



VISUAL BASIC/C# PROGRAMMING (330)

REGIONAL – 2018

Production Portion:

Program 1: Photo Gallery _____ (415 points)

TOTAL POINTS _____ (*415 points*)

**Graders: Please double check and verify all scores
and answer keys!**

Property of Business Professionals of America.
May be reproduced only for use in the Business Professionals of America
Workplace Skills Assessment Program competition.



Photo Gallery

Photo gallery applications are included on all modern operating systems, and thus are commonly overlooked. In this exercise, you will create a Visual Basic or C# Windows Form Application that handles the functionality commonly associated with this sort of generic application. It will be capable of loading in a directory of images and will allow traversal through them. All images will be 640x640 for simplicity.

Requirements:

1. You must create a VB/C# Windows Forms application named VB_330_ContestantNumber, where ContestantNumber is your BPA assigned contestant number (including dashes). For example, VB_330_01_2345_6789.
2. Your contestant number must appear as a comment at the top of the main source code file.
3. Application on Exit button press must ask for confirmation to close, with the Title of the confirmation box being “Confirm” and the text being “Are you sure you wish to exit the photo gallery?”
 - a. Exit button must be named “exitButton”
4. The main form must not have minimize, maximize, or close buttons in the Form Handle.
5. Pressing the Load Button must show a FolderBrowserDialog that allows the user to select a folder. Once the folder is selected, all pictures in the folder must be loaded and the title of the form should be changed to “Photo Gallery – {folderpath}”.
6. If a folder has not been loaded, the right and left buttons must be disabled. When a picture is loaded, these buttons must be re-enabled.
 - a. These must be named “leftButton” and “rightButton”
7. When a folder is loaded, the first image must be loaded into the picture box control “galleryBox”.
8. The left button must load the image prior to the currently loaded image. If the first image is already loaded, then nothing is done.
9. The right button must load the image after the currently loaded image. If the last image is already loaded, then nothing is done.
10. An indicator of how many photos should be between the right and left buttons in the form of “{currentIndex} / {numberOfPhotos}”. If there are no photos loaded this should display “0/0”. This must be automatically updated when either left or right buttons are pressed.



Sample Pictures:



Figure 1: The cats directory, loaded in. Note that the title of the form has changed name to C:\Users\SBatzer\Desktop\cats

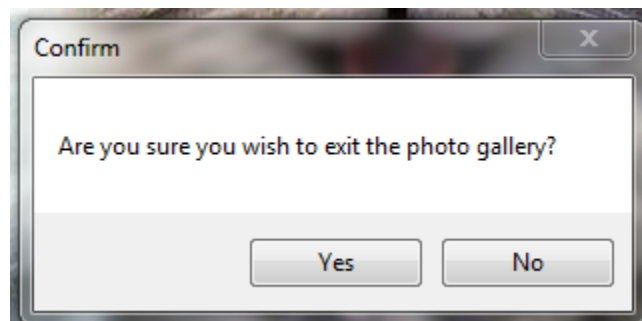


Figure 2: The confirmation window. This should be opened when Exit is pressed. If “Yes” is clicked, the application should close, otherwise, return to the main form.

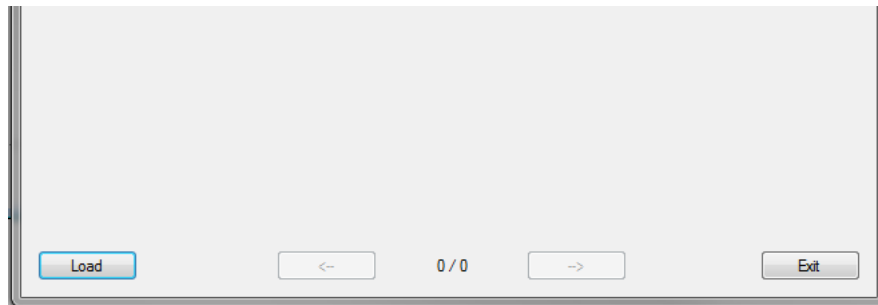


Figure 3: On form load, there should be no directory loaded. Thus, the left and right buttons are disabled. These must be enabled once a directory is loaded. Note that the photo indicator is set to 0/0.

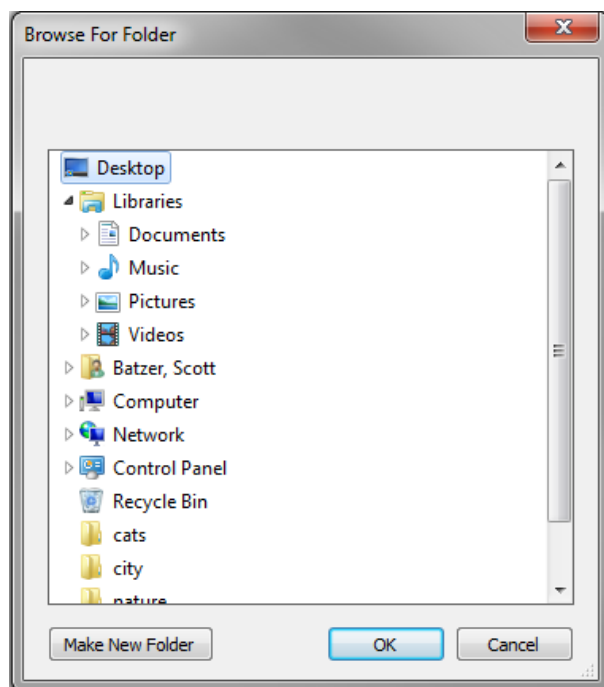


Figure 4: The Directory loading form. Note that this is populated using the FolderBrowserDialog class.

You will have ninety (90) minutes to complete your work.

Your name and/or school name should *not* appear on any work you submit for grading.



Save a copy your entire solution/project to the flash drive provided. You must submit your entire solution/project so that the graders may open your project to review the source code and/or build and execute your solution/project. **Submissions that do *not* contain source code *will not* be graded.**

Development Standards

- Standard name prefixes must be utilized for variables.
- All subroutines, functions, and methods must be documented with comments explaining the purpose of the method, the input parameters (if any), and the output (if any).



Your application will be graded on the following criteria:

Solution and Project

- The project is present on the flash drive _____ 10 points
- The project is named according to the naming conventions _____ 10 points

Program Execution

- Code copied to flash drive and program runs from flash drive _____ 20 points

If the program does not execute, then the remaining items in this section receive a score of zero.

- The program contains an Exit button that asks for user confirmation. _____ 25 points
- The Exit button is named “exitButton”. _____ 20 points
- The main form does not have minimize, maximize, or close buttons in the Form Handle. _____ 25 points
- Pressing the Load Button shows a FolderBrowserDialog that allows the user to select a folder. _____ 25 points
- Loading a folder change form title to “Photo Gallery – {folderpath}”. _____ 25 points
- If a folder has not been loaded, the right and left buttons are disabled. _____ 25 points
- When a picture is loaded, the right and left buttons are re-enabled. _____ 25 points
- These buttons are named “leftButton” and “rightButton”. _____ 50 points
- When a folder is loaded, the first image is loaded into the picture box control “galleryBox”. _____ 25points
- The left button loads the image prior to the currently loaded image. _____ 25 points
- The right button loads the image after the currently loaded image. _____ 25 points
- Bounds checking on left and right buttons is handled properly. _____ 25 points
- Photo index indicator is displayed and updated properly. _____ 25 points

Source Code Review

- Code is commented at the top, for each function, and as needed. _____ 15 points
- Code uses reasonable and consistent variable naming conventions. _____ 15 points

Total Points: 415 points



C# Solution

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

namespace photogallery
{
    public partial class Form1 : Form
    {
        string[] pictures = new string[0]; // The path locations of all pictures
loaded int selectedIndex = 0; // The index currently being displayed

        public Form1()
        {
            InitializeComponent();
        }

        private void exitButton_Click(object sender, EventArgs e)
        {
            if (MessageBox.Show("Are you sure you wish to exit the photo gallery?",
"Confirm",
                MessageBoxButtons.YesNo) == System.Windows.Forms.DialogResult.Yes)
            {
                this.Close(); // If confirmed, close the application
            }
        }

        private void loadButton_Click(object sender, EventArgs e)
        {
            FolderBrowserDialog folder = new FolderBrowserDialog();
            if (folder.ShowDialog() == System.Windows.Forms.DialogResult.OK) // if
directory selected...
            {
                pictures = Directory.GetFiles(folder.SelectedPath); // retrieve all
files in directory
                pictures = removeMiscPaths(pictures); // remove all
non-png/jpg files
                this.Text = "Photo Gallery - " + folder.SelectedPath; // update title
of form

                selectedIndex = 0; // update
selected index and update image
                updateImage();
            }
        }
    }
}
```



```

        private void leftButton_Click(object sender, EventArgs e)
        {
            if (pictures.Count() > 0) // if there are loaded
pictures
            {
                if (selectedIndex > 0)
decrease index
                    selectedIndex--; // if still in bounds,
                updateImage(); // update the image
            }
        }

        private void rightButton_Click(object sender, EventArgs e)
        {
            if (pictures.Count() > 0) // if there are loaded
pictures
            {
                if (selectedIndex < pictures.Count() - 1)
increase index
                    selectedIndex++; // if still in bounds,
                updateImage(); // update the image
            }
        }

        void updateImage()
        {
            // format the position label as followed : {index of current image} / {number
of pictures}
            positionLabel.Text = (selectedIndex + 1).ToString() + " / " +
pictures.Count();
            galleryBox.Load(pictures[selectedIndex]); // Load new image
            leftButton.Enabled = true;
            rightButton.Enabled = true;
        }

        string[] removeMiscPaths(string[] paths)
        {
            List<string> newPathes = new List<string>();
            for (int i = 0; i < paths.Count(); i++ ) // for each path in
paths...
            {
                string extension = paths[i].Split('.')[1]; // grab extension
                if (extension == "jpg" || extension == "png") // if extension is valid,
add path to list
                    newPathes.Add(paths[i]);
            }
            return newPathes.ToArray(); // return path list as an
array
        }
    }
}

```

```
namespace photogallery
```




```
{
    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.galleryBox = new System.Windows.Forms.PictureBox();
            this.leftButton = new System.Windows.Forms.Button();
            this.rightButton = new System.Windows.Forms.Button();
            this.loadButton = new System.Windows.Forms.Button();
            this.exitButton = new System.Windows.Forms.Button();
            this.positionLabel = new System.Windows.Forms.Label();
            ((System.ComponentModel.ISupportInitialize)(this.galleryBox)).BeginInit();
            this.SuspendLayout();
            //
            // galleryBox
            //
            this.galleryBox.Dock = System.Windows.Forms.DockStyle.Top;
            this.galleryBox.Location = new System.Drawing.Point(0, 0);
            this.galleryBox.Name = "galleryBox";
            this.galleryBox.Size = new System.Drawing.Size(640, 640);
            this.galleryBox.TabIndex = 0;
            this.galleryBox.TabStop = false;
            //
            // leftButton
            //
            this.leftButton.Enabled = false;
            this.leftButton.Location = new System.Drawing.Point(191, 652);
            this.leftButton.Name = "leftButton";
            this.leftButton.Size = new System.Drawing.Size(75, 23);
            this.leftButton.TabIndex = 1;
        }
    }
}
```



```
this.leftButton.Text = "<--";
this.leftButton.UseVisualStyleBackColor = true;
this.leftButton.Click += new System.EventHandler(this.leftButton_Click);
//
// rightButton
//
this.rightButton.Enabled = false;
this.rightButton.Location = new System.Drawing.Point(378, 652);
this.rightButton.Name = "rightButton";
this.rightButton.Size = new System.Drawing.Size(75, 23);
this.rightButton.TabIndex = 2;
this.rightButton.Text = "-->";
this.rightButton.UseVisualStyleBackColor = true;
this.rightButton.Click += new System.EventHandler(this.rightButton_Click);
//
// loadButton
//
this.loadButton.Location = new System.Drawing.Point(12, 652);
this.loadButton.Name = "loadButton";
this.loadButton.Size = new System.Drawing.Size(75, 23);
this.loadButton.TabIndex = 3;
this.loadButton.Text = "Load";
this.loadButton.UseVisualStyleBackColor = true;
this.loadButton.Click += new System.EventHandler(this.loadButton_Click);
//
// exitButton
//
this.exitButton.Location = new System.Drawing.Point(553, 652);
this.exitButton.Name = "exitButton";
this.exitButton.Size = new System.Drawing.Size(75, 23);
this.exitButton.TabIndex = 4;
this.exitButton.Text = "Exit";
this.exitButton.UseVisualStyleBackColor = true;
this.exitButton.Click += new System.EventHandler(this.exitButton_Click);
//
// positionLabel
//
this.positionLabel.AutoSize = true;
this.positionLabel.Location = new System.Drawing.Point(308, 657);
this.positionLabel.Name = "positionLabel";
this.positionLabel.Size = new System.Drawing.Size(30, 13);
this.positionLabel.TabIndex = 5;
this.positionLabel.Text = "0 / 0";
this.positionLabel.TextAlign = System.Drawing.ContentAlignment.MiddleCenter;
//
// Form1
//
this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
this.ClientSize = new System.Drawing.Size(640, 687);
this.ControlBox = false;
this.Controls.Add(this.positionLabel);
this.Controls.Add(this.exitButton);
this.Controls.Add(this.loadButton);
this.Controls.Add(this.rightButton);
```



```
        this.Controls.Add(this.leftButton);
        this.Controls.Add(this.galleryBox);
        this.Name = "Form1";
        this.Text = "Photo Gallery";
        ((System.ComponentModel.ISupportInitialize)(this.galleryBox)).EndInit();
        this.ResumeLayout(false);
        this.PerformLayout();

    }

#endregion

    private System.Windows.Forms.PictureBox galleryBox;
    private System.Windows.Forms.Button leftButton;
    private System.Windows.Forms.Button rightButton;
    private System.Windows.Forms.Button loadButton;
    private System.Windows.Forms.Button exitButton;
    private System.Windows.Forms.Label positionLabel;
}

using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace photogallery
{
    static class Program
    {
        /// <summary>
        /// The main entry point for the application.
        /// </summary>
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
            Application.SetCompatibleTextRenderingDefault(false);
            Application.Run(new Form1());
        }
    }
}
```

VB Code

```
Imports System.Collections.Generic
Imports System.ComponentModel
Imports System.Data
Imports System.Drawing
Imports System.IO
Imports System.Linq
```



```
Imports System.Text
Imports System.Threading.Tasks
Imports System.Windows.Forms

Namespace photogallery
    Public Partial Class Form1
        Inherits Form
        Private pictures As String() = New String(-1) {}
        ' The path locations of all pictures loaded
        Private selectedIndex As Integer = 0
        ' The index currently being displayed
        Public Sub New()
            InitializeComponent()
        End Sub

        Private Sub exitButton_Click(sender As Object, e As EventArgs)
            If MessageBox.Show("Are you sure you wish to exit the photo
gallery?", "Confirm", MessageBoxButtons.YesNo) = System.Windows.Forms.DialogResult.Yes
Then
                ' If confirmed, close the application
                Me.Close()
            End If
        End Sub

        Private Sub loadButton_Click(sender As Object, e As EventArgs)
            Dim folder As New FolderBrowserDialog()
            If folder.ShowDialog() = System.Windows.Forms.DialogResult.OK Then
                ' if directory selected...
                pictures = Directory.GetFiles(folder.SelectedPath)
                ' retrieve all files in directory
                pictures = removeMiscPaths(pictures)
                ' remove all non-png/jpg files
                Me.Text = "Photo Gallery - " + folder.SelectedPath
                ' update title of form
                selectedIndex = 0
                ' update selected index and update image
                updateImage()
            End If
        End Sub

        Private Sub leftButton_Click(sender As Object, e As EventArgs)
            If pictures.Count() > 0 Then
                ' if there are loaded pictures
                If selectedIndex > 0 Then
                    selectedIndex -= 1
                End If
                ' if still in bounds, decrease index
                ' update the image
                updateImage()
            End If
        End Sub

        Private Sub rightButton_Click(sender As Object, e As EventArgs)
            If pictures.Count() > 0 Then
                ' if there are loaded pictures
```



```

        If selectedIndex < pictures.Count() - 1 Then
            selectedIndex += 1
        End If
        ' if still in bounds, increase index
        ' update the image
        updateImage()
    End If
End Sub

Private Sub updateImage()
    ' format the position label as followed : {index of current image} /
{number of pictures}
    positionLabel.Text = (selectedIndex + 1).ToString() + " / " +
pictures.Count()
    galleryBox.Load(pictures(selectedIndex))
    ' Load new image
    leftButton.Enabled = True
    rightButton.Enabled = True
End Sub

Private Function removeMiscPaths(paths As String()) As String()
    Dim newPath As New List(Of String)()
    For i As Integer = 0 To paths.Count() - 1
        ' for each path in paths...
        Dim extension As String = paths(i).Split("."C)(1)
        ' grab extension
        If extension = "jpg" OrElse extension = "png" Then
            ' if extension is valid, add path to list
            newPath.Add(paths(i))
        End If
    Next
    Return newPath.ToArray()
    ' return path list as an array
End Function
End Class
End Namespace

```

```

'=====
'Service provided by Telerik (www.telerik.com)
'Conversion powered by NRefactory.
'Twitter: @telerik
'Facebook: facebook.com/telerik
'=====

```

```

Namespace photogallery
    Partial Class Form1
        ''' <summary>
        ''' Required designer variable.
        ''' </summary>
        Private components As System.ComponentModel.IContainer = Nothing
    End Class
End Namespace

```



```

''' <summary>
''' Clean up any resources being used.
''' </summary>
''' <param name="disposing">>true if managed resources should be disposed;
otherwise, false.</param>
Protected Overrides Sub Dispose(disposing As Boolean)
    If disposing AndAlso (components IsNot Nothing) Then
        components.Dispose()
    End If
    MyBase.Dispose(disposing)
End Sub

#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 Sub InitializeComponent()
    Me.galleryBox = New System.Windows.Forms.PictureBox()
    Me.leftButton = New System.Windows.Forms.Button()
    Me.rightButton = New System.Windows.Forms.Button()
    Me.loadButton = New System.Windows.Forms.Button()
    Me.exitButton = New System.Windows.Forms.Button()
    Me.positionLabel = New System.Windows.Forms.Label()
    DirectCast(Me.galleryBox,
System.ComponentModel.ISupportInitialize).BeginInit()
    Me.SuspendLayout()
    '
    ' galleryBox
    '
    Me.galleryBox.Dock = System.Windows.Forms.DockStyle.Top
    Me.galleryBox.Location = New System.Drawing.Point(0, 0)
    Me.galleryBox.Name = "galleryBox"
    Me.galleryBox.Size = New System.Drawing.Size(640, 640)
    Me.galleryBox.TabIndex = 0
    Me.galleryBox.TabStop = False
    '
    ' leftButton
    '
    Me.leftButton.Enabled = False
    Me.leftButton.Location = New System.Drawing.Point(191, 652)
    Me.leftButton.Name = "leftButton"
    Me.leftButton.Size = New System.Drawing.Size(75, 23)
    Me.leftButton.TabIndex = 1
    Me.leftButton.Text = "<--"
    Me.leftButton.UseVisualStyleBackColor = True
    Me.leftButton.Click += New System.EventHandler(Me.leftButton_Click)
    '
    ' rightButton
    '
    Me.rightButton.Enabled = False
    Me.rightButton.Location = New System.Drawing.Point(378, 652)
    Me.rightButton.Name = "rightButton"

```



```
Me.rightButton.Size = New System.Drawing.Size(75, 23)
Me.rightButton.TabIndex = 2
Me.rightButton.Text = "-->"
Me.rightButton.UseVisualStyleBackColor = True
Me.rightButton.Click += New
System.EventHandler(Me.rightButton_Click)
'
' loadButton
'
Me.loadButton.Location = New System.Drawing.Point(12, 652)
Me.loadButton.Name = "loadButton"
Me.loadButton.Size = New System.Drawing.Size(75, 23)
Me.loadButton.TabIndex = 3
Me.loadButton.Text = "Load"
Me.loadButton.UseVisualStyleBackColor = True
Me.loadButton.Click += New System.EventHandler(Me.loadButton_Click)
'
' exitButton
'
Me.exitButton.Location = New System.Drawing.Point(553, 652)
Me.exitButton.Name = "exitButton"
Me.exitButton.Size = New System.Drawing.Size(75, 23)
Me.exitButton.TabIndex = 4
Me.exitButton.Text = "Exit"
Me.exitButton.UseVisualStyleBackColor = True
Me.exitButton.Click += New System.EventHandler(Me.exitButton_Click)
'
' positionLabel
'
Me.positionLabel.AutoSize = True
Me.positionLabel.Location = New System.Drawing.Point(308, 657)
Me.positionLabel.Name = "positionLabel"
Me.positionLabel.Size = New System.Drawing.Size(30, 13)
Me.positionLabel.TabIndex = 5
Me.positionLabel.Text = "0 / 0"
Me.positionLabel.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter
'
' Form1
'
Me.AutoScaleDimensions = New System.Drawing.SizeF(6F, 13F)
Me.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font
Me.ClientSize = New System.Drawing.Size(640, 687)
Me.ControlBox = False
Me.Controls.Add(Me.positionLabel)
Me.Controls.Add(Me.exitButton)
Me.Controls.Add(Me.loadButton)
Me.Controls.Add(Me.rightButton)
Me.Controls.Add(Me.leftButton)
Me.Controls.Add(Me.galleryBox)
Me.Name = "Form1"
Me.Text = "Photo Gallery"
DirectCast(Me.galleryBox,
System.ComponentModel.ISupportInitialize).EndInit()
Me.ResumeLayout(False)
```



```
                Me.PerformLayout()  
  
            End Sub  
  
        #End Region  
  
        Private galleryBox As System.Windows.Forms.PictureBox  
        Private leftButton As System.Windows.Forms.Button  
        Private rightButton As System.Windows.Forms.Button  
        Private loadButton As System.Windows.Forms.Button  
        Private exitButton As System.Windows.Forms.Button  
        Private positionLabel As System.Windows.Forms.Label  
    End Class  
End Namespace
```

```
'=====
```

```
'Service provided by Telerik (www.telerik.com)
```

```
'Conversion powered by NRefactory.
```

```
'Twitter: @telerik
```

```
'Facebook: facebook.com/telerik
```

```
'=====
```

Imports System.Collections.Generic
Imports System.Linq
Imports System.Threading.Tasks
Imports System.Windows.Forms

Namespace photogallery

NotInheritable Class Program

Private Sub New()

End Sub

''' <summary>

''' The main entry point for the application.

''' </summary>

<STAThread> _

Private Shared Sub Main()

Application.EnableVisualStyles()

Application.SetCompatibleTextRenderingDefault(False)

Application.Run(New Form1())

End Sub

End Class

End Namespace

```
'=====
```

```
'Service provided by Telerik (www.telerik.com)
```

```
'Conversion powered by NRefactory.
```

```
'Twitter: @telerik
```




Facebook: [facebook.com/telerik](https://www.facebook.com/telerik)

