Chapter # 2

📕 Chapter 2: Setting Up Development Environment – Notes & Solutions

✅ **PART I: Short Questions (Exercise Answers)**

1. What is Tomcat?

- **Tomcat** is an **open-source web server and servlet container** developed by Apache.

- It is mainly used to run Java Servlets and Java Server Pages (JSP).

- Example: Running a Java-based login application on localhost:8080.

2. Write some advantages of Tomcat.

- Open-source (free to use).

- Lightweight and easy to install.

- Stable and secure.

- Supports JSP and Servlets.

- Flexible and platform-independent.

3. What is NetBeans?

- **NetBeans** is a **free, open-source Integrated Development Environment (IDE)**.

- It supports Java, C++, PHP, HTML, and more.

- Provides tools for writing, debugging, and running Java programs.

- Example: Developers use NetBeans to build Java web applications.

4. What is WEB-INF?

- A **special directory** inside a Java web application.

- Stores configuration files (web.xml), libraries (.jar files), and compiled classes.

- Not directly accessible by the browser for security reasons.

5. What is web.xml or Deployment Descriptor?

- A configuration file of a Java web application placed inside **WEB-INF**.

- Defines how servlets are mapped, session settings, welcome page, error handling.

- Example:

```
<web-app>
 <servlet>
  <servlet-name>login</servlet-name>
  <servlet-class>LoginServlet</servlet-class>
 </servlet>
</web-app>
```

6. Write names of Web Application Development Stages.

1. Requirement Review & Proposal

2. Planning & Blueprint

3. Design

4. Programming

5. Copywriting & Labeling

6. Testing & Launch

7. Maintenance

✅ PART II: Long Questions (Exercise Answers)

1. What is Tomcat? Write installation steps for Tomcat.

- **Tomcat** is an open-source web server and servlet container used for Java web apps.

- **Installation Steps:**

    1. Install Java JDK.

    2. Download Tomcat from tomcat.apache.org.

    3. Run installer and accept license.

    4. Provide admin username/password.

    5. Set JDK path.

    6. Click Install → Finish.

    7. Start Tomcat service and test by opening http://localhost:8080.

2. Describe about NetBeans? Also write its Installation Steps.

- **NetBeans:** An IDE for Java and other languages. It provides code editor, debugger, GUI builder, and version control.

- **Installation Steps:**

    1. Download NetBeans from netbeans.org.

    2. Run installer → Accept license.

    3. Select installation path.

    4. Choose JDK path.

    5. Click Install and wait for completion.

    6. Click Finish and start NetBeans IDE.

3. Write Web Application Standard Directory Structure.

mywebapp/

|— index.html

|— style.css

|— script.js

|

└— WEB-INF/

  |— web.xml

  |— classes/ (compiled .class files)

  |— lib/ (JAR libraries)

- **Root Directory:** Contains HTML, CSS, JS.

- **WEB-INF:** Meta information, classes, libraries.

- **WAR File:** Packaged form of web app.

4. Write Stages of Web Application Development.

1. **Requirement Review & Proposal** → Define goals, features.

2. **Planning & Blueprint** → Create flowcharts, sitemaps.

3. **Design** → Work on UI/UX (colors, layout).

4. **Programming** → Write backend and frontend code.

5. **Copywriting & Labeling** → Add text, headings, labels.

6. **Testing & Launch** → Test in browsers/devices, deploy.

7. **Maintenance** → Update features, fix bugs.

⭐ **Extra Important Short Questions with Answers**

Q1. What is Eclipse IDE?

- Eclipse is another Java IDE, similar to NetBeans.

- Used for writing, compiling, and debugging Java applications.

Q2. What is WAR file?

- **WAR (Web Application Archive):** Packaged format of Java web app.

- Contains HTML, JSP, servlets, and libraries.

- Example: myapp.war can be deployed on Tomcat server.

Q3. Differentiate between Tomcat and Apache HTTP Server.

- **Tomcat:** Runs Java servlets and JSP.

- **Apache HTTP Server:** Serves static content (HTML, CSS).

Q4. Why WEB-INF is secure?

- Files inside **WEB-INF** are not accessible directly from browser.

- Provides protection for sensitive files like web.xml and .jar libraries.

Q5. What is the role of classes and lib inside WEB-INF?

- **classes:** Stores compiled Java classes.

- **lib:** Stores external libraries (.jar files).

Q6. What is the difference between IDE and Text Editor?

- **Text Editor:** Simple (Notepad, Sublime). Only used to write code.

- **IDE (NetBeans, Eclipse):** Provides editor, compiler, debugger, GUI builder.

⭐ **Extra Important Long Questions with Answers**

Q1. Differentiate between NetBeans and Eclipse IDE.

Feature	NetBeans	Eclipse
Developer	Oracle	IBM
Ease of use	User-friendly	More flexible
Plugins	Fewer	More extensive
Best for	Beginners	Advanced developers

Q2. Explain WAR File with Structure.

- **Definition:** WAR = Web Application Archive.

- **Structure:**

myapp.war

|— index.html

|— style.css

|— WEB-INF/

  |— web.xml

  |— classes/

  |— lib/

- **Usage:** Makes deployment easy on Tomcat/GlassFish servers.

Q3. Why Testing and Maintenance are important in Web App Development?

- **Testing:** Finds and fixes errors before launch. Ensures compatibility across browsers/devices.

- **Maintenance:** Updates features, improves performance, security patches.

- Example: Updating a banking app with new security features.