Lab Exercise 1- Simple API in java running in Apache Tomcat

Objective:

You will create a simple REST API:

- URL: http://localhost:8080/SimpleAPI/hello

- Method: GET

- Response: "Hello from Java API!"

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1. Install Required Tools

Install Eclipse IDE (Enterprise Edition)

Download: *Eclipse IDE for Enterprise Java and Web Developers*

Install Apache Tomcat (v9 or v10 recommended)

Extract it on your computer.

Example path:

C:/apache-tomcat-9.0.85/

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2. Configure Tomcat in Eclipse

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1. Open **Eclipse**

2. Go to:

   Window → Preferences → Server → Runtime Environments

3. Click **Add**

4. Select:

   Apache → Tomcat v9.0

5. Browse and select your Tomcat installation folder

6. Click **Finish**

You're ready!

3. Create a Dynamic Web Project in Eclipse

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1. Go to:

   File → New → Dynamic Web Project

2. Project Name: **SimpleAPI**

3. Runtime: **Apache Tomcat v9.0**

4. Finish

Eclipse will create the project structure.

4. Create a Simple Servlet (API Endpoint)

Steps:

1. Right-click **src/main/java**

2. Click:

   New → Servlet

3. Name: HelloAPI

4. Package: com.api

Replace code with this simple API:

```java
package com.api;

import java.io.IOException;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;


@WebServlet("/hello")

public class HelloAPI extends HttpServlet {

    private static final long serialVersionUID = 1L;


    protected void doGet(HttpServletRequest request, HttpServletResponse response)

        throws ServletException, IOException {

      response.setContentType("application/json");

      response.getWriter().write("{ \"message\": \"Hello from Java API!\" }");

    }

}
```

This creates a REST-style endpoint:

/hello

5. Add Servlet Mapping (Optional XML Method)

Not needed if using @WebServlet annotation.

But if you want web.xml mapping:

Inside WebContent/WEB-INF/web.xml:

```
<servlet>

  <servlet-name>HelloAPI</servlet-name>

  <servlet-class>com.api.HelloAPI</servlet-class>

</servlet>


<servlet-mapping>

  <servlet-name>HelloAPI</servlet-name>

  <url-pattern>/hello</url-pattern>

</servlet-mapping>
```

6. Run API on Tomcat

1. Right-click project

   Run As → Run on Server

2. Choose: **Tomcat v9.0**

3. Click **Finish**

7. Test the API

Open browser or Postman:

URL:

```
http://localhost:8080/SimpleAPI/hello
```

Expected Output:

```
{ "message": "Hello from Java API!" }
```

Your Java API is working!