Object Oriented Programming

Week 11 Part 3
Applets GUI

Lecture

- Input
- AWT
- Swing

GUI Basics

- A graphical user interface responds to events.
- *Events* are caused by user actions.
- *Event handlers* are programs that are written that handle events
- Event handlers are *associated with* objects that may cause events (e.g. buttons)
- When an object experiences an event, it calls the event handlers associated with it.

Input

Applet Shell

Two input fields and button

Set up fields and button

What to do when things change

ActionListener for Button

```
public class AppletInput extends Applet {

    private static final long serialVersionUID = 1L;

    TextField text1;
    TextField text2;
    Button button;

    public void init() {
    }

    public void paint(Graphics g) {
    }

    // ActionListner associated with button
    private class ButtonClickListener
    implements ActionListener {

        @Override
        public void actionPerformed(ActionEvent e) {
            repaint();
        }
    }

}
```

Applet init()

Create input fields an button

Associate ActionListener with button

Put fields and button on applet

Set initial values to “0”

```
public void init() {
    //Create two text fields and a button
    text1 = new TextField(8);
    text2 = new TextField(8);
    button = new Button("add");

    // Associate an ActionListener with the button
    button.addActionListener(new ButtonClickListener());

    // Put the two input fields and button on the applet
    add(text1);
    add(text2);
    add(button);

    //Set the values of the text fields
    text1.setText("0");
    text2.setText("0");
}
```

Applet paint()

Get two values, convert to in and add

Catch exception if bad input

Write the sum on the applet

```
public void paint(Graphics g) {
    int sum = 0;
    try {
        // get the two values and add them
        sum = Integer.parseInt(text1.getText()) +
              Integer.parseInt(text2.getText());
    } catch (Exception e) {
        g.drawString(e.getMessage(), 10, 100);
    }
    // Display the sum on the applet
    g.drawString("The sum is: " + sum, 10, 75);
}
```

ActionListener

Private local class

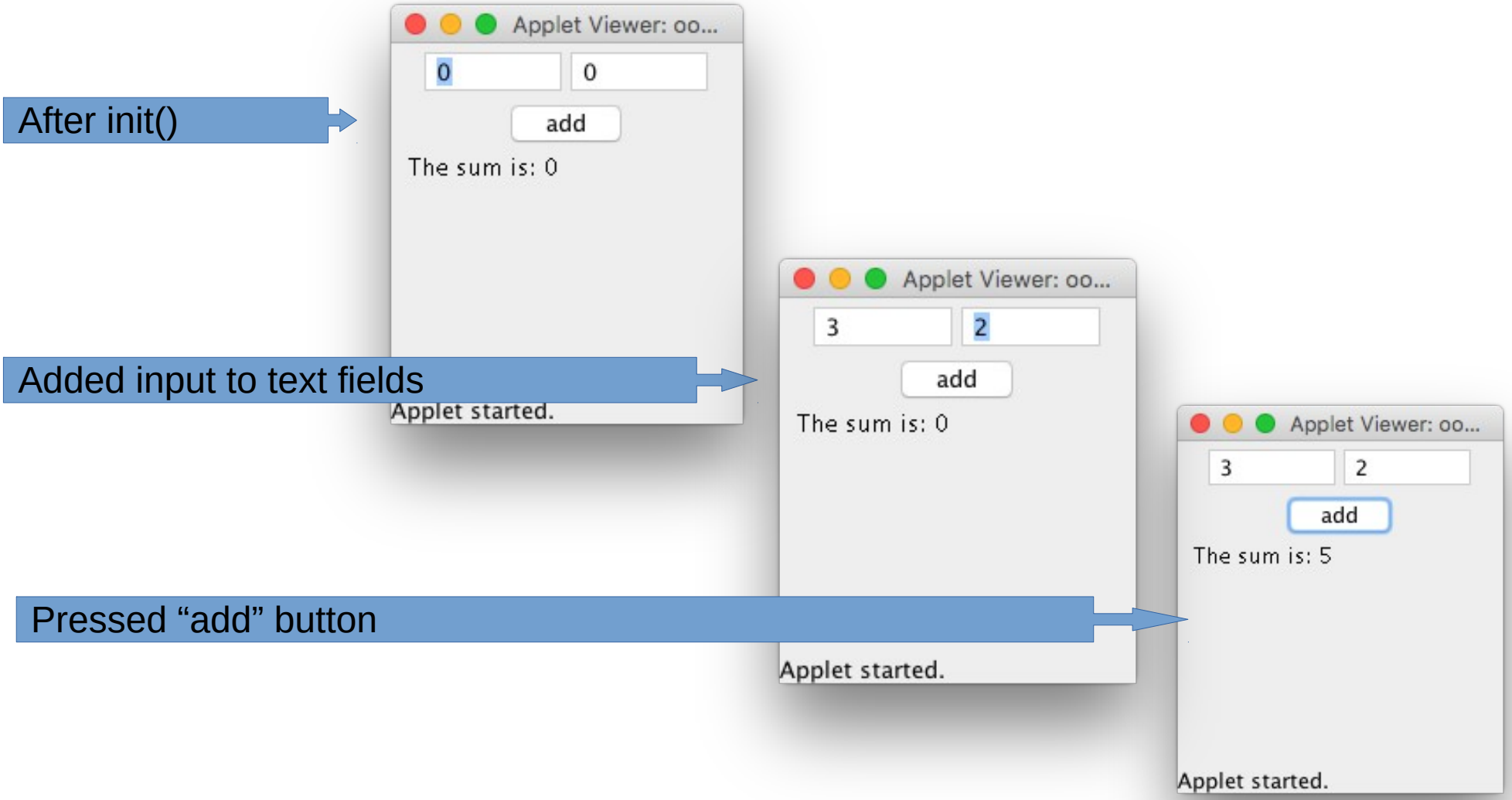
Required by interface

Calls repaint (i.e. calls paint())

```
// ActionListner associated with button
private class ButtonClickListener implements ActionListener {

    @Override
    public void actionPerformed(ActionEvent e) {
        repaint();
    }
}
```

Applet Output



Applet review

- Applets are an outdated way to deliver GUIs through a web page
- The underlying GUI may be written in AWT or Swing