

* Event Handling in Java :-

Changing the state of an object is known as an event.

For example:- click on button, dragging mouse etc.

◦ Steps of Perform Event Handling:-

for registering the component with the listener, many classes provide the registration methods.

(i) Button

```
public void addActionListener(ActionListener a) {}
```

(ii) MenuItem

```
public void addActionListener(ActionListener a) {}
```

(iii) TextField

```
public void addActionListener(ActionListener a) {}
```

```
public void addTextListener(TextListener a) {}
```

(iv) TextArea

```
public void addTextListener(TextListener a) {}
```

(v) Checkbox

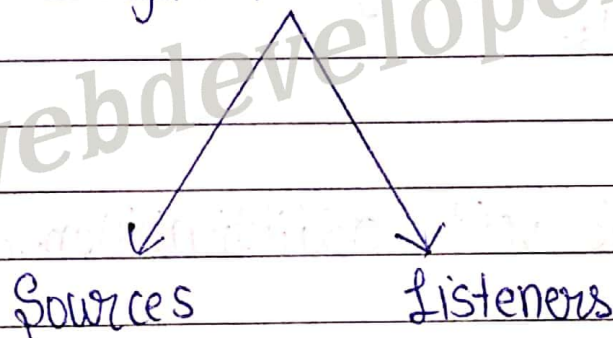
```
public void addItemListener(ItemListener a) {}
```

* Delegation Event Model :-

- To handle the events, Java follows the Delegation Event model.
- The delegation event model, which defines standard and consistent mechanisms to generate and process events.

It has Sources and Listeners :-

Delegation Event Model



1. Sources :-

- It is an object on which event occurs.
- Events are generated from the source.
- There are various sources like buttons, checkboxes, list, menu-item, choice etc to generate events.

2 Listeners:-

- It is also Event handler.
- It Generates response to event.
- Listeners are basically used for handling the events generated from the source.

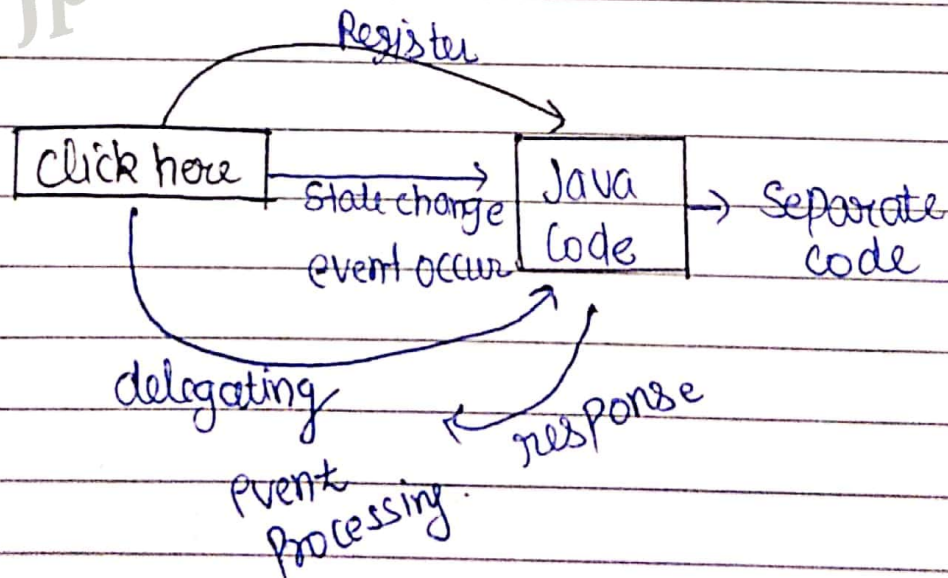
Syntax:

addTypeListener()



addKeyListener()

addActionListener()



Java Listener Interfaces

1. ActionListener:-

- It is used to handle events caused by sources like Buttons, MenuItems etc.
- The ActionListener interface is found in java.awt.event package - It has only one method

Example:-

```
import java.awt.*;  
import java.awt.event.*;
```

```
class eventtest extends Frame implements  
ActionListener
```

```
{
```

```
    Frame f;  
    TextField tf;  
    Button b;  
    eventdemo()
```

```
{
```

```
    f = new Frame;  
    f.setLayout(new FlowLayout());  
    f.setSize(500, 500);  
    f.setVisible(true);  
    b = new Button("Click here");  
    tf = new TextField(10);
```


f.add(b);
f.add(tf);
b.addActionListener(this);

3
public void actionPerformed(ActionEvent ae)

8
String str = ae.getActionCommand();
tf.setText(str);

9
public static void main (String args[])

8
eventdemo e = new eventdemo();

9

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② Java MouseListener Interface :-

- The Java MouseListener is notified whenever you change the state of mouse.
- The MouseListener interfaces is found in java.awt.event.*.

It has five Methods

```
public abstract void mouseClicked (MouseEvent e);  
public abstract void mouseEntered (MouseEvent e);  
public abstract void mouseExited (MouseEvent e);  
public abstract void mousePressed (MouseEvent e);  
public abstract void mouseReleased (MouseEvent e);
```

Example

```
import java.awt.*;  
import java.awt.event.*;  
public class MouseListenerExample extends Frame  
implements MouseListener  
{  
    Label l = new Label();  
  
    MouseListenerExample()  
    {  
        addMouseListener(this);  
    }  
}
```



```
l. setBounds (25, 50, 100, 20);  
add(l);  
setSize (300, 300);  
setLayout (null);  
setVisible (true);  
}  
public void mouseClicked (MouseEvent e)  
{  
    l.setText (" Mouse Clicked ");  
}  
public void mouseEntered (MouseEvent e)  
{  
    l.setText (" Mouse Entered ");  
}  
public void mouseExited (MouseEvent e)  
{  
    l.setText (" Mouse Exit ");  
}  
public void mouseReleased (MouseEvent e)  
{  
    l.setText (" Mouse Released ");  
}  
public void mousePressed (MouseEvent e)  
{  
    l.setText (" Mouse Pressed ");  
}  
public static void main (String args[]) {  
    new MouseListenerExample ();  
}
```

③ Java KeyListener Interface:-

- The Java KeyListener is notified whenever you change the state of key.
- The KeyListener interface is found in java.awt.event package.

• It has three methods:-

1. public void keyPressed(MouseEvent e):- It is invoked when a key ^{has been} pressed.
2. public void keyReleased(MouseEvent e):- It is invoked when a key has been released.
3. public void keyTyped(MouseEvent e):- It is invoked when a key has been typed.

Example

```
import java.awt.*;  
import java.awt.event.*;  
public class KeyListenerExample extends Frame implements  
    KeyListener  
{  
    Label l = new Label();  
    TextArea area = new TextArea();
```


keyListenerExample()

{

l. setBounds (20, 50, 100, 20);

area. setBounds (20, 80, 300, 300);

area. addKeyListener (this);

add (l);

add (area);

setSize (400, 400);

// Setting the size, layout
and visibility of frame

setLayout (null);

setVisible (true);

public void keyPressed (KeyEvent e)

{

l. setText ("Key Pressed");

}

public void keyReleased (^{Key}MouseEvent e)

{

l. setText ("key Released");

}

public void keyTyped (KeyEvent e)

{

l. setText ("key Typed");

}

1/1/

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

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