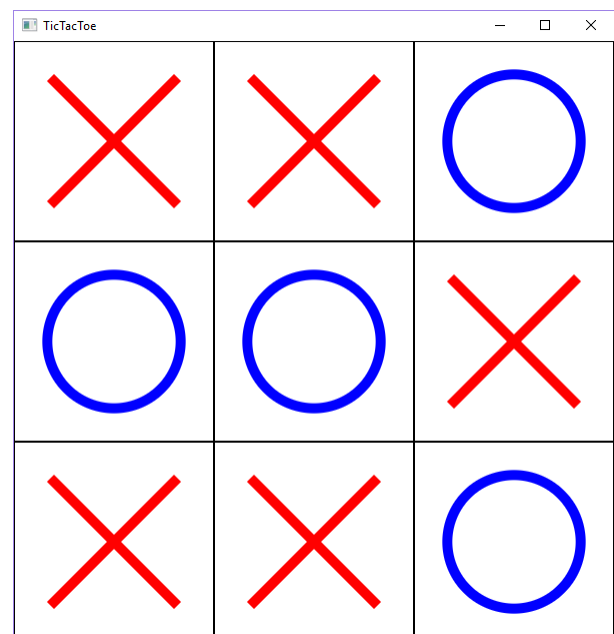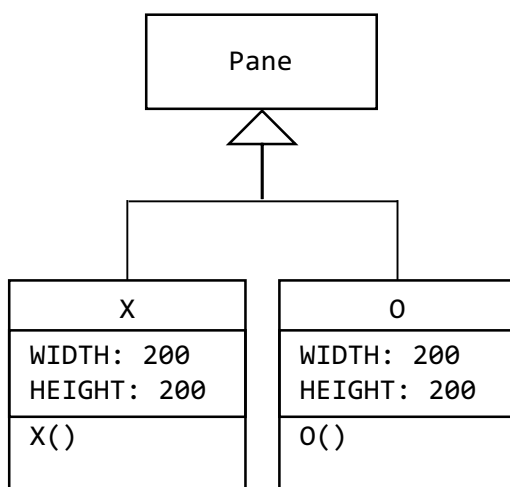## CS 112 Programing II
Lab Session 10: JavaFX Basics

The `TicTacToe` Class

NOTE: This class is similar to the `ShowGridPane` class that was discussed in Chapter 14.

`TicTacToe` class displays a 3x3 grid that can be filled with Xs and Os

Create the `TicTacToe` class by extending the `Application` class as follows:

- Override `start(Stage)`
- Use the `GridPane` class to create the grid
- Use the `X` and `O` classes to paint Xs and Os on that grid as shown in the picture
- Place the `GridPane` object in a `Scene` object
- Place the `Scene` object on the `Stage` object
- Show `Stage` object

1. Create the UML class diagram showing TicTacToe, Pane, X, and O and their relationships.
2. Create the TicTacToe class. It should display the Xs and Os as shown in the picture.

```java
import javafx.application.*;
import javafx.scene.*;
import javafx.scene.layout.*;
import javafx.scene.shape.*;
import javafx.stage.*;


public class TicTacToe extends Application {
      // code for this class
}


class O extends Pane {

    public O() {

        setPrefSize(200,200); // preferred size of the pane
        setStyle("-fx-border-color: black;"); // add black border to the pane

        Circle circle = new Circle();
        circle.centerXProperty().bind(widthProperty().divide(2));
        circle.centerYProperty().bind(heightProperty().divide(2));

circle.radiusProperty().bind((heightProperty().add(widthProperty())).divide(6));
        circle.setStyle("-fx-stroke: blue; -fx-fill: white; -fx-stroke-width:
10px;");

        getChildren().add(circle);
    }
}


class X extends Pane {

    public X() {

        setPrefSize(200,200); // preferred size of the pane
        setStyle("-fx-border-color: black;"); // add black border to the pane

        Line line1 = new Line(40, 40, 40, 40);
        line1.endXProperty().bind(widthProperty().subtract(40));
        line1.endYProperty().bind(heightProperty().subtract(40));
        line1.setStyle("-fx-stroke: red; -fx-stroke-width: 10px;");

        Line line2 = new Line(40, 40, 40, 40);
        line2.startXProperty().bind(widthProperty().subtract(40));
        line2.endYProperty().bind(heightProperty().subtract(40));
        line2.setStyle("-fx-stroke: red; -fx-stroke-width: 10px;");

        getChildren().addAll(line1, line2);
    }
}
```