**First Advanced Java Project**

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# First Java EE Project

## Setting up the Java Development Environment

### Download and Install latest JDK and JRE (LTS version only)

* Check if your system currently has JDK and JRE installed or not:

Open command prompt & type **java –version**. If it says “java is **not recognized as an internal or external command**”, we need to install java.

* If you have any version(s) prior to JDK 11.0.12 uninstall it/them from Control Panel
* Google for “JDK latest LTS version download”. In the displayed results, open **Oracle** specific link
* Download the latest JDK (currently its **11.0.12**) and install it. JRE will be installed along with automatically.

You can download it directly from here: <https://www.oracle.com/in/java/technologies/javase-jdk11-downloads.html>

### Environment Variables

* JDK will be installed in “C:\Program Files\” directory
* Copy the path inclusive of **bin** directory: “C:\Program Files\Java\jdk-11.0.12\bin”
* Right click on “My PC”, go to “Properties” and then go to “Advance System Settings”
* Click on “**Environment variables**” under “Advanced” tab. You will notice **2 sections** in the dialog
* In both sections, search for **“PATH”** environment variables and choose to **edit** them
* Add the path: “C:\Program Files\Java\jdk-11.0.12\bin” in both PATH variables and click OK
* **Restart** the command prompt & check again for java version

### Download and Install Eclipse IDE for Java EE Developers

* Search for “Eclipse IDE latest download”
* Open the link that says eclipse.org
* Download **Eclipse IDE 2020-12** or the one that suits your systems configuration (32/64 bit)
* Run the installer.
* Choose “Eclipse IDE for **Enterprise** Java Developers”
* Select the installation folder and proceed with the installation

You can download it directly from here: <https://www.eclipse.org/downloads/packages/release/2020-12/r>

### Set Up the Workspace

* As soon as Eclipse Installation completes, launch it.
* The launcher will ask us to set up a workspace path. Give the workspace path.
* It will create a folder where all our projects will be created and stored

### Download and Install Tomcat

* Google for “tomcat download”
* Click the link that displays “tomcat.apache.org”
* Choose **Tomcat 9** under downloads section
* Download Windows service installer – 32/64 bit depending on your system configuration
* You can download it directly from here: <https://tomcat.apache.org/download-90.cgi>
* Follow the usual install mechanism to install Tomcat.
* Give the path to JDK 11.0.12 when asked
* Keep the default installation folder as is.
* Uncheck “Start Tomcat” and click Finish.
* To install Tomcat on Ubuntu, follow this link: <https://tecadmin.net/install-tomcat-9-on-ubuntu/>

### Configure Tomcat Server with Eclipse

* Open Eclipse
* Go to: **Windows** ⟹ **Preferences**
* Open option: **Server** ⟹ Click on: **Runtime Environments**.
* Click on: Add⟹ Choose: Apache Tomcat v10.0 and click next
* Browse Tomcat installation directory and click Finish
* Click “Apply and Close”. Tomcat is configured.

### Start Tomcat Server

* Open Servers Tab below, or Click on Window ⟹ Show View ⟹ Other ⟹ type Servers and hit enter.
* Click the link under Servers Tab.
* Select the Server Type as Tomcat v9.0 Server, click next and then Finish.
* Tomcat will start showing in the Servers Tab with the status “Stopped, Synchronized”
* Select Tomcat and click the green play icon.
* Click “Allow Access” in “Windows Security Alert” Dialog Box if it pops up
* The status of Tomcat changes to “Started, Synchronized”
* Open a web browser and type “localhost:8080” in the address bar
* If the web page shows “**HTTP Status 404 – Not Found”**, the server has started successfully

### If Block Port Error Message

* Go to Apache Tomcat installation folder ⟹**conf** folder
* Open **server.xml** and change port numbers to the free ones (for ex. 9494) available on the system.
* Save the file and restart the server.

### Download and Install MySQL for Windows

* Search for “download mysql” on Google
* Open the link that says “https://www.mysql.com/downloads/”
* Under “Downloads” tab, search for “**MySQL Community (GPL) Downloads**”. Click it.
* Search for “MySQL Community Server”
* Search for “Windows (x86, 32 & 64 bit), MySQL Installer MSI” and go to download page.
* Under GA releases, search for “**Windows (x86, 32-bit), MSI Installer -** (mysql-installer-community-8.0.23.0.msi)” – Download the one with a higher size
* You can download it directly from this link: <https://dev.mysql.com/downloads/file/?id=506568>
* You will be asked to “Login” or “Sign Up”. Instead click on “**No thanks, just start my download.**”
* Go through normal installation.

### Download MySQL Connector

* Google for “**MySQL Connector for Java**”
* Open the link that says: dev.mysql.com
* Download any (tar.gz or .zip file)
* You will be asked to “Login” or “Sign Up”. Instead click on “**No thanks, just start my download.**”
* Download the file and extract it

## First Web Application

### Create a Project

* Start Eclipse
* Create a “**Dynamic Web Project**” by clicking: File → New → Dynamic Web Project
* Give a name to the project, say **01MyFirstWebProject** here.
* Keep every entry as default and proceed with next → next options
* Keep the Context Root and Content Directory as is.
* A context root **identifies a web application in a Java EE server**.
* Check “Generate **web.xml** deployment descriptor” and click finish.

### Create an HTML File

* Right click on **WebContent** directory, click New → HTML File, give name of the file as “**index.html**” in the dialog box, click next and then finish.
* Create a form with attributes **action** and **method** set to “**first**” and “**get**” respectively
* Create an input with attributes **type** and **name** set to “**text**” and “**user-name**” respectively
* Create a submit button

### Create a Servlet

* Inside Java Resources, find the “src” directory.
* Right click on the “src” directory, click New → Servlet
* Give the name of the package (**com.first.project**) & the name of the Servlet (**FirstServlet**) & click next
* In the URL mappings section, select the URL and click **edit**. Set the new URL to **“/first**” & click next
* In the next dialog, **uncheck** “doPost”, keep rest of the options as they are and click finish
* In the created FirstServlet, locate the doGet() method and write the below code:

|  |
| --- |
| **System.out.println("Name: " + request.getParamter(“user-name”));** |

### Modify web.xml

* Open **web.xml** and find the tag **<welcome-file-list></welcome-file-list>**
* Keep only the **<welcome-file>** tag that has **index.html** as its content
* **Remove** all the other <welcome-file> tags and save the web.xml file

### Execute the Project

* Select the project and click the **green button** on the toolbar
* Select “Run on Server” in the pop-up

**Result:** The project will run in the Eclipse inbuilt browser with URL: <http://localhost:8080/01MyFirstWebProject/>

* Enter “testvalue” in the text box and hit Submit

Result: The URL will change to: <http://localhost:8080/01MyFirstWebProject/first?user-name=testvalue>

### Stop the Server

When you are done with executing the code, stop the server by clicking on Servers tab and clicking the **red square** button on its toolbar