

1. Define a Swing in Java

Swing is a part of Java Foundation Classes (JFC) used for building graphical user interfaces (GUIs).

It is a lightweight, platform-independent GUI toolkit that provides rich components like buttons, text fields, tables, trees, etc.

2. Compare Applets and Applications in Java

Feature	Applet	Application
Environment	Runs in a browser	Runs on desktop (JVM)
Entry Point	init() method	main() method
Security	Restricted (sandboxed)	Full access to system resources
GUI	AWT/Swing	AWT/Swing
Use	Web-based interface	Standalone programs

3. Role of JDBC Drivers in Database Connectivity

JDBC drivers are the interface between Java applications and databases, translating Java API calls into database-specific operations.

4. Swing and MVC Architecture

Swing uses the Model-View-Controller pattern. For example:

```
JButton button = new JButton("Click Me");  
button.addActionListener(e -> System.out.println("Clicked!"));
```

5. Purpose of java.net Package

Provides networking capabilities such as Socket, ServerSocket, URL, and InetAddress for

client-server communication.

## 6. HTTP Servlet Lifecycle

- init(): Called once when loaded
- service(): Handles requests
- destroy(): Called when destroyed

## 7. Client-Server Architecture

Client requests service; server responds.

Example: Browser <--> Web Server

## 8. Socket and ServerSocket

Server: `ServerSocket server = new ServerSocket(5000);`

Client: `Socket client = new Socket("localhost", 5000);`

## 9. What is J2EE Platform

J2EE is Java 2 Platform, Enterprise Edition, used for building enterprise applications with Servlets, JSP, EJB, etc.

## 10. Servlet Handling Form

`@WebServlet("/SubmitServlet")`

```
public class SubmitServlet extends HttpServlet {  
    protected void doPost(HttpServletRequest req, HttpServletResponse res) throws IOException {  
        String user = req.getParameter("username");  
        res.getWriter().println("Hello " + user);  
    }  
}
```

## 11. JSP vs Servlet

Feature	JSP	Servlet
Type	HTML with Java	Java code
Focus	Presentation layer	Logic layer
Syntax	Easier for UI	For developers
Compilation	Compiled to servlet	Written as Java class

## 12. Distributed App using RMI

Steps: Define remote interface -> Implement -> Register with rmiregistry -> Client lookup and invoke.

## 13. Define Web Container

Manages servlet and JSP lifecycle and provides services like security and concurrency.

## 14. Expression Language (EL)

Used in JSP to access Java objects: `${user.name}`

## 15. J2EE Architecture

Layers: Client, Web, Business, EIS. Promotes scalability and maintainability.

## 16. JNDI and RMI

JNDI allows lookup of remote objects/services, integrates with RMI for enterprise apps.

## 17. What is DNS

DNS translates domain names (e.g., google.com) to IP addresses.

## 18. Define Servlets

Servlets are Java classes that handle HTTP requests/responses and generate dynamic content.

## 19. Session Management in Servlets

```
HttpSession session = request.getSession();
```

```
session.setAttribute("user", "Bernard");
```

```
String name = (String) session.getAttribute("user");
```

```
response.getWriter().println("Welcome " + name);
```