1;

else

output = 0;

return output;

}

}

}

SUT.cs

using NUnit.Framework;

using LeapYearCalculatorLib;

namespace UnitTestProject9

{

[TestFixture]

public class SUT

{

[Test]

[TestCase(1752, -1)]

[TestCase(2000, 1)]

[TestCase(1998, 0)]

public void UnitUnderTest\_Scenario\_ExpectedOutcome(int year, int expectedresult)

{

LeapYearCalculator leapYearCalculator = new LeapYearCalculator();

int result = leapYearCalculator.IsLeapYear(year);

Assert.That(result, Is.EqualTo(expectedresult));

}

}

}

4)User.cs

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace UserManagerLib

{

public class User

{

public Guid Id { get; set; }

public string FirstName { get; set; }

public string LastName { get; set; }

public string EmailId { get; set; }

public string PANCardNo

{

get;

set;

}

public string ValidatePANCardNumber(string panCard)

{

if (string.IsNullOrEmpty(panCard))

{

throw new NullReferenceException("Invalid Pan Card Number");

}

else if (panCard.Length != 10)

{

throw new FormatException("Pan Card Number Should contain only 10 characters");

}

else

{

return "Valid";

}

}

public void CreateUser(User user)

{

if (ValidatePANCardNumber(user.PANCardNo).Equals("Valid"))

{

//Do something

}

}

}

}

UnitTest1.cs

using System;

using NUnit.Framework;

using UserManagerLib;

namespace UnitTestProject11

{

[TestFixture]

public class UnitTest1

{

[Test]

[TestCase("1234567890")]

[TestCase("ABCDEFGHIJ")]

public void validpancard(string a)

{

User s = new User();

try

{

s.CreateUser(new User { PANCardNo = a });

}

catch (NullReferenceException e)

{

Assert.Fail(e.Message);

}

catch (FormatException e)

{

Assert.Fail(e.Message);

}

}

}

}