



Course: Web Application Development Setup Environment

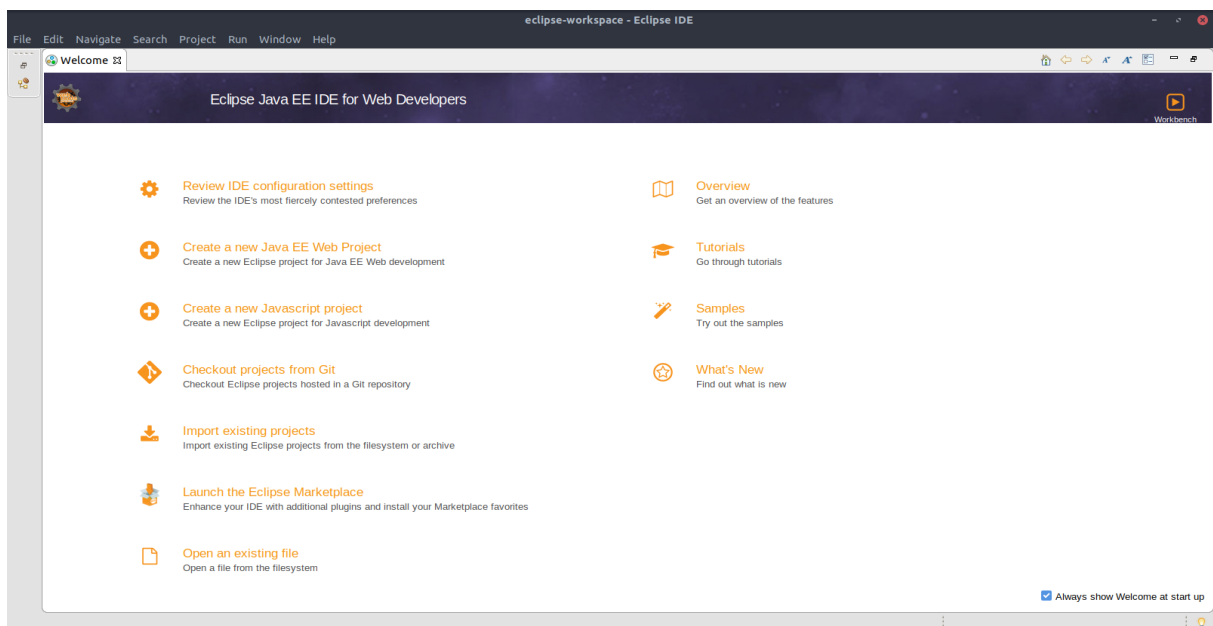
Content:

- Setup IDE: Eclipse EE IDE
- Setup database: MySQL (database server), MySQL Workbench(administration tool)

Part 1: Setup Eclipse EE IDE

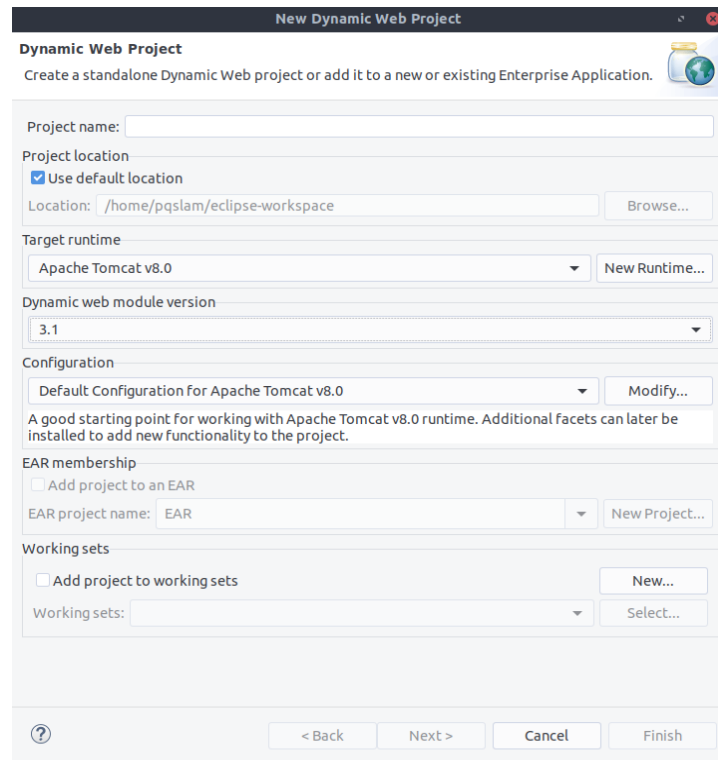
Eclipse is one of the most popular integrated development environments (IDE) used in software development. It provides a core workspace and various plugins for extending/customizing the environment. You can download different packages of Eclipse from <https://www.eclipse.org/downloads/packages/>, and it is recommended to use Eclipse EE IDE (Eclipse IDE for Enterprise Java Developers) in this course since it contains almost all plugins for developing web applications. Another alternative is using Eclipse Installer (download via <https://www.eclipse.org/downloads/packages/installer>) to install the EE package.

Normally, the welcome page will be displayed when you open Eclipse:



Part 2: Your first Dynamic Web Project

Eclipse EE IDE supports different kinds of projects, but we only focus on **Dynamic Web Project** during this course. To create Dynamic Web Project in Eclipse: From the upper navigation bar, select **File → New → Dynamic Web Project** (in case you installed additional web plugins for Eclipse core and could not see the Dynamic Web Project option in the New menu, you can try **File → New → Other**, then find **Web** on the list and choose **Dynamic Web Project**.)



New Dynamic Web Project

Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

Project name:

Project location

☒ Use default location

Location:

Target runtime

Dynamic web module version

Configuration

A good starting point for working with Apache Tomcat v8.0 runtime. Additional facets can later be installed to add new functionality to the project.

EAR membership

☐ Add project to an EAR

EAR project name:

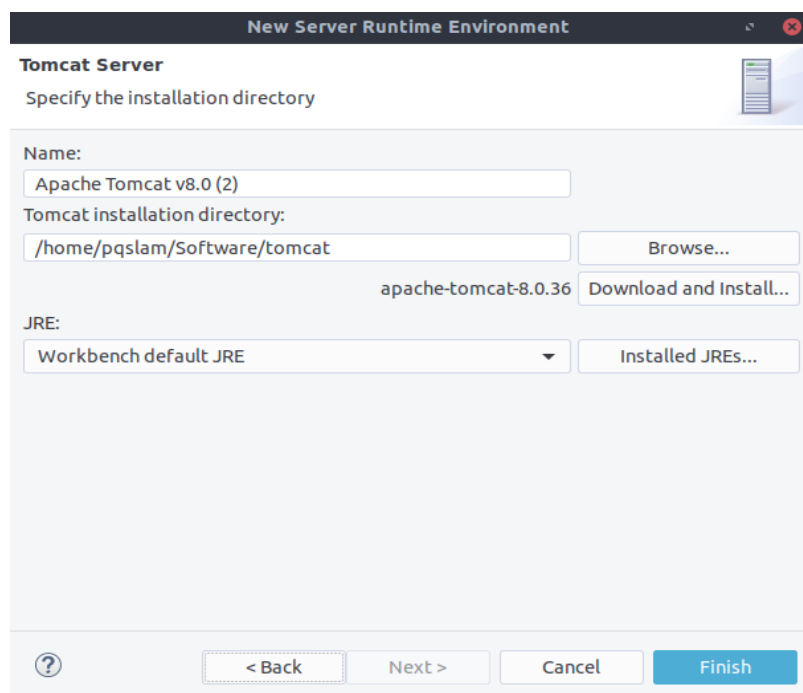
Working sets

☐ Add project to working sets

Working sets:

**** Notes:**

- **Project Name:** The name of your project should be in lowercase as Eclipse's naming convention.
- **Project location:** By default, your projects will be created and saved to the Eclipse workspace. But you can choose other locations by unchecking **Use default location**.
- **Target runtime:** Target server that your project will be deployed. The most common one is Apache Tomcat (you can use version 6.0 → 8.0).
- You can leave default values for other fields.
- The first time you try to create a new project, your **Target runtime** may be set to **<None>**. To solve this problem, click on **New Runtime** → Choose **Apache** on the list → **Apache Tomcat v7.0** (or you can choose another version) → **Next**



New Server Runtime Environment

Tomcat Server

Specify the installation directory

Name:

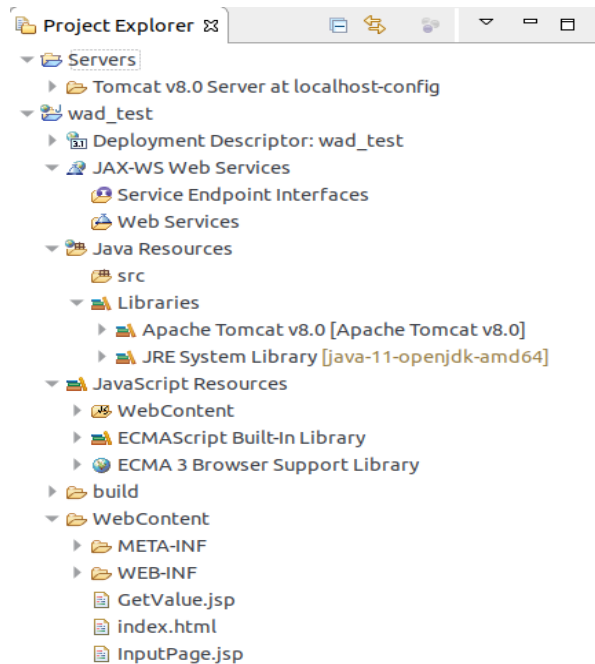
Tomcat installation directory:

JRE:

Name – The name of your target runtime server, you may keep the default name or change it.

If you already have Tomcat installed on your computer, choose to **Browse...** and navigate to the TomCat installation folder. Otherwise, select **Download and Install...** and the feature license will show up, check on **I accept the terms of the license agreement** → **Finish** → selecting the folder for installing TomCat, and wait for some minutes (The installation process will be run in the background) → **Finish**.

If everything goes smoothly, your project will be created and displayed on **Project Explorer** Panel.



- **Servers:** contained all the installed target runtime (only Tomcat v8.0 in this case). You can also reuse this runtime server for other projects.

- **wad_test:** Your new dynamic web project (I gave it the name **wad_test** when creating a new project).

** Note:

- **wad_test/WebContent:** should contain all HTML and JSP files of your project.

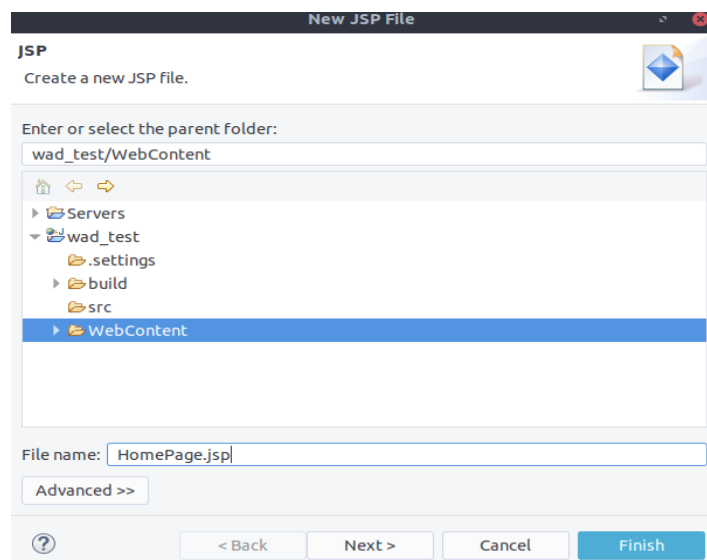
- **wad_test/Java Resources/src:** should contain all java files of your project.

- **wad_test/JavaScript Resources:** should contain all javascript files of your project.

Automatically, Apache Tomcat lib and JRE System Lib will be there (as the result of your configuration when creating a new project).

- **wad_test/JavaScript Resources:** should contain all javascript files of your project.

Let's try to create your first JSP file (will be the same for the HTML case). Right-click on your project (**wad_test** in my case) or **WebContent** folder, **New** → **JSP File**, give it a name, and select **Finish**.



By default, your new JSP file will be opened on the editor already. Try to change its content to:

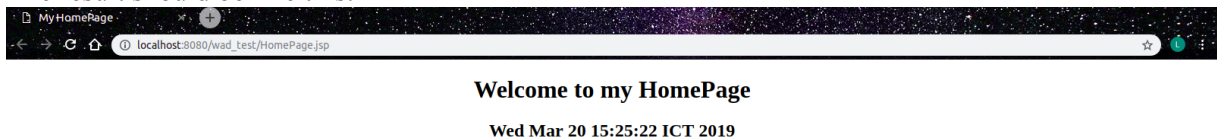


```
1 <%@ page language="java" contentType="text/html; charset=UTF-8"
2   pageEncoding="UTF-8"%>
3 <%@ page import="java.io.*, java.util.*, javax.servlet.*"%>
4 <!DOCTYPE html>
5 <html>
6 <head>
7   <meta charset="UTF-8">
8   <title>My HomePage</title>
9 </head>
10 <body>
11   <h1 align="center">Welcome to my HomePage</h1>
12   <%
13     Date date = new Date();
14     out.print("<h2 align = \"center\">" + date.toString() + "</h2>");
15   %>
16 </body>
17 </html>
```

****Note:** JSP file can understand HTML code and java code as well. But for java code, you have to put them inside `<% ... %>` tags and `<%@ ... %>` to import libraries. In this case, I imported three libraries: `java.io.*`, `java.util.*` and `javax.servlet.*`, create a new object `date` and displayed its value on the screen.

Right-click on `HomePage.jsp`, **Run as** → **Run on Server** → **Finish**

The result should be like this:



Congratulation, you finished your first Dynamic Web Project. At this point, you already knew:

- How to create a new Dynamic Web Project
- Configure target runtime for your projects
- Create a new JSP/HTML file and run it on the runtime server.

Part 2: Setup MySQL (Database System) and MySQL Workbench (GUI)

(Warning: you should have MySQL or other database management systems installed on your computer after the course Principle of Database Management System)

During this course, we will use MySQL as our main database management system. You can download the latest version of MySQL (Community edition) from <https://dev.mysql.com/downloads/mysql/>

By default, MySQL has a built-in console to help users interact with the database. For a better experience, you can try to download and install MySQL Workbench (via this link:

<https://dev.mysql.com/downloads/workbench/>

- a. In case you want to use the traditional built-in console of MySQL

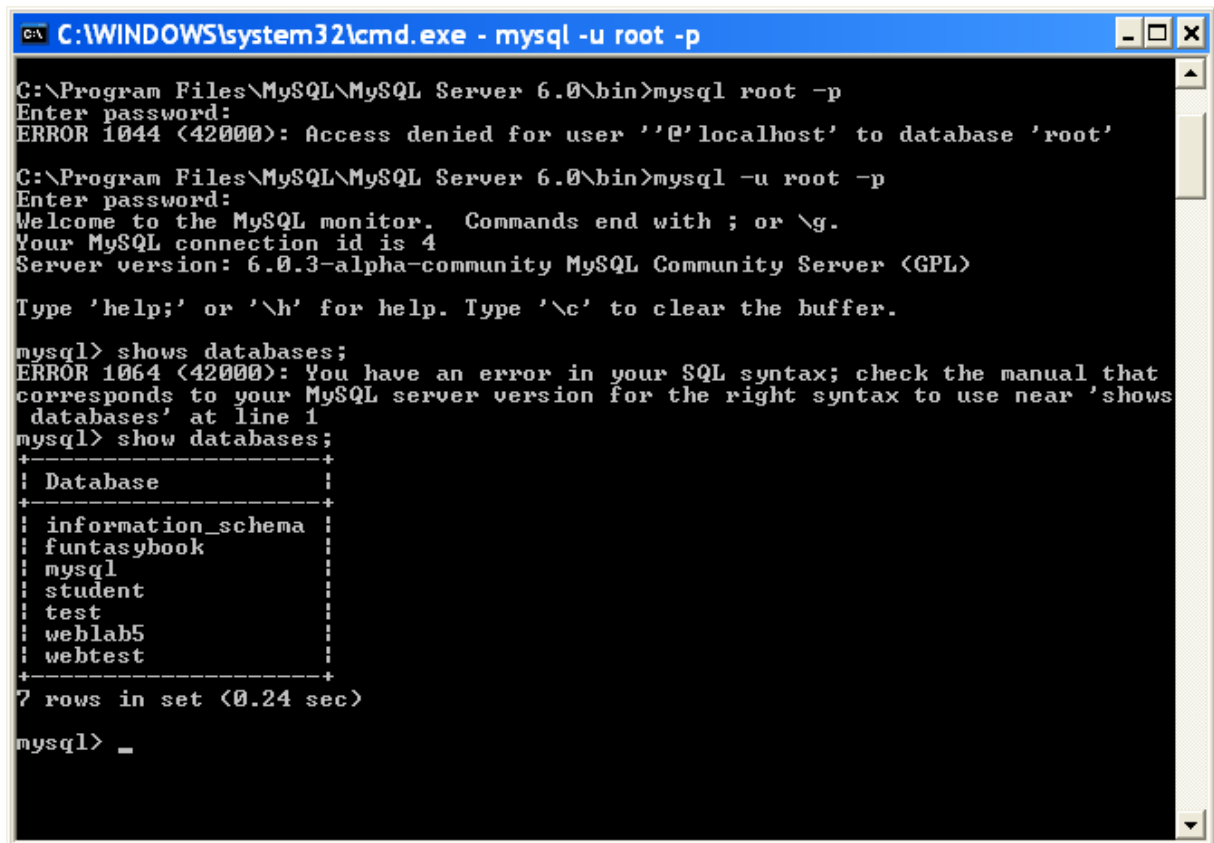


Steps to launch console:

- Open window console by running the “cmd” command on the “Start” menu
- Locate directory contained file “MySQL” (it is usually located in the bin folder of the installed folder).
- Run MySQL using this command: **mysql -u <username> -p**

(normally, the default username will be **root**)

Enter your password (If you did set your password, you just need to enter again)



```
C:\WINDOWS\system32\cmd.exe - mysql -u root -p

C:\Program Files\MySQL\MySQL Server 6.0\bin>mysql root -p
Enter password:
ERROR 1044 (42000): Access denied for user ''@'localhost' to database 'root'

C:\Program Files\MySQL\MySQL Server 6.0\bin>mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 4
Server version: 6.0.3-alpha-community MySQL Community Server (GPL)

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

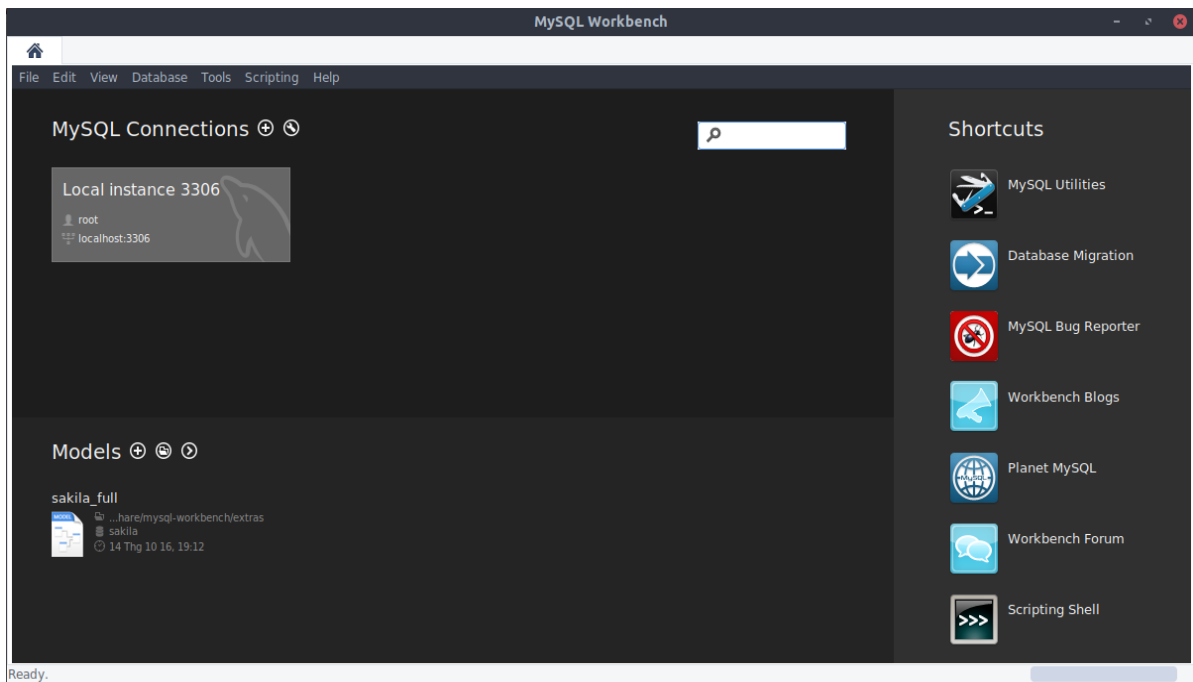
mysql> shows databases;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near 'shows
databases' at line 1
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| funtasybook |
| mysql |
| student |
| test |
| weblab5 |
| webtest |
+-----+
7 rows in set (0.24 sec)

mysql> _
```

- After connecting to the database, you can test MySQL features by typing something. The syntax and purposes of command can be found on the internet.

****Note:** On Linux/Ubuntu, to access MySQL, you just need to open the terminal and enter the command **mysql -u <username> -p**

- Using MySQL Workbench
 - Install MySQL Workbench on your computer.



- If you already installed MySQL database on your computer, it should be displayed on the main screen of the application (**Local instance 3306** for my case).

***Note: Not only local database systems, MySQL Workbench also helps you connect to other database management systems deployed on the cloud or your networks. For detailed steps of creating a new database connection, please visit*

<https://dev.mysql.com/doc/workbench/en/wb-getting-started-tutorial-create-connection.html>

- Choosing your database system by clicking on it. You may need to provide your password (depending on your setting when installing MySQL) to grant access to the instance.
- The **SCHEMAS** section on the left panel lists all the MySQL databases (normally called schema) on your computer.

**For more details, please refer to*

<https://dev.mysql.com/doc/workbench/en/wb-data-modeling.html>

