

# CS 2334 Lab 11

Event Driven Graphics

# Event-Driven Programming

- The flow of the program is determined by user actions, such as mouse clicks and key presses.
- In event-driven programming, the program listens for events and triggers a callback function when one of these events is detected.
  - Flow of execution is not linear!
  - Challenge to debug – so go carefully

# Key Events

- Key events indicate when the user is typing on the keyboard.
- Types of Key Events
  - Key-typed Event
  - Key-pressed Event
  - Key-released Event
- A key-typed event is only generated if a valid Unicode character could be generated. E.g. 'r'

# KeyListener

- Example

```
addKeyListener(new KeyListener() {
    public void keyTyped(KeyEvent e) {
        if (e.getKeyChar() == 'r'){
            JOptionPane.showMessageDialog(null, "You typed r");
        }
    }
    public void keyPressed(KeyEvent e) {
    }
    public void keyReleased(KeyEvent e) {
    }
});
```

- The KeyListener interface requires you to define all three key events, but you can leave unused methods empty.

# KeyAdapter

- Alternatively, you could implement a KeyAdapter class.
- This class defines null methods for all the KeyEvent, so you only have to override methods for events you care about.

```
addKeyListener(new KeyAdapter() {  
    public void keyTyped(KeyEvent e) {  
        if (e.getKeyChar() == 'r'){  
            JOptionPane.showMessageDialog(null, "You typed r");  
        }  
    }  
});
```

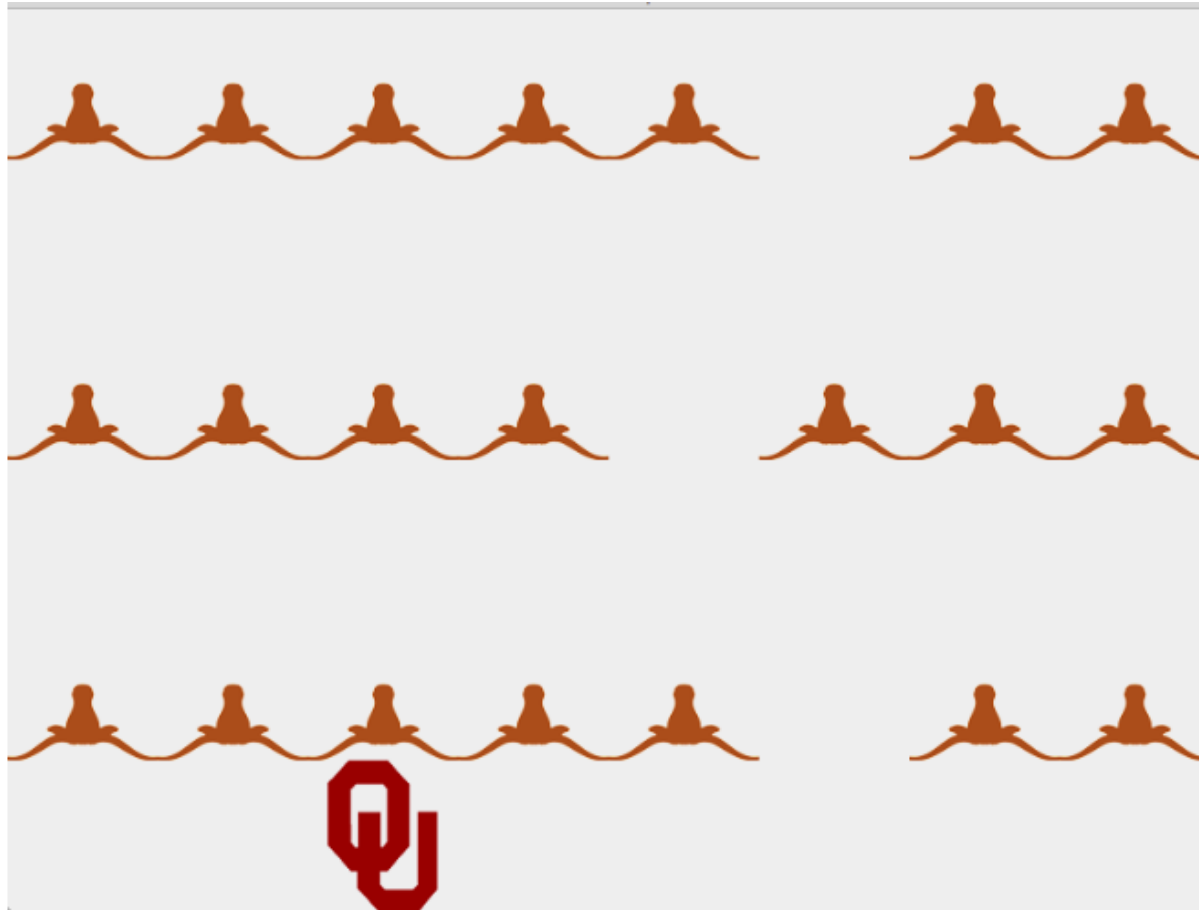
# Update Graphics

- As time passes, we may want to change what is displayed in our Components (usually a JPanel).
  - For example: an animation loop can make changes to how things are drawn (e.g., their position)
- To display these changes, we need to call ***repaint()*** which repaints the Component with the new changes in effect.
  - If you want the whole frame to be repainted, then call this method on the frame
  - This `repaint()` causes your `paintComponent()` methods to be called

# Lab11: OU vs UT

- Create an OU vs UT themed game
- Use a KeyListener to update graphics on Key-Pressed events.
- The player reacts to keys pressed by the user (right or left)

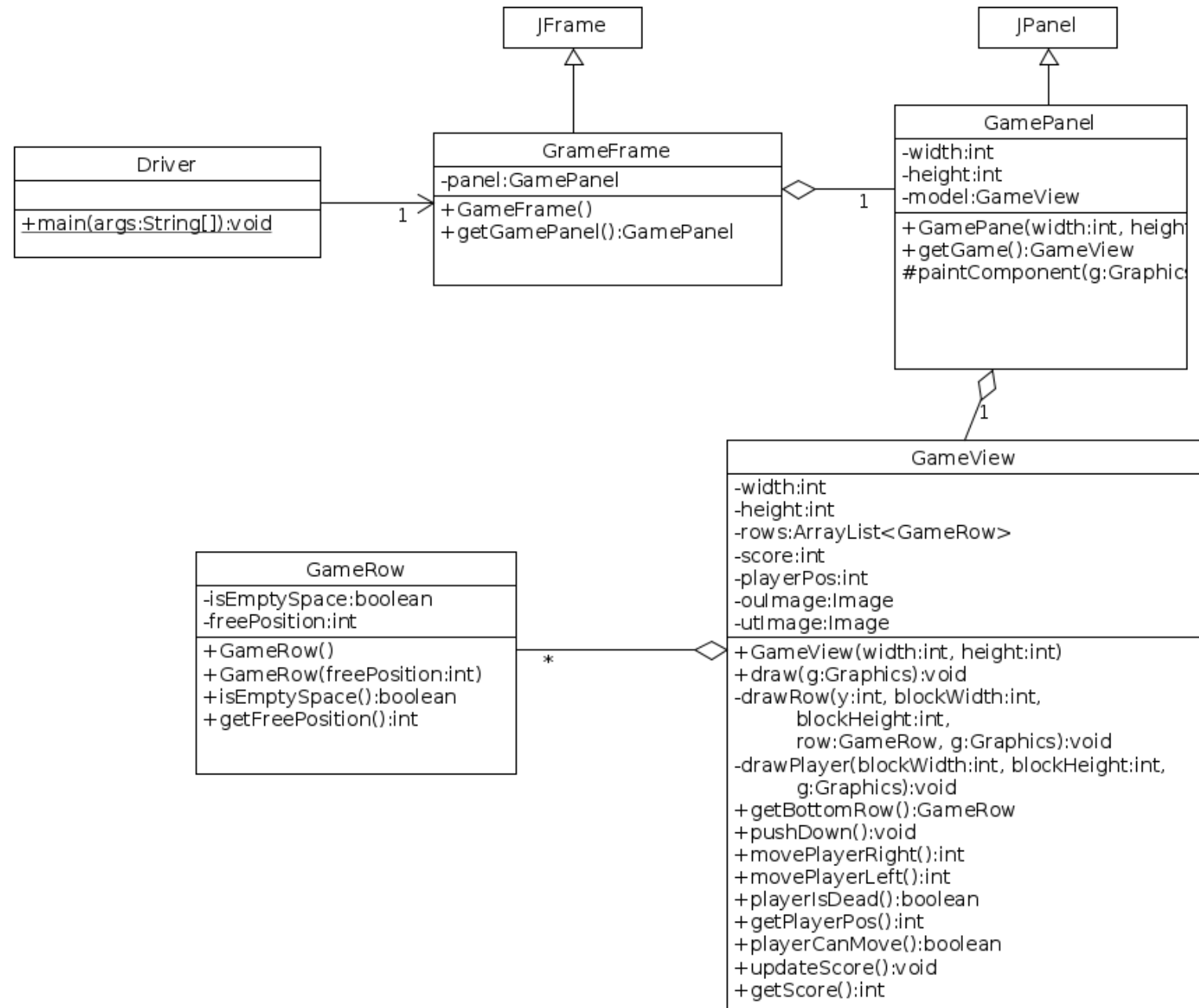
# Lab 11





# Demonstration...

# UML



# Submission

- Submit only one file: lab11.zip (casing matters)
- Due date: Friday, November 6<sup>th</sup> @11:59pm
- Submit to lab11 dropbox on D2L