**Experiment No-4**

**Title:** Write a program to handle different events.

**Aim:** Able to handle events of AWT and swing components.

Able to develop programs to handle events in java programming.

**Theory:**

## What is an Event?

Change in the state of an object is known as event i.e. event describes the change in state of source. Events are generated as result of user interaction with the graphical user interface components. For example, clicking on a button, moving the mouse, entering a character through keyboard, selecting an item from list, scrolling the page are the activities that causes an event to happen.

## What is Event Handling?

Event Handling is the mechanism that controls the event and decides what should happen if an event occurs. This mechanism have the code which is known as event handler that is executed when an event occurs. Java Uses the Delegation Event Model to handle the events. This model defines the standard mechanism to generate and handle the events. Let’s have a brief introduction to this model.

**The Delegation Event Model has the following key participants namely:**

* **Source** - The source is an object on which event occurs. Source is responsible for providing information of the occurred event to its handler. Java provide as with classes for source object.
* **Listener** - It is also known as event handler. Listener is responsible for generating response to an event. From java implementation point of view the listener is also an object. Listener waits until it receives an event. Once the event is received, the listener process the event a then returns.

The benefit of this approach is that the user interface logic is completely separated from the logic that generates the event. The user interface element is able to delegate the processing of an event to the separate piece of code. In this model, Listener needs to be registered with the source object so that the listener can receive the event notification. This is an efficient way of handling the event because the event notifications are sent only to those listener that want to receive them.

## Steps involved in event handling

* The User clicks the button and the event is generated.
* Now the object of concerned event class is created automatically and information about the source and the event get populated with in same object.
* Event object is forwarded to the method of registered listener class.
* The method is now get executed and returns.

## Java Event classes and Listener interfaces

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| **Event Classes** | **Listener Interfaces** |
| ActionEvent | ActionListener |
| MouseEvent | MouseListener and MouseMotionListener |
| MouseWheelEvent | MouseWheelListener |
| KeyEvent | KeyListener |
| ItemEvent | ItemListener |
| TextEvent | TextListener |
| AdjustmentEvent | AdjustmentListener |
| WindowEvent | WindowListener |
| ComponentEvent | ComponentListener |
| ContainerEvent | ContainerListener |
| FocusEvent | FocusListener |

**Conclusion:** In this experiment we have learnt different event handling mechanism.

**Exercise:**

1. Write a program to generate key event when key is pressed and display “Key Pressed” message.
2. Write a program to change the background color of applet when user performs event using mouse.
3. Write a program to using JPasswordField to set the password character as ‘#’ instead of ‘\*’.