PREMIER UNIVERSITY

Department of Computer Science & Engineering

Assignment

Course Name : Object Oriented Programming
Course Code : CSE 211

Title : Tic Tac Toe Game

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Submitted By
Name: Refazul Hoque Priyom
ID: 2104010202267
Batch : 40TH
Section : C(2)

Submitted To
Sourav Adhikary
Lecturer,
Department of CSE
Premier University

Tic Toc Toe

Implementation:

Firstly, I start by creating a basic Java application with a graphical user interface using . I create a panel for the Tic-Tac-Toe game board and use buttons or labels to represent each cell of the grid.

Then I create a class for the game, which will handle the logic of the game. In this class, I define methods for initializing the game, making a move, checking for a winner, and displaying the game board. I use a two-dimensional array to represent the game board and keep track of the state of each cell.

I create a class for the player, which will store information about the player, such as their name and symbol (X or O).

To implement error checking, you can check if the selected cell is already occupied or if the player is attempting to make an invalid move. If an error is detected, I display an error message to the player and prompt them to make another move.

To check for a winner, I check all possible winning combinations of three in a row, column, or diagonal. If a winning combination is found, I display a message indicating which player won.

Finally, I implement a method to allow players to play again if they wish. I prompt the players to choose whether they want to play again or exit the game.

When displaying the X and O marks, I use Java Graphics to draw the shapes on the game board. I define the shape, size, and colour of the marks using the Graphics class.

Code:

```
package com.pikango.tictactoeg;

import java.awt.*;
import java.awt.event.*;
import java.util.*;
import javax.swing.*;
public class TicTacToeGame implements ActionListener {

   JFrame frame = new JFrame();
   JPanel t_panel = new JPanel();
   JPanel bt_panel = new JPanel();
   JLabel textfield = new JLabel();
   JButton[] bton = new JButton[9];
   int chance_flag = 0;
   Random random = new Random();
   boolean pl1_chance;

   TicTacToeGame() {
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setSize(800, 800);
      frame.getContentPane().setBackground(new Color(50, 50, 50));
      frame.setTitle("Tic Tac Toe");
      frame.setLayout(new BorderLayout());
      frame.setVisible(true);

      textfield.setBackground(new Color(120, 20, 124));
      textfield.setForeground(new Color(25, 255, 0));
      textfield.setFont(new Font("Ink Free", Font.BOLD, 75));
      textfield.setHorizontalAlignment(JLabel.CENTER);
      textfield.setText("Tic Tac Toe");
      textfield.setOpaque(true);
      t_panel.setLayout(new BorderLayout());
      t_panel.setBounds(0, 0, 800, 100);
      bt_panel.setLayout(new GridLayout(3, 3));
```

```
    bt_panel.setBackground(new Color(150, 150, 150));
    for (int i = 0; i < 9; i++) {
        bton[i] = new JButton();
        bt_panel.add(bton[i]);
        bton[i].setFont(new Font("Ink Free", Font.BOLD, 120));
        bton[i].setFocusable(false);
        bton[i].addActionListener(this);
    }

    t_panel.add(textfield);
    frame.add(t_panel, BorderLayout.NORTH);
    frame.add(bt_panel);
    startGame();
}
public void startGame() {
    try {
        textfield.setText("Loading....");
        Thread.sleep(4000);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
    int chance=random.nextInt(100);
    if (chance%2 == 0) {
        pl1_chance = true;
        textfield.setText("X turn");
    } else {
        pl1_chance = false;
        textfield.setText("O turn");
    }
}
public void gameOver(String s){
    chance_flag = 0;
    Object[] option={"Restart","Exit"};
```

```
    int n=JOptionPane.showOptionDialog(frame, "Game Over\n"+s,"Game Over",JOptionPane.YES_NO_CANCEL_OPTION,JOptionPane.QUESTION_MESSAGE,null,option,option[0]);
    if(n==0){
      frame.dispose();
      new TicTacToeGame();
    }
    else{
      frame.dispose();
    }

  }
  public void matchCheck() {
    if ((bton[0].getText() == "X") && (bton[1].getText() == "X") && (bton[2].getText() == "X")) {
      xWins(0, 1, 2);
    }
    else if ((bton[0].getText() == "X") && (bton[4].getText() == "X") && (bton[8].getText() == "X")) {
      xWins(0, 4, 8);
    }
    else if ((bton[0].getText() == "X") && (bton[3].getText() == "X") && (bton[6].getText() == "X")) {
      xWins(0, 3, 6);
    }
    else if ((bton[1].getText() == "X") && (bton[4].getText() == "X") && (bton[7].getText() == "X")) {
      xWins(1, 4, 7);
    }
    else if ((bton[2].getText() == "X") && (bton[4].getText() == "X") && (bton[6].getText() == "X")) {
      xWins(2, 4, 6);
    }
    else if ((bton[2].getText() == "X") && (bton[5].getText() == "X") && (bton[8].getText() == "X")) {
```

```
            xWins(2, 5, 8);
        }
        else if ((bton[3].getText() == "X") && (bton[4].getText() == "X") &&
(bton[5].getText() == "X")) {
            xWins(3, 4, 5);
        }
        else if ((bton[6].getText() == "X") && (bton[7].getText() == "X") &&
(bton[8].getText() == "X")) {
            xWins(6, 7, 8);
        }

        else if ((bton[0].getText() == "O") && (bton[1].getText() == "O") &&
(bton[2].getText() == "O")) {
            oWins(0, 1, 2);
        }
        else if ((bton[0].getText() == "O") && (bton[3].getText() == "O") &&
(bton[6].getText() == "O")) {
            oWins(0, 3, 6);
        }
        else if ((bton[0].getText() == "O") && (bton[4].getText() == "O") &&
(bton[8].getText() == "O")) {
            oWins(0, 4, 8);
        }
        else if ((bton[1].getText() == "O") && (bton[4].getText() == "O") &&
(bton[7].getText() == "O")) {
            oWins(1, 4, 7);
        }
        else if ((bton[2].getText() == "O") && (bton[4].getText() == "O") &&
(bton[6].getText() == "O")) {
            oWins(2, 4, 6);
        }
        else if ((bton[2].getText() == "O") && (bton[5].getText() == "O") &&
(bton[8].getText() == "O")) {
            oWins(2, 5, 8);
        }
```

```
    else if ((bton[3].getText() == "O") && (bton[4].getText() == "O") &&
(bton[5].getText() == "O")) {
        oWins(3, 4, 5);
    } else if ((bton[6].getText() == "O") && (bton[7].getText() == "O") &&
(bton[8].getText() == "O")) {
        oWins(6, 7, 8);
    }
    else if(chance_flag==9) {
        textfield.setText("Match Tie");
         gameOver("Match Tie");
    }
  }
  public void xWins(int x1, int x2, int x3) {
    bton[x1].setBackground(Color.RED);
    bton[x2].setBackground(Color.RED);
    bton[x3].setBackground(Color.RED);
    for (int i = 0; i < 9; i++) {
        bton[i].setEnabled(false);
    }
    textfield.setText("X wins");
    gameOver("X Wins");
  }
  public void oWins(int x1, int x2, int x3) {
    bton[x1].setBackground(Color.RED);
    bton[x2].setBackground(Color.RED);
    bton[x3].setBackground(Color.RED);
    for (int i = 0; i < 9; i++) {
        bton[i].setEnabled(false);
    }
    textfield.setText("O Wins");
    gameOver("O Wins");
  }
  @Override
  public void actionPerformed(ActionEvent e) {
    for (int i = 0; i < 9; i++) {
```

```
            if (e.getSource() == bton[i]) {
                if (pl1_chance) {
                    if (bton[i].getText() == "") {
                        bton[i].setForeground(new Color(255, 0, 0));
                        bton[i].setText("X");
                        pl1_chance = false;
                        textfield.setText("O turn");
                        chance_flag++;
                        matchCheck();
                    }
                } else {
                    if (bton[i].getText() == "") {
                        bton[i].setForeground(new Color(0, 0, 255));
                        bton[i].setText("O");
                        pl1_chance = true;
                        textfield.setText("X turn");
                        chance_flag++;
                        matchCheck();
                    }
                }
            }
        }
    public static void main(String[] args) {
        new TicTacToeGame();
    }
```

Output: