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Graphical User Interface (GUI)

- GUI components, events, and listeners
- Containers
- Buttons, text fields, sliders, combo boxes
- Layout managers
- Mouse and keyboard events
- Dialog boxes
- Borders, tool tips

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GUI Elements

- Components
  - defines a screen element used to display information or allow the user to interact with the program
  - i.e JFrame, JPanel, JButton
- Events
  - an object that represents some occurrence in which we may be interested
  - Keyboard, Mouse, Touch, Time-based
- Listeners
  - an object that “waits” for an event to occur and responds in way when it does

Packages: java.awt and javax.swing

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Component, Event, Listener

- Create Component

```
JButton button1 = new Jbutton("Click me");
```

- Create Listener

```
ButtonListener listener = new ButtonListener();
```

- Set relationship between Component and listener and pass an ActionEvent

```
button1.addActionListener(listener);
```

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Component, Event, Listener

- Define Listener – inner Class of Container has access to the component object of the container

```
private class ButtonListener implements ActionListener
 {
    //-------------------------------------------------
    //  Listen to the button action push.
    //-------------------------------------------------
    public void actionPerformed(ActionEvent event)
    {
       //Do something
    }
 }
```

More than one component

- Determining Event Sources

```
if (event.getSource() == button1)
```

- The `getSource` method returns a reference to the component that generated the event

- We could have created different listener classes. Then the `actionPerformed` method would not have to determine where the event is originating

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References

- Lewis, DePasquale, Chase
  Java Foundations,
  Pearson, 4th Edition,

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Slides mainly taken out of

- the book **Java Foundations by** Lewis, DePasquale, Chase (Pearson, 4th Edition)