Java Servlets Learning Roadmap

1. **Introduction to Servlets**

   o Understanding the basics of web applications.

   o Difference between static and dynamic web pages.

   o Overview of Java EE and its components.

   o Role of Servlets in web applications.

2. **Servlet Architecture**

   o The Servlet interface and its methods.

   o Servlet lifecycle: `init()`, `service()`, and `destroy()`.

   o Understanding `ServletConfig` and `ServletContext`.

3. **Setting Up Your Environment**

   o Installing a Servlet container (e.g., Apache Tomcat).

   o Configuring your development environment (IDE setup).

   o Creating a simple Servlet project.

4. **Handling Requests and Responses**

   o Understanding HTTP protocol basics (GET, POST, etc.).

   o Working with `HttpServletRequest` and `HttpServletResponse`.

   o Reading request parameters and headers.

   o Sending responses to the client.

5. **Servlet Configuration**

   o Web.xml configuration (deployment descriptor).

   o Annotations for Servlet configuration (`@WebServlet`, etc.).

   o Load-on-startup and initialization parameters.

6. **Session Management**

   o Understanding session and cookies.

   o Managing sessions with `HttpSession`.

   o URL rewriting and hidden form fields for session tracking.

7. **Request Dispatcher and Redirects**

    o   Forwarding requests using `RequestDispatcher`.

    o   Redirecting requests with `sendRedirect()`.

8. **Filters**

    o   Introduction to filters in Java EE.

    o   Writing and configuring filters.

    o   Filter chaining and lifecycle.

9. **Servlet Listeners**

    o   Understanding Servlet context listeners.

    o   Writing and configuring listeners.

    o   Common listener use cases.

10. **Error Handling**

    o   Configuring custom error pages.

    o   Handling exceptions in Servlets.

11. **File Upload and Download**

    o   Handling file uploads with Servlets.

    o   Serving files for download.

12. **Internationalization (i18n)**

    o   Basics of internationalization.

    o   Configuring Servlets for multiple languages.

13. **Security**

    o   Basic authentication and authorization.

    o   Using SSL/TLS with Servlets.

    o   Role-based access control.

14. **Servlet Best Practices**

    o   Writing thread-safe Servlets.

    o   Optimizing performance.

        o Logging and debugging.

Resources

- **Books**: "Head First Servlets and JSP" by Kathy Sierra, Bert Bates, and Bryan Basham.

- **Online Tutorials**: TutorialsPoint, GeeksforGeeks, JavaTpoint.

- **Official Documentation**: Oracle Servlet Documentation.

Practical Projects

1. **Simple Servlet-based Web Application**

   o Create a basic web application with servlets handling different requests.

2. **User Authentication System**

   o Implement login, registration, and session management.

3. **CRUD Operations**

   o Build a web application that performs CRUD operations on a database using Servlets and JDBC.

4. **File Management System**

   o Develop a system to upload, download, and manage files on the server.