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//Imports all packages
package TicTacToGUI;

import java.awt.BorderLayout;
import java.awt.Container;
import java.awt.GridLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;

public class TicTacToGUI implements ActionListener{

	//Creates all of the variables
	JFrame frame = new JFrame();
	JButton[][] button = new JButton[3][3];
	int [][]board = new int[3][3];
	final int BLANK = 0;
	final int X_MOVE = 1;
	final int O_MOVE = 2;
	final int X_TURN = 0;
	final int O_TURN = 1;
	int turn = X_TURN;
	Container center = new Container();
	JLabel xLabel = new JLabel("X wins:0");
	JLabel oLabel = new JLabel("O wins:0");
	JButton xChangeName = new JButton("Change X's Name.");
	JButton oChangeName = new JButton("Change O's Name.");
	JTextField xChangeField = new JTextField();
	JTextField oChangeField = new JTextField();
	Container north = new Container();
	String xPlayerName = "X";
	String oPlayerName = "O";
	int xwins = 0;
	int owins = 0;

	public TicTacToGUI() {
		frame.setSize(400, 400);
		//Center grid container
		frame.setLayout(new BorderLayout());
		center.setLayout(new GridLayout(3,3));
		for (int i = 0; i < button[0].length; i++) {
			for (int j = 0; j < button[0].length; j++) {
				button[j][i] = new JButton();
				center.add(button[j][i]);
				button[j][i].addActionListener(this);
			}
		}
		//Creates the Names
		frame.add(center, BorderLayout.CENTER);
		//North container
		north.setLayout(new GridLayout(3,2));
		north.add(xLabel);
		north.add(oLabel);
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            north.add(xChangeName);
            xChangeName.addActionListener(this);
            north.add(oChangeName);
            oChangeName.addActionListener(this);
            north.add(xChangeField);
            north.add(oChangeField);
            frame.add(north, BorderLayout.NORTH);

            frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
            frame.setVisible(true);
      }

      public static void main(String[] args) {
            new TicTacToGUI();
      }

      @Override
      //Making the X's and O's when you click on the board and setting the turns
and checks if you wins
      public void actionPerformed(ActionEvent event) {
            JButton current;
            boolean gridButton = false;
            for (int i = 0; i < button.length; i++) {
                  for (int j = 0; j < button[0].length; j++) {
                        if (event.getSource().equals(button[j][i])) {
                              gridButton = true;
                              current = button[j][i];
                              if (board[j][i] == BLANK) {
                                    if (turn == X_TURN) {
                                          current.setText("X");
                                          board[j][i] = X_MOVE;
                                          turn = O_TURN;
                                    }
                                    else {
                                          current.setText("O");
                                          board[j][i] = O_MOVE;
                                          turn = X_TURN;
                                    }
                                    //check for wins and ties
                                    if (checkWin(X_MOVE) == true) {
                                          //X Wins!
                                          xwins++;
                                          xLabel.setText(xPlayerName + " wins:" +
xwins);
                                          clearBoard();
                                    }
                                    else if (checkWin(O_MOVE) == true) {
                                          //O Wins!
                                          owins++;
                                          oLabel.setText(oPlayerName + " wins:" +
owins);
                                          clearBoard();
                                    }
                                    else if (checkTie() == true) {
                                          //Tie!
                                          clearBoard();
                                    }
                              }
                        }
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            }
      }
      //This is where you rename yourself
      if (gridButton == false) {
            if (event.getSource().equals(xChangeName) == true) {
                  if (xChangeField.getText().equals("") == false) {
                        xPlayerName = xChangeField.getText();
                        xLabel.setText(xPlayerName + " wins:" + xwins);
                  }
            }
            else if (event.getSource().equals(oChangeName) == true) {
                  if (oChangeField.getText().equals("") == false) {
                        oPlayerName = oChangeField.getText();
                        oLabel.setText(oPlayerName + " wins:" + owins);
                  }
            }
      }
}
//All the conditions for wins
public boolean checkWin(int player) {
      if (board[0][0] == player &&
                  board[0][1] == player &&
                  board[0][2] == player) {
            return true;
      }
      if (board[1][0] == player &&
                  board[1][1] == player &&
                  board[1][2] == player) {
            return true;
      }
      if (board[2][0] == player &&
                  board[2][1] == player &&
                  board[2][2] == player) {
            return true;
      }
      if (board[0][0] == player &&
                  board[1][0] == player &&
                  board[2][0] == player) {
            return true;
      }
      if (board[0][1] == player &&
                  board[1][1] == player &&
                  board[2][1] == player) {
            return true;
      }
      if (board[0][2] == player &&
                  board[1][2] == player &&
                  board[2][2] == player) {
            return true;
      }
      if (board[0][0] == player &&
                  board[1][1] == player &&
                  board[2][2] == player) {
            return true;
      }
      if (board[0][2] == player &&
                  board[1][1] == player &&
                  board[2][0] == player) {
            return true;
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			}

			return false;
		}
		//Checks for tie
		public boolean checkTie() {
			for (int row = 0; row < board.length; row++) {
				for (int column = 0; column < board.length; column++) {
					if (board[row][column] == BLANK) {
						return false;
					}
				}
			}
			return true;
		}
		//Clears the board
		public void clearBoard() {
			for (int a = 0; a < board.length; a++) {
				for (int b = 0; b < board[0].length; b++) {
					board[a][b] = BLANK;
					button[a][b].setText("");
				}
			}
			//always starts on x
			turn = X_TURN;
		}
}
```