Course: Web Application Development
Lab Instructor: Pham Lam
Email: pqslam@hcmiu.edu.vn

Lab 1: Setup Environment & Implement a basic Website

Date: March, 2019
Content:
- Setup IDE: Eclipse EE IDE
- Setup database: MySQL (database server), MySQL Workbench(administration tool)
- Implement a website using HTML
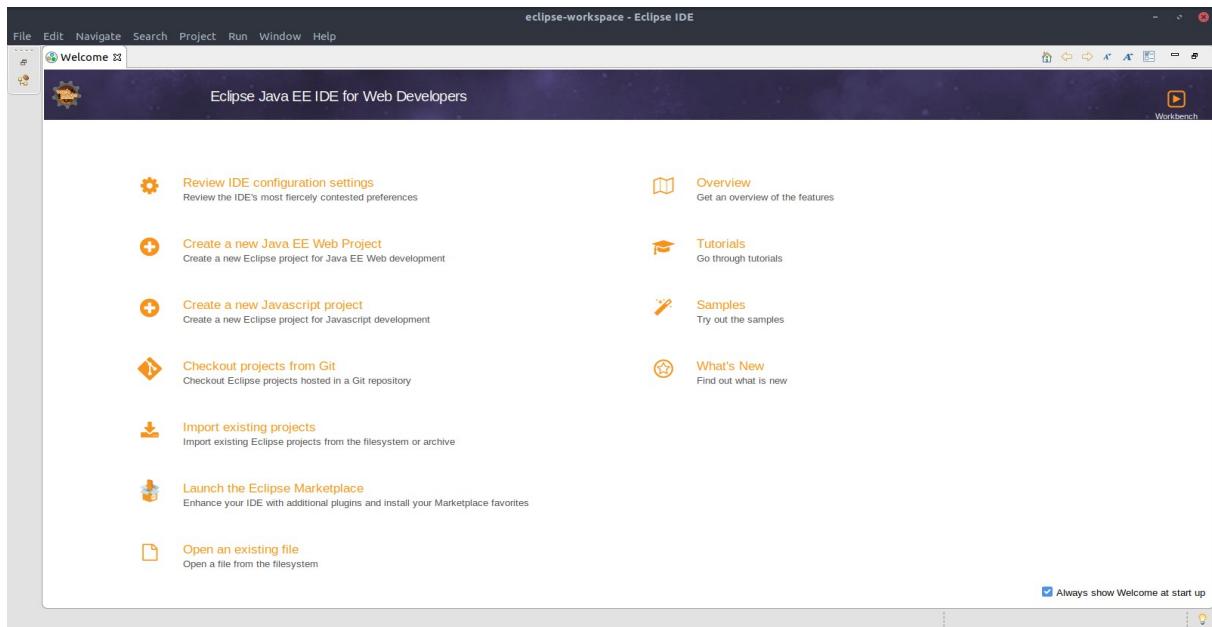
Duration: 3 hours

Part 1: Setup Eclipse EE IDE
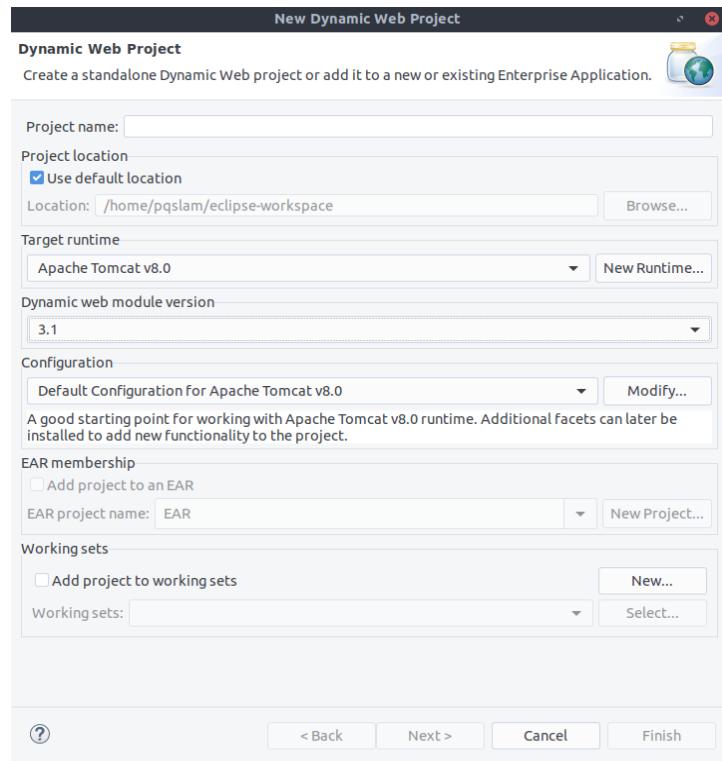
Eclipse is one of the most popular integrated development environment (IDE) used in software development (and the most widely used Java IDE in 2018). It provides a core workspace and various plugins for extending/customizing the environment. You can download different packages of Eclipse from https://www.eclipse.org/downloads/packages/ , 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 application. Another alternative is using Eclipse Installer (download via https://www.eclipse.org/downloads/packages/installer) to install EE package.

Normally, the welcome page will be displayed when you open Eclipse:
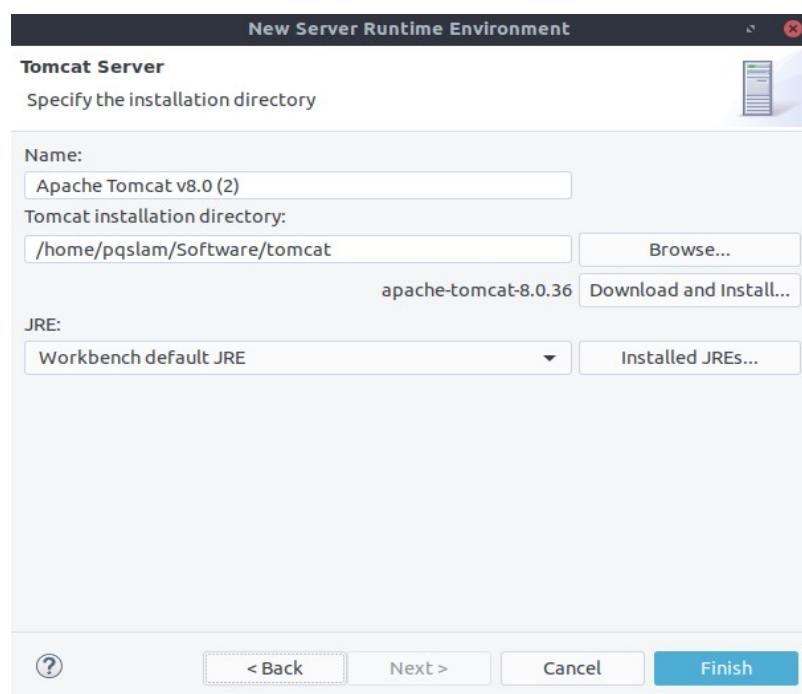
Part 2: Your first Dynamic Web Project

Eclipse EE IDE supports different kind 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 that you installed additional web plugins for Eclipse core and could not see Dynamic Web Project option in New menu, you can try **File → New → Other**, then find **Web** on the list and choose **Dynamic Web Project**.)
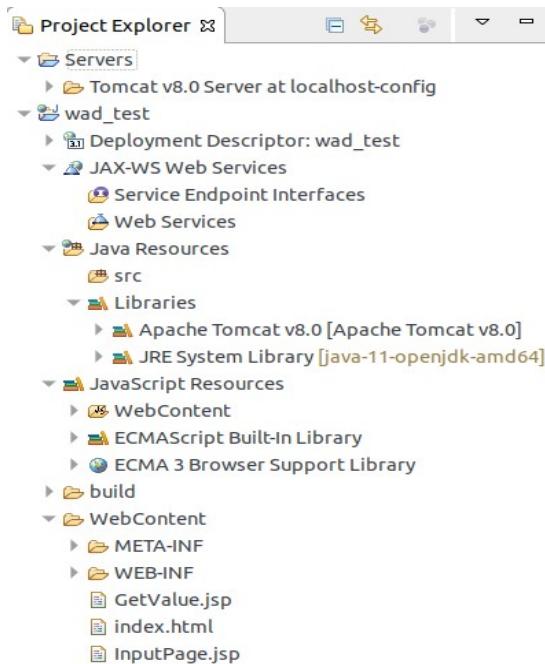
** Notes:

- **Project Name:** The name of your project and should be in lowercase as Eclipse's naming convention.
- **Project location:** By default, your projects will be created and saved to Eclipse workspace. But you can choose other locations by uncheck **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 when you try to create 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**

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 **Browse...** and navigate to TomCate 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** → select the folder for installing TomCate and wait some minutes (The installation process will be run in 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 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/Java Resources/Libraries:** should contain all libraries used in your project. Automatically, Apache Tomcat lib and JRE System Lib will be there (as the result of your configuration when creating new project).
- **wad_test/JavaScript Resources:** should contain all java-script files of your project.
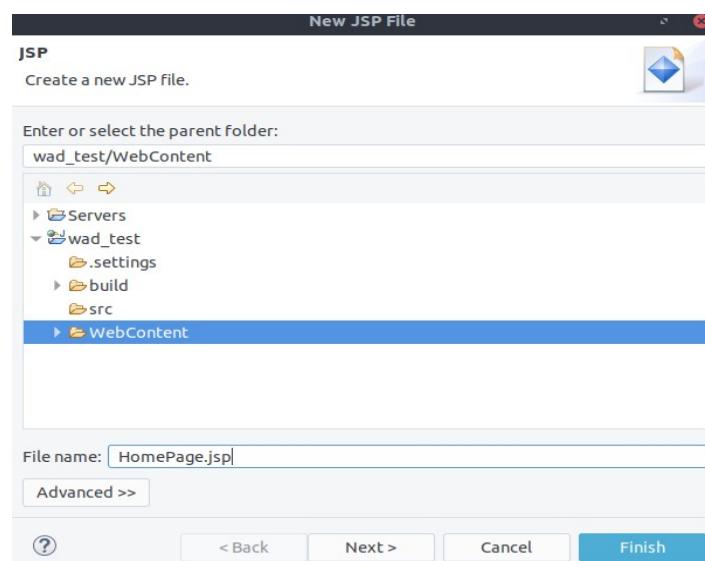
Let's try to create your first jsp file (will be the same for html case). Right click on your project (**wad_test** in my case) or **WebContent** folder, **New** → **JSP File**, give it a name and select **Finish**.

By default, your new jsp file will be opened on the editor already. Try to change its content to:
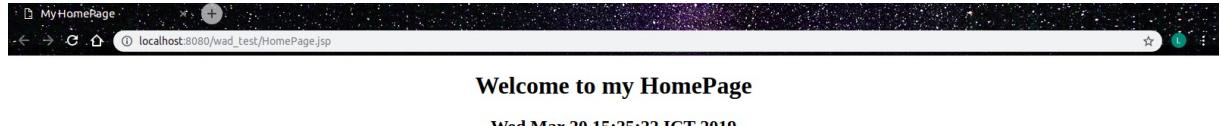
**Note: JSP file can understand html code and java code as well. But for java code, you have to put them inside <% … %> tags and <%@ … %> to import libraries. In this case, I imported three libraries: java.io.*, java.util.* and javax.servlet.* , create new object date and displayed its value on the screen.

Right click on HomePage.jsp, **Run as → 1 Run on Server → Finish**
The result should be like:

Welcome to my HomePage

Wed Mar 20 15:25:22 ICT 2019

Congratulation, you finished your first Dynamic Web Project. At this point, you already knew:
- How to create new Dynamic Web Project
- Configure target runtime for your projects
- Create new JSP/HTML file and run it on 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 user interact with the database. For 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 traditional built-in console of MySQL

Steps to launch console:

- Open window console by run "cmd" command on "Start" menu

- Locate directory contained file "mysql" (it is usually located in bin folder of 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)

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

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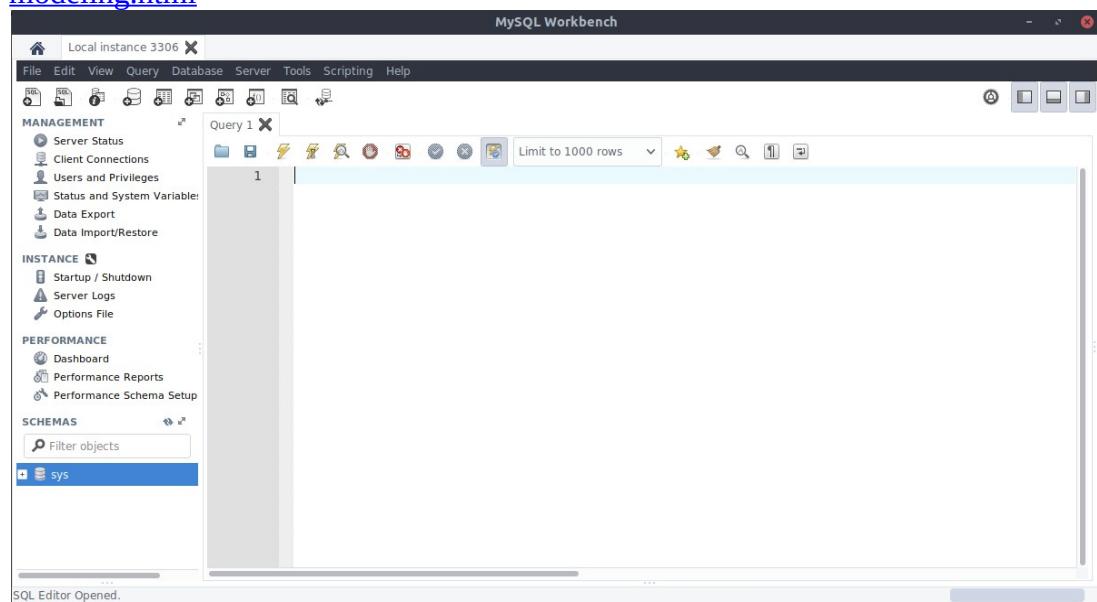
    b. Using MySQL Workbench

   - 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 help you connect to other database management systems deployed on cloud or your networks. For detailed steps of creating 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 (depend on your setting when installing MySQL) to grant access to the instance.

- The **SCHEMAS** section on the left panel lists all the MySQL database (normally called schema) on your computer.

  *For more details, please refer to https://dev.mysql.com/doc/workbench/en/wb-data-modeling.html

ASSIGNMENT 1: GO ON TO DEVELOP YOUR PERSONAL WEBSITE WITH THE FOLLOWING REQUIREMENTS:
- From 5 to 10 pages
- Using Frame, Images, Link, and all components of a form.
- Using CSS to decorate your pages