Task 6 Date: 13.08.2025

1. What is Swing?

Swing is a Java GUI toolkit that provides lightweight, platform-independent components.

It is part of the Java Foundation Classes (JFC) and built on top of AWT.

It supports advanced features like pluggable look-and-feel.

2. Difference between AWT and Swing?

AWT components are heavyweight (depend on OS), while Swing components are lightweight.

Swing offers more components and flexibility than AWT.

Swing supports pluggable look-and-feel, AWT does not.

3. What is ActionListener?

ActionListener is an interface used to handle action events like button clicks.

It contains the method actionPerformed(ActionEvent e).

You register it to a component to respond to user actions.

4. How to manage layouts in Java?

Java uses Layout Managers like FlowLayout, BorderLayout, GridLayout, etc.

They control how components are arranged in a container.

You can also set null layout for manual positioning.

5. What is the Event Dispatch Thread?

The Event Dispatch Thread (EDT) handles all GUI updates and event processing in Swing.

It ensures thread-safety for UI operations.

GUI code must run on EDT using SwingUtilities.invokeLater().

6. What are the GUI components in Java?

GUI components include buttons, labels, text fields, tables, lists, and menus.

Swing provides these in javax.swing package.

They are used to create interactive user interfaces.

7. How to handle multiple events?

Implement multiple listener interfaces or use inner/anonymous classes.

Each event type is handled in its corresponding method.

You can register multiple listeners to the same component.

8. JPanel vs JFrame?

JFrame is a top-level window with a title bar and close/minimize buttons.

JPanel is a lightweight container used to group components.

A JPanel must be added to a JFrame or another container.

9. How to add scroll bar in GUI?

Use JScrollPane to wrap components like text areas, tables, or panels.

Example: new JScrollPane(component).

It automatically shows scrollbars when needed.

10. What is MVC architecture?

MVC stands for Model-View-Controller.

Model holds data, View displays it, Controller handles input.

It separates concerns for better maintainability.