TOPIC:

- EVENT HANDLING
- INTRODUCTION TO AWT

AdjustmentEvent Class

- An AdjustmentEvent is generated by a scroll bar.
- There are five types of adjustment events.
- The AdjustmentEvent class defines integer constants that can be used to identify them.
- Example, **ADJUSTMENT_VALUE_CHANGED**, indicates that a change has occurred.

- One AdjustmentEvent constructor: AdjustmentEvent(Adjustable src, int id, int type, int val)
    Here, src is a reference to the object that generated this event. The id specifies the event. The type of the adjustment is specified by type, and its associated value is val.

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ComponentEvent Class

•A ComponentEvent is generated when the size, position, or visibility of a component is changed. There are four types of component events.

•The ComponentEvent class defines integer constants that can be used to identify them.

•ComponentEvent has this constructor:

    ComponentEvent(Component src, int type)

Here, src is a reference to the object that generated this event. The type of the event is specified by type.

ContainerEvent Class

•A ContainerEvent is generated when a component is added to or removed from a container.

•There are two types of container events. : COMPONENT_ADDED

•and COMPONENT_REMOVED. They indicate that a component has been added to or removed from the container.

•ContainerEvent is a subclass of ComponentEvent.

• Constructor:

ContainerEvent(Component src, int type, Component comp)

Here, src is a reference to the container that generated this event. The type of the event is specified by type, and the component that has been added to or removed from the container is comp.

The FocusEvent Class

• A FocusEvent is generated when a component gains or loses input focus.

• These events are identified by the integer constants FOCUS_GAINED and FOCUS_LOST.

• FocusEvent is a subclass of ComponentEvent.

• One constructor:

FocusEvent(Component src, int type)

Here, src is a reference to the component that generated this event. The type of the event is specified by type.

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The InputEvent Class

•The abstract class InputEvent is a subclass of ComponentEvent and is the superclass for component input events.

•Its subclasses are KeyEvent and MouseEvent.

•InputEvent defines several integer constants that represent any modifiers, such as the control key being pressed, that might be associated with the event.

The ItemEvent Class

•An ItemEvent is generated when a check box or a list item is clicked or when a checkable menu item is selected or deselected.

•There are two types of item events, which are identified by the following integer constants:
    DESELECTED
    SELECTED

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The KeyEvent Class

• A KeyEvent is generated when keyboard input occurs.

• There are three types of key events, which are identified by these integer constants: KEY_PRESSED, KEY_RELEASED, and KEY_TYPED.

• The first two events are generated when any key is pressed or released.

• The last event occurs only when a character is generated.

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The MouseEvent Class

- MouseEvent is a subclass of InputEvent.
- One of its constructors:
    - MouseEvent(Component src, int type, long when, int modifiers, int x, int y, int clicks, boolean triggersPopup)
- Here, src is a reference to the component that generated the event.
- The type of the event is specified by type.
- The system time at which the mouse event occurred is passed in when.
- The modifiers argument indicates which modifiers were pressed
- when a mouse event occurred. The coordinates of the mouse are passed in x and y.
- The click count is passed in clicks. The triggersPopup flag indicates if this event causes a pop-up menu to appear on this platform.

The TextEvent Class

- Instances of this class describe text events.
- These are generated by text fields and text areas when characters are entered by a user or program.
- TextEvent defines the integer constant TEXT_VALUE_CHANGED.
- The one constructor for this class is shown here:

  TextEvent(Object src, int type)

- Here, src is a reference to the object that generated this event.
- The type of the event is specified by type.

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The WindowEvent Class

- There are ten types of window events.
- The WindowEvent class defines integer constants that can be used to identify them.
- WindowEvent is a subclass of ComponentEvent. It defines several constructors.
- The first is WindowEvent(Window src, int type)
- Here, src is a reference to the object that generated this event.
- The type of the event is type.

Event Listener Interfaces

• The delegation event model has two parts: sources and listeners.
• listeners are created by implementing one or more of the interfaces defined by the java.awt.event package.
• When an event occurs, the event source invokes the appropriate method defined by the listener and provides an event object as its argument.

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Event Listener Interfaces

Interface	Description
ActionListener	Defines one method to receive action events.
AdjustmentListener	Defines one method to receive adjustment events.
ComponentListener	Defines four methods to recognize when a component is hidden, moved, resized, or shown.
ContainerListener	Defines two methods to recognize when a component is added to or removed from a container.
FocusListener	Defines two methods to recognize when a component gains or loses keyboard focus.
ItemListener	Defines one method to recognize when the state of an item changes.
KeyListener	Defines three methods to recognize when a key is pressed, released, or typed.
MouseListener	Defines five methods to recognize when the mouse is clicked, enters a component, exits a component, is pressed, or is released.
MouseMotionListener	Defines two methods to recognize when the mouse is dragged or moved.
MouseWheelListener	Defines one method to recognize when the mouse wheel is moved.
TextListener	Defines one method to recognize when a text value changes.
WindowFocusListener	Defines two methods to recognize when a window gains or loses input focus.
WindowListener	Defines seven methods to recognize when a window is activated, closed, deactivated, deiconified, iconified, opened, or quit.

References/Resources:

- Balaguruswamy, E. (2014). Programming with JAVA: A Primer. 5th edition. India: McGraw Hill Education
- Horstmann, C. S. (2017). Core Java - Vol. I – Fundamentals (Vol. 10). Pearson Education
- Schildt, H. (2018). Java: The Complete Reference. 10th edition. McGraw-Hill Education.

NOTE: Please go through the reference book for details on the above topic and feel free to mail your doubts or discuss anything. For Introduction to AWT: Working with Windows, Graphics and Text, Please use the following link:

https://www.javatpoint.com/java-awt

Assignment

Q1.Write different constants and their description available in AdjustmentEvent class.

Q2.Write different constants and their description available in ComponentEvent class.

Q3.Explain syntax of all constructors available in ContainerEvent and FocusEvent class.

Q4.Write the name of constants present in InputEvent class.

Q5.List all the constants present in KeyEvent class.

Q6.List all the constants present in MouseEvent class.

Q7.List all the constants and their meaning present in WindowEvent class.