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Assignment 6

In this assignment, I used windows forms to create a turtle graphics program. The application allows users to change direction and move with either the pen up or down to create different drawings.

Form1.Designer.cs:

```
namespace ITE365Assign6
{
    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.turtlePanel = new System.Windows.Forms.Panel();
            this.listView1 = new System.Windows.Forms.ListView();
            this.panel2 = new System.Windows.Forms.Panel();
            this.forward = new System.Windows.Forms.Button();
            this.forwardText = new System.Windows.Forms.TextBox();
            this.ExitGame = new System.Windows.Forms.Button();
            this.ClearGrid = new System.Windows.Forms.Button();
            this.DisplayGrid = new System.Windows.Forms.Button();
            this.TurnLeft = new System.Windows.Forms.Button();
            this.TurnRight = new System.Windows.Forms.Button();
            this.PenDown = new System.Windows.Forms.Button();
            this.PenUp = new System.Windows.Forms.Button();
        }
    }
}
```

```

        this.eventLog1 = new System.Diagnostics.EventLog();
        this.Commands = new System.Windows.Forms.TextBox();
        this.penStatus = new System.Windows.Forms.TextBox();
        this.backgroundWorker1 = new
System.ComponentModel.BackgroundWorker();
        this.position = new System.Windows.Forms.TextBox();
        this.panel2.SuspendLayout();

        ((System.ComponentModel.ISupportInitialize)(this.eventLog1)).BeginInit();
        this.SuspendLayout();
        //
        // turtlePanel
        //
        this.turtlePanel.BackColor = System.Drawing.SystemColors.Control;
        this.turtlePanel.Dock = System.Windows.Forms.DockStyle.Left;
        this.turtlePanel.Location = new System.Drawing.Point(0, 0);
        this.turtlePanel.Name = "turtlePanel";
        this.turtlePanel.Size = new System.Drawing.Size(723, 458);
        this.turtlePanel.TabIndex = 0;
        //
        // listView1
        //
        this.listView1.HideSelection = false;
        this.listView1.Location = new System.Drawing.Point(740, 4);
        this.listView1.Name = "listView1";
        this.listView1.Size = new System.Drawing.Size(224, 323);
        this.listView1.TabIndex = 1;
        this.listView1.UseCompatibleStateImageBehavior = false;
        //
        // panel2
        //
        this.panel2.BackColor =
System.Drawing.SystemColors.ControlLightLight;
        this.panel2.Controls.Add(this.forward);
        this.panel2.Controls.Add(this.forwardText);
        this.panel2.Controls.Add(this.ExitGame);
        this.panel2.Controls.Add(this.ClearGrid);
        this.panel2.Controls.Add(this.DisplayGrid);
        this.panel2.Controls.Add(this.TurnLeft);
        this.panel2.Controls.Add(this.TurnRight);
        this.panel2.Controls.Add(this.PenDown);
        this.panel2.Controls.Add(this.PenUp);
        this.panel2.Location = new System.Drawing.Point(2, 337);
        this.panel2.Name = "panel2";
        this.panel2.Size = new System.Drawing.Size(961, 116);
        this.panel2.TabIndex = 2;
        //
        // forward
        //
        this.forward.Location = new System.Drawing.Point(351, 51);
        this.forward.Name = "forward";
        this.forward.Size = new System.Drawing.Size(75, 23);
        this.forward.TabIndex = 8;
        this.forward.Text = "Move";
        this.forward.UseVisualStyleBackColor = true;
        this.forward.Click += new
System.EventHandler(this.forward_Click);
        //
        // forwardText
        //
        this.forwardText.Location = new System.Drawing.Point(432, 53);
        this.forwardText.Name = "forwardText";
        this.forwardText.Size = new System.Drawing.Size(54, 20);
        this.forwardText.TabIndex = 7;

```

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        //
        // ExitGame
        //
        this.ExitGame.Location = new System.Drawing.Point(857, 18);
        this.ExitGame.Name = "ExitGame";
        this.ExitGame.Size = new System.Drawing.Size(75, 23);
        this.ExitGame.TabIndex = 6;
        this.ExitGame.Text = "Exit";
        this.ExitGame.UseVisualStyleBackColor = true;
        this.ExitGame.Click += new
System.EventHandler(this.ExitGame_Click);
        //
        // ClearGrid
        //
        this.ClearGrid.Location = new System.Drawing.Point(649, 18);
        this.ClearGrid.Name = "ClearGrid";
        this.ClearGrid.Size = new System.Drawing.Size(75, 23);
        this.ClearGrid.TabIndex = 5;
        this.ClearGrid.Text = "Clear";
        this.ClearGrid.UseVisualStyleBackColor = true;
        this.ClearGrid.Click += new
System.EventHandler(this.ClearGrid_Click);
        //
        // DisplayGrid
        //
        this.DisplayGrid.Location = new System.Drawing.Point(754, 18);
        this.DisplayGrid.Name = "DisplayGrid";
        this.DisplayGrid.Size = new System.Drawing.Size(75, 23);
        this.DisplayGrid.TabIndex = 4;
        this.DisplayGrid.Text = "Display";
        this.DisplayGrid.UseVisualStyleBackColor = true;
        this.DisplayGrid.Click += new
System.EventHandler(this.DisplayGrid_Click);
        //
        // TurnLeft
        //
        this.TurnLeft.Location = new System.Drawing.Point(225, 74);
        this.TurnLeft.Name = "TurnLeft";
        this.TurnLeft.Size = new System.Drawing.Size(75, 23);
        this.TurnLeft.TabIndex = 3;
        this.TurnLeft.Text = "Left";
        this.TurnLeft.UseVisualStyleBackColor = true;
        this.TurnLeft.Click += new
System.EventHandler(this.TurnLeft_Click);
        //
        // TurnRight
        //
        this.TurnRight.Location = new System.Drawing.Point(225, 33);
        this.TurnRight.Name = "TurnRight";
        this.TurnRight.Size = new System.Drawing.Size(75, 23);
        this.TurnRight.TabIndex = 2;
        this.TurnRight.Text = "Right";
        this.TurnRight.UseVisualStyleBackColor = true;
        this.TurnRight.Click += new
System.EventHandler(this.TurnRight_Click);
        //
        // PenDown
        //
        this.PenDown.Location = new System.Drawing.Point(98, 74);
        this.PenDown.Name = "PenDown";
        this.PenDown.Size = new System.Drawing.Size(75, 23);
        this.PenDown.TabIndex = 1;
        this.PenDown.Text = "Pen Down";
        this.PenDown.UseVisualStyleBackColor = true;

```

```

        this.PenDown.Click += new
System.EventHandler(this.PenDown_Click);
        //
        // PenUp
        //
        this.PenUp.Location = new System.Drawing.Point(98, 33);
        this.PenUp.Name = "PenUp";
        this.PenUp.Size = new System.Drawing.Size(75, 23);
        this.PenUp.TabIndex = 0;
        this.PenUp.Text = "Pen Up";
        this.PenUp.UseVisualStyleBackColor = true;
        this.PenUp.Click += new System.EventHandler(this.PenUp_Click);
        //
        // eventLog1
        //
        this.eventLog1.SynchronizingObject = this;
        //
        // Commands
        //
        this.Commands.AcceptsReturn = true;
        this.Commands.AcceptsTab = true;
        this.Commands.Location = new System.Drawing.Point(755, 96);
        this.Commands.Multiline = true;
        this.Commands.Name = "Commands";
        this.Commands.ReadOnly = true;
        this.Commands.ScrollBars =
System.Windows.Forms.ScrollBars.Vertical;
        this.Commands.Size = new System.Drawing.Size(202, 200);
        this.Commands.TabIndex = 3;
        //
        // penStatus
        //
        this.penStatus.Location = new System.Drawing.Point(757, 23);
        this.penStatus.Name = "penStatus";
        this.penStatus.ReadOnly = true;
        this.penStatus.Size = new System.Drawing.Size(119, 20);
        this.penStatus.TabIndex = 4;
        //
        // position
        //
        this.position.Location = new System.Drawing.Point(758, 58);
        this.position.Name = "position";
        this.position.ReadOnly = true;
        this.position.Size = new System.Drawing.Size(118, 20);
        this.position.TabIndex = 5;
        //
        // Form1
        //
        this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
        this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
        this.ClientSize = new System.Drawing.Size(969, 458);
        this.Controls.Add(this.position);
        this.Controls.Add(this.penStatus);
        this.Controls.Add(this.Commands);
        this.Controls.Add(this.panel2);
        this.Controls.Add(this.listView1);
        this.Controls.Add(this.turtlePanel);
        this.Name = "Form1";
        this.Text = "Form1";
        this.panel2.ResumeLayout(false);
        this.panel2.PerformLayout();

((System.ComponentModel.ISupportInitialize)(this.eventLog1)).EndInit();
        this.ResumeLayout(false);

```

```

        this.PerformLayout();
    }
#endregion

private System.Windows.Forms.Panel turtlePanel;
private System.Windows.Forms.ListView listView1;
private System.Windows.Forms.Panel panel2;
private System.Windows.Forms.Button forward;
private System.Windows.Forms.TextBox forwardText;
private System.Windows.Forms.Button ExitGame;
private System.Windows.Forms.Button ClearGrid;
private System.Windows.Forms.Button DisplayGrid;
private System.Windows.Forms.Button TurnLeft;
private System.Windows.Forms.Button TurnRight;
private System.Windows.Forms.Button PenDown;
private System.Windows.Forms.Button PenUp;
private System.Diagnostics.EventLog eventLog1;
private System.Windows.Forms.TextBox Commands;
private System.Windows.Forms.TextBox penStatus;
private System.ComponentModel.BackgroundWorker backgroundworker1;
private System.Windows.Forms.TextBox position;
}
}

```

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 ITE365Assign6
{
    public partial class Form1 : Form
    {
        bool up = true;
        int row = 360;
        int col = 160;
        string directionXY = "+x";
        int r = 723;
        int c = 324;
        Graphics g;
        bool display = false;
        List<int> hr = new List<int>();
        List<int> r1 = new List<int>();
        List<int> c1 = new List<int>();
        List<int> hc = new List<int>();
    }
}

```

```

public Form1()
{
    InitializeComponent();
    penStatus.Text = "Pen: Up";
    position.Text = row + " " + col;
}

private void PenUp_Click(object sender, EventArgs e)
{
    up = true;
    Commands.AppendText("Up\n");
    penStatus.Text = "Pen: Up";
}

private void PenDown_Click(object sender, EventArgs e)
{
    up = false;
    penStatus.Text = "Pen: Down";
    Commands.AppendText("Down\n");
}

private void TurnRight_Click(object sender, EventArgs e)
{
    Commands.AppendText("Right\n");
    if (directionXY == "+x")
    {
        directionXY = "-y";
    }
    else if (directionXY == "-x")
    {
        directionXY = "+y";
    }
    else if (directionXY == "+y")
    {
        directionXY = "+x";
    }
    else
    {
        directionXY = "-x";
    }
}

private void TurnLeft_Click(object sender, EventArgs e)
{
    Commands.AppendText("Left\n");

    if (directionXY == "+x")
    {
        directionXY = "+y";
    }
    else if (directionXY == "-x")
    {
        directionXY = "-y";
    }
    else if (directionXY == "+y")
    {
        directionXY = "-x";
    }
}

```

```

    }
    else
    {
        directionXY = "+x";
    }
}

private void forward_Click(object sender, EventArgs e)
{
    int a = 0;
    int holdR = 0;
    int holdC = 0;

    holdR = row;
    holdC = col;

    try { a = Convert.ToInt32(forwardText.Text); }
    catch { }
    Commands.AppendText("Forward " + a + "\n");

    for (int counter = 0; counter < a; counter++)
    {
        if (directionXY == "+x")
        {
            if (col == (c - 1)) { break; }
            else col++;
        }
        else if (directionXY == "-x")
        {
            if (col == 0) { break; }
            else col--;
        }
        else if (directionXY == "+y")
        {
            if (row == (r - 1)) { break; }
            else row++;
        }
        else
        {
            if (row == 0) { break; }
            else row--;
        }
    }

    if (up == false)
    {
        if (display)
        {
            g = turtlePanel.CreateGraphics();
            Pen pn = new Pen(Color.Black);
            g.DrawLine(pn, holdR, holdC, row, col);
        }
        else
        {
            hr.Add(holdR);
            r1.Add(row);
            hc.Add(holdC);
            c1.Add(col);
        }
    }
}

```

```

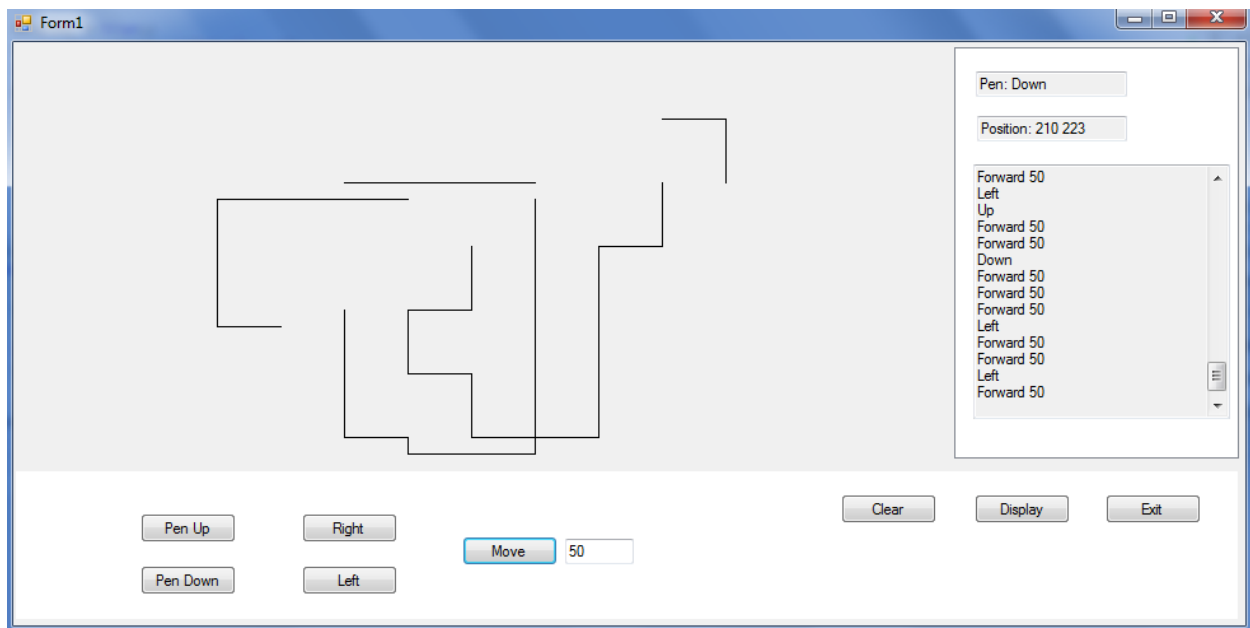
        }
    }
    position.Text = "Position: " + row + " " + col;
}

private void ClearGrid_Click(object sender, EventArgs e)
{
    string name = turtlePanel.BackColor.Name;
    Color c = Color.FromName(name);
    g.Clear(c);
    display = false;
    up = true;
    row = 360;
    col = 160;
    directionXY = "+x";
    hr.Clear();
    r1.Clear();
    hc.Clear();
    c1.Clear();
    penStatus.Text = "Pen: Up";
    position.Text = row + " " + col;
    Commands.AppendText("Clear\n");
}

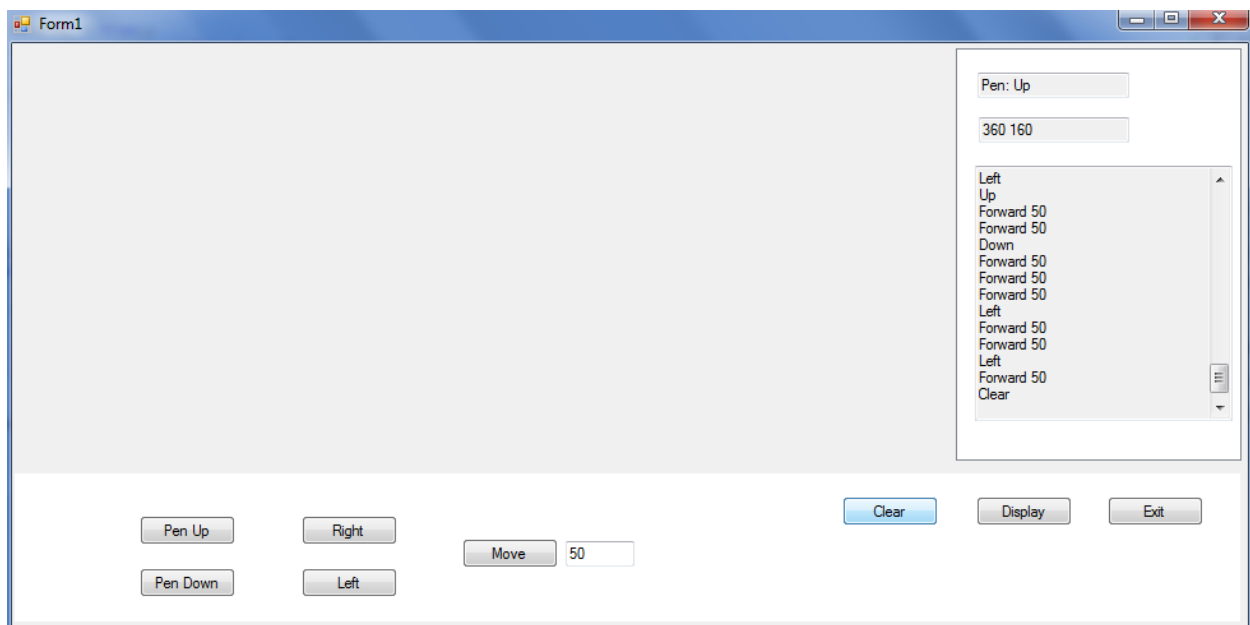
private void DisplayGrid_Click(object sender, EventArgs e)
{
    display = true;;
    Commands.AppendText("Display\n");
    int counter = hr.Count();
    g = turtlePanel.CreateGraphics();
    for (int x = 0; x < counter; x++)
    {
        Pen pn = new Pen(Color.Black);
        g.DrawLine(pn, hr[x], hc[x], r1[x], c1[x]);
    }
}

private void ExitGame_Click(object sender, EventArgs e)
{
    DialogResult result = MessageBox.Show
        ("Do you want to exit the program?", "Exit", MessageBoxButtons.YesNo);
    if (result == DialogResult.Yes)
    {
        System.Windows.Forms.Application.Exit();
    }
}
}
}

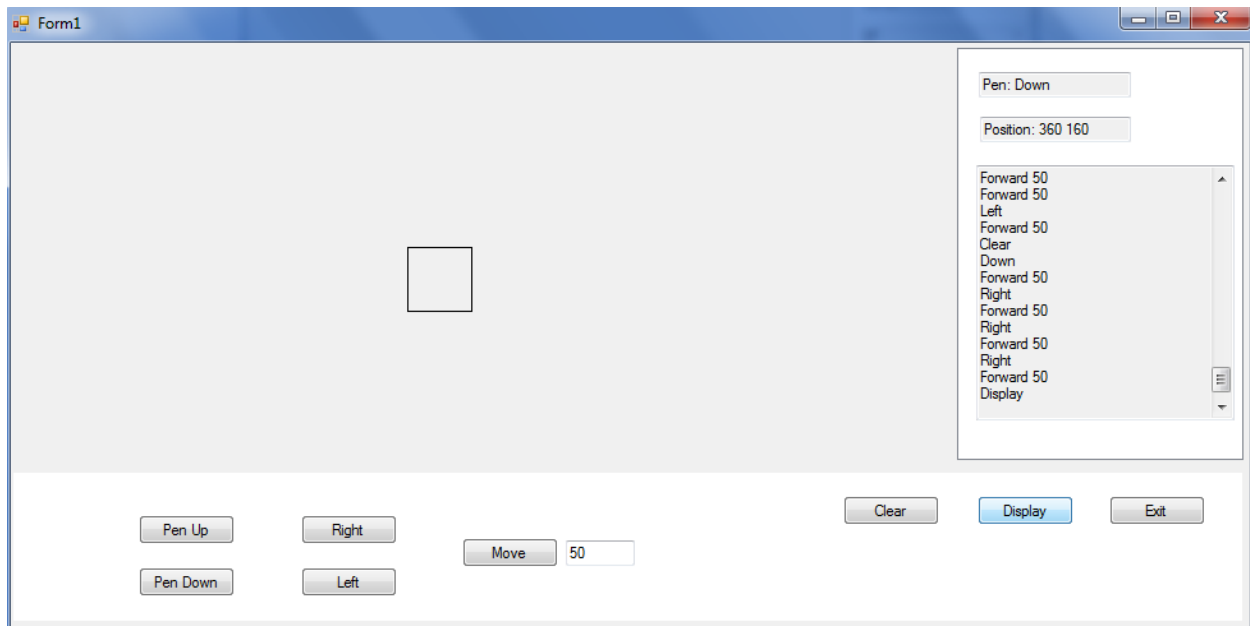
```

The clear button has been pressed



The display button displays the image that has been drawn



The exit button has been pressed

