Labs

Lab 8.1: Displaying a Tic Tac Toe Board by Using the Swing Class

What is the purpose?

In this lab, you will display a frame that contains nine labels. A label may display a cross image icon, a not image icon, or nothing, as shown in the following figures. What to display is randomly chosen. Use the Math.random() method to generate integers 0, 1, or 2, corresponding to displaying a cross image icon, a not image icon, or nothing. The cross and not images can be obtained from the cross.gif and not.gif in the image directory on the companion CD.

What are the steps?

- Task 1:

Procedure

1. Create a Java class named TicTacToe.
2. Import javax.swing.* package to use all the Swing components.
3. Import java.awt.* package to use the framework of AWT.
4. Extend the TicTacToe class by creating a JFrame container class using inheritance.
5. Create two imageIcon variables for "cross" and "not" images.
6. Create a constructor to get the Content Pane to organize the layout structure. All the GUI controls will be sitting on the Content Pane.
7. Create a 3 x 3 labels layout on the frame by the code shown in Figure 8-1-1:

```
container.setLayout(new GridLayout(3, 3));
```

Figure 8-1-1

8. Declare a variable called mode to capture random numbers 0, 1, or 2 by the code shown in Figure 8-1-2.

```
int mode = (int)(Math.random() * 3);
```

Figure 8-1-2

9. Assign each label by a random imageIcon: 0 for cross, 1 for not, and 2 for nothing.
10. Express the result into a GUI frame.
11. Compile the java file using the javac command.
12. Execute the TicTacToe class using the java command./
13. Save screen shots similar to Figures 8-1-3 and 8-1-4 and submit them to your instructor.

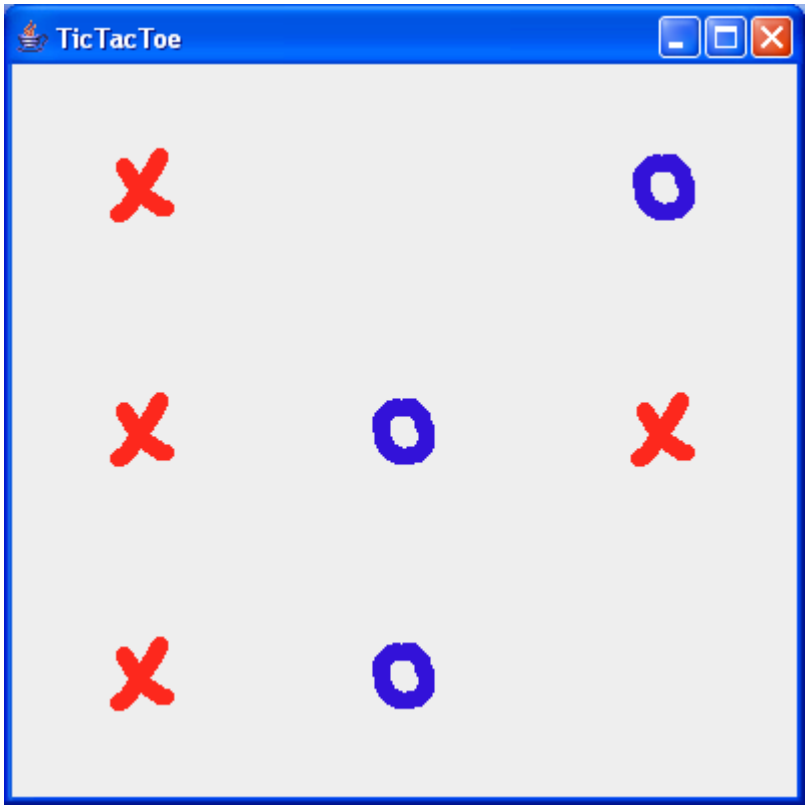

Figure 8-1-3

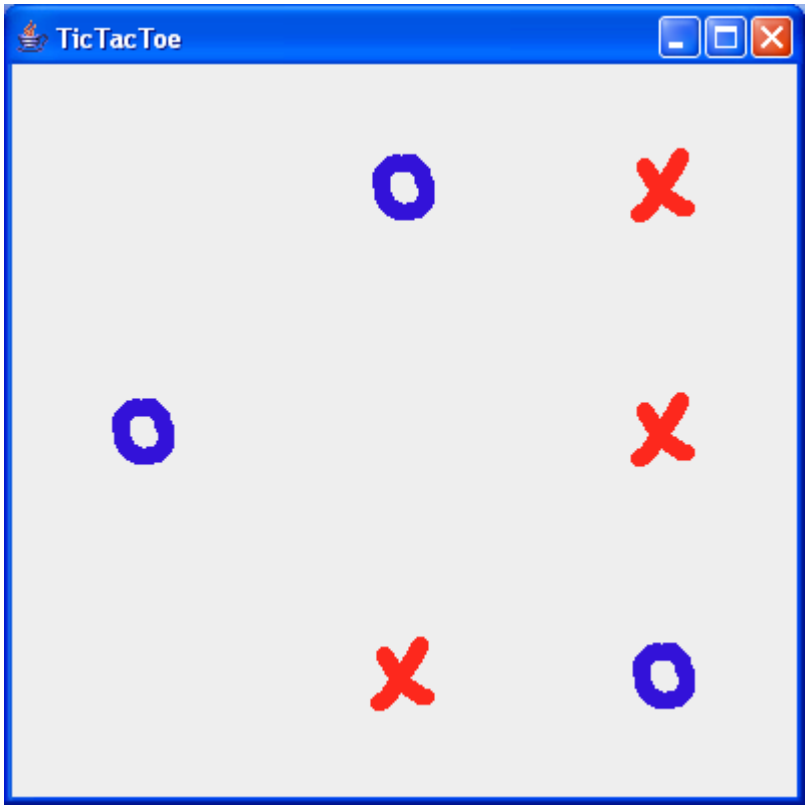

Figure 8-1-4

Did it work?

- Were you able to display a frame with nine random icon images (X, O, or blank) using the Swing class?

Lab 8.2: Displaying a Tic Tac Toc Board by Using the Graphics Class

What is the purpose?

Create a custom panel that displays X, O, or nothing. What to display is randomly chosen whenever a panel is repainted. Use the Math.random() method to generate an integer 0, 1, or 2, corresponding to displaying X, O, or nothing. Create a frame that contains nine custom panels, as shown in Figures 8-2-3 and 8-2-4.

What are the steps?

- Task 1:

Procedure

1. Create a Java class named TicTacToe2.
2. Import javax.swing.* package to use all the Swing components.
3. Import java.awt.* package to use the framework of AWT.
4. Extend the TicTacToe2 class by creating a JFrame container class using inheritance.
5. Create a constructor to get the Content Pane to organize the layout structure. All the GUI controls will be sitting on the Content Pane.
6. Create a 3 x 3-cell layout on the frame by the code shown in Figure 8-2-1.

```
container.setLayout(new GridLayout(3, 3));
```

Figure 8-2-1

7. Create a Cell class that extends JPanel by using inheritance. The Cell class will draw a graphics expression for each cell.
8. Assign each cell by a random number: 0 for cross, 1 for not, and 2 for nothing. See the code shown in Figure 8-2-2.

```
int mode = (int)(Math.random() * 3);

    if (mode == 0) {

   // see Listing 13.5, page 434 for drawing cross

    }
    else if (mode == 1) {

    // see Listing 13.5, page 435 for drawing circles

    }
```

Figure 8-2-2

9. Express the result into a GUI frame.
10. Compile the java file using the javac command.
11. Execute the TicTacToe2 class using the java command.
12. Save screenshots of the output similar to Figures 8-2-3 and 8-2-4 and submit them to your instructor.

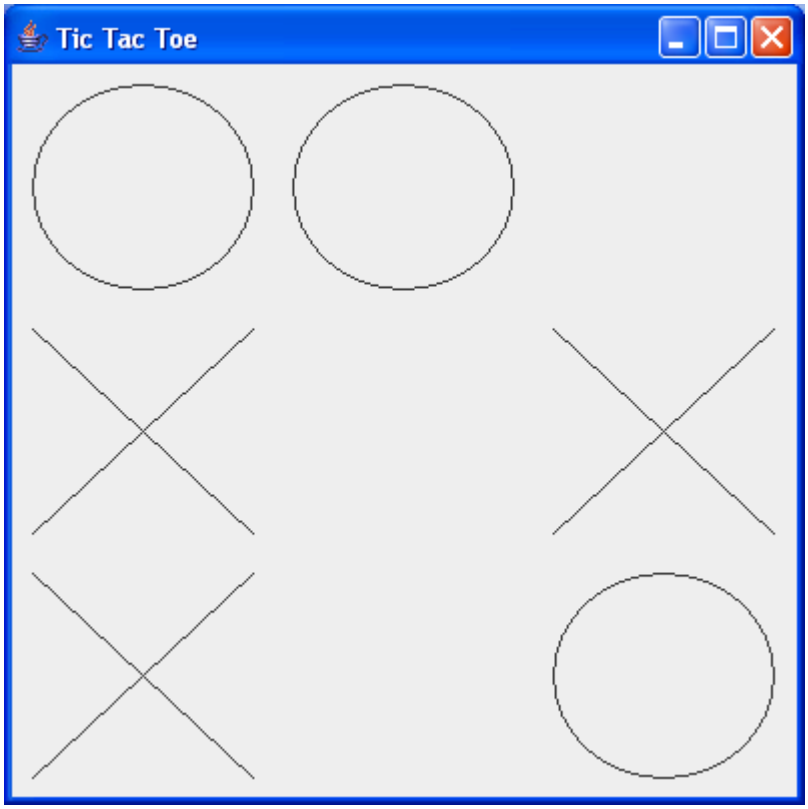

Figure 8-2-3

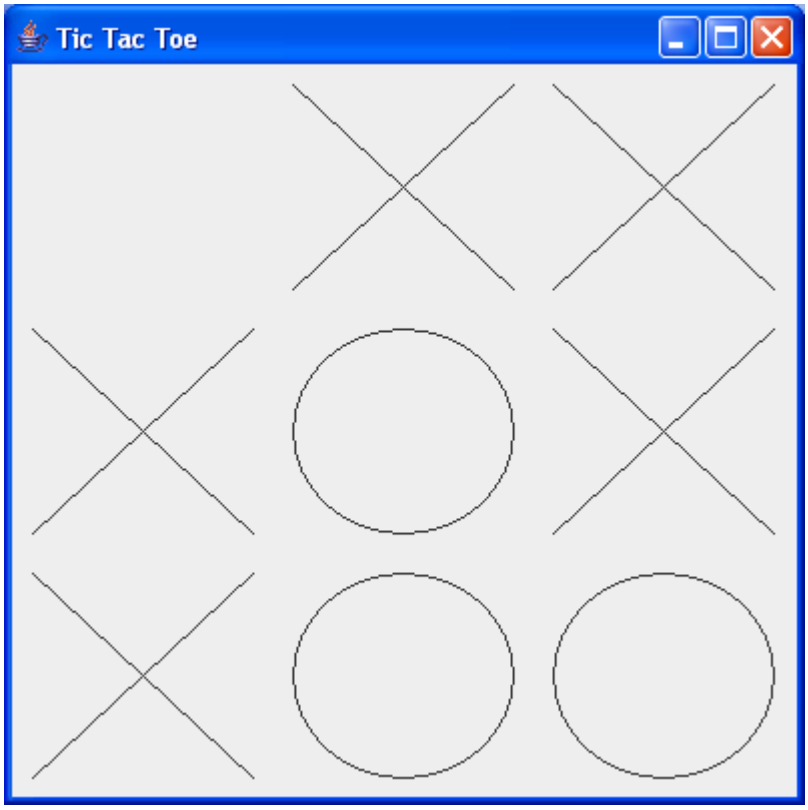

Figure 8-2-4

Did it work?

- Were you able to display a frame with nine random icon images (X, O, or blank) using the Graphics class?