

Chapter Two: Game Design

Chapter Summary

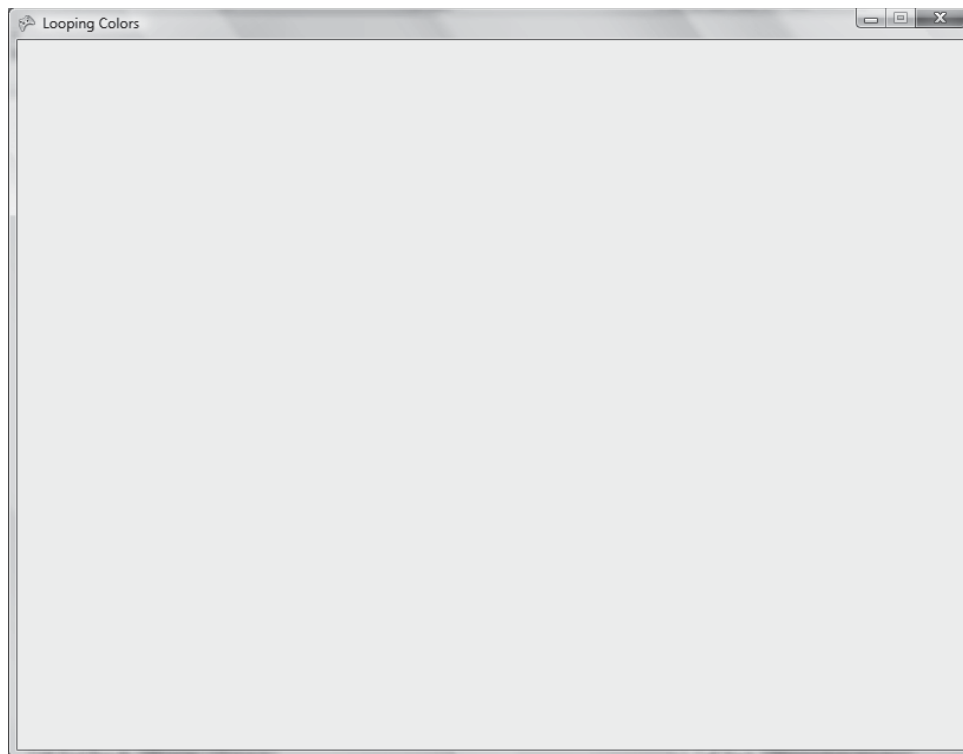
In this chapter the student will learn the basic steps involved in designing a computer game. The first lesson describes the game proposal, which is a document that describes the game in detail. In the second lesson, we will discuss game engines, which are the brains of a computer game. Lesson three will show the student how to create a new game project and explore the default code generated by the IDE. In the fourth lesson, the student will learn about the game loop that controls when game logic is run and the game screen is drawn.

Activity Solution

In this activity, the student will create a new game project that will cause the game screen to change colors every second. This program will teach the student how to update a game window at a specific interval.

Game Screen

The game screen should show a solid color that changes once a second.



Code Required to Complete this Activity

The student will begin by adding a single line of code to the **LoopingColor()** constructor method:

```
this.TargetElapsedTime = TimeSpan.FromSeconds(1.0f);
```

Now they will need to add two new variables at the top of the **LoopingColor** class definition:

```
// declare an array of colors
private Color[] backgroundColors;

// declare an integer index into the array
int currentColor;
```

Next, in the **Initialize()** method, the student will add the following (any colors may be chosen):

```
// initialize an array of length 5 with a variety of colors
backgroundColors = new Color[5]
{Color.Red, Color.Blue, Color.Yellow, Color.Violet, Color.PapayaWhip};

// set the current color index to 0
currentColor = 0;
```

The student will then add some code to the **Update()** method:

```
// move on to the next color
currentColor++;

// if the index is past the end of the array
if (currentColor >= backgroundColors.Length)
{
    currentColor = 0;    // reset back to the beginning of the array!
}
```

Finally, the student will change one line in the **Draw()** method to the following:

```
GraphicsDevice.Clear(backgroundColors[currentColor]);
```

The complete solution for this activity is located in the “Looping Colors” folder in the Teacher Files under the “Activity Solutions” folder. The main source code can be found in the “Looping Colors.cs” file.