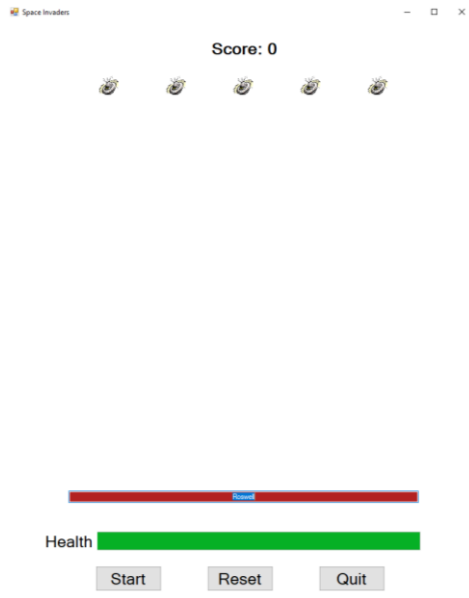


Name: **Session:**
Programming II
Lab Exercise 2/20/2023

Space Invaders

In this lab exercise, you will build a classic video game; Space Invaders. Start by creating a Form that looks like this:



1. After your interface is created, add the following global variables to your code:

```
int value;  
string score;  
Graphics space;  
Pen laser;  
Pen erase;  
Point cannon;  
Point position;  
Boolean hit = false;
```
2. Set the following timer1 properties:

```
Enabled = False  
Interval = 300
```
3. Add the following code to the Form1 constructor:

```
space = Panel1.CreateGraphics();  
laser = new Pen(Color.Red, 3);  
erase = new Pen(Color.White, 3);  
cannon = new Point(300, 700);
```

4. Add the following to the Form1_Load event:

```
value = 0;
score = "Score: " + value.ToString();
```

5. Add the following code to the timer1_Tick event:

```
PictureBox1.Top += 20;
PictureBox2.Top += 20;
PictureBox3.Top += 20;
PictureBox4.Top += 20;
PictureBox5.Top += 20;
checkLanded();
updateScore();
if (pbrHealth.Value == 0)
{
    timer1.Enabled = false;
    lblOver.Text = "Game\n" + "Over !!!";
}
```

6. Write the checkLanded() and updateScore() functions.

```
public void checkLanded()
{
    if (PictureBox1.Top >= 744)
    {
        value -= 5;
        PictureBox1.Top = 0;
        score = "Score: " + value.ToString();
        pbrHealth.Value -= 10;
    }

    if (PictureBox2.Top >= 744)
    {
        value -= 5;
        PictureBox2.Top = 0;
        score = "Score: " + value.ToString();
        pbrHealth.Value -= 10;
    }

    if (PictureBox3.Top >= 744)
    {
        value -= 5;
        PictureBox3.Top = 0;
        score = "Score: " + value.ToString();
        pbrHealth.Value -= 10;
    }
}
```

```

        if (PictureBox4.Top >= 744)
        {
            value -= 5;
            PictureBox4.Top = 0;
            score = "Score: " + value.ToString();
            pbrHealth.Value -= 10;
        }

        if (PictureBox5.Top >= 744)
        {
            value -= 5;
            PictureBox5.Top = 0;
            score = "Score: " + value.ToString();
            pbrHealth.Value -= 10;
        }
    }

    public void updateScore()
    {
        lblScore.Text = score;
    }

```

7. Now write the PictureBox click event handlers as such

```

private void PictureBox1_Click(object sender, EventArgs e)
{
    hit = true;
    value += 5;
    score = "Score: " + value.ToString();
    fireLaser1();
    PictureBox1.Top = 0;
    hit = false;
}

```

This example is for PictureBox1. You will have to add similar code to PictureBox1_Click, PictureBox2_Click, PictureBox3_Click, PictureBox4_Click, and PictureBox5_Click.

8. Now write 5 fireLaser methods

```

public void fireLaser1()
{
    space.DrawLine(laser, PictureBox1.Location, cannon);
    Thread.Sleep(100);
    space.DrawLine(erase, PictureBox1.Location, cannon);
}

```

This example is for fireLaser1. You will have to add similar code to fireLaser1, fireLaser2, fireLaser3, fireLaser4, and fireLaser5 methods.

9. Now we will add code for Start, Stop, and Reset buttons.

```
private void btnQuit_Click(object sender, EventArgs e)
{
    this.Close();
}

private void btnStart_Click(object sender, EventArgs e)
{
    timer1.Enabled = true;
}

private void btnReset_Click(object sender, EventArgs e)
{
    timer1.Enabled = false;
    value = 0;
    score = "Score: " + value.ToString();
    lblOver.Text = "";
    lblScore.Text = score;
    PictureBox1.Top = 0;
    PictureBox2.Top = 0;
    PictureBox3.Top = 0;
    PictureBox4.Top = 0;
    PictureBox5.Top = 0;
    pbrHealth.Value = 100;
}
```

10. Since Graphics are associated with Panel1, we will need to make a MouseDown Click event handlers.

```
private void Panel1_MouseDown(object sender, MouseEventArgs e)
{
    position = new Point(e.X, e.Y);
}

private void Panel1_Click(object sender, EventArgs e)
{
    if (!hit)
    {
        space.DrawLine(laser, position, cannon);
        Thread.Sleep(100);
        space.DrawLine(erase, position, cannon);
    }
}
```

When you have completed your game, submit a screen shot of your running game and attach to this sheet and turn in.