Homework #2
Appendix

Environment Setup

KAIST

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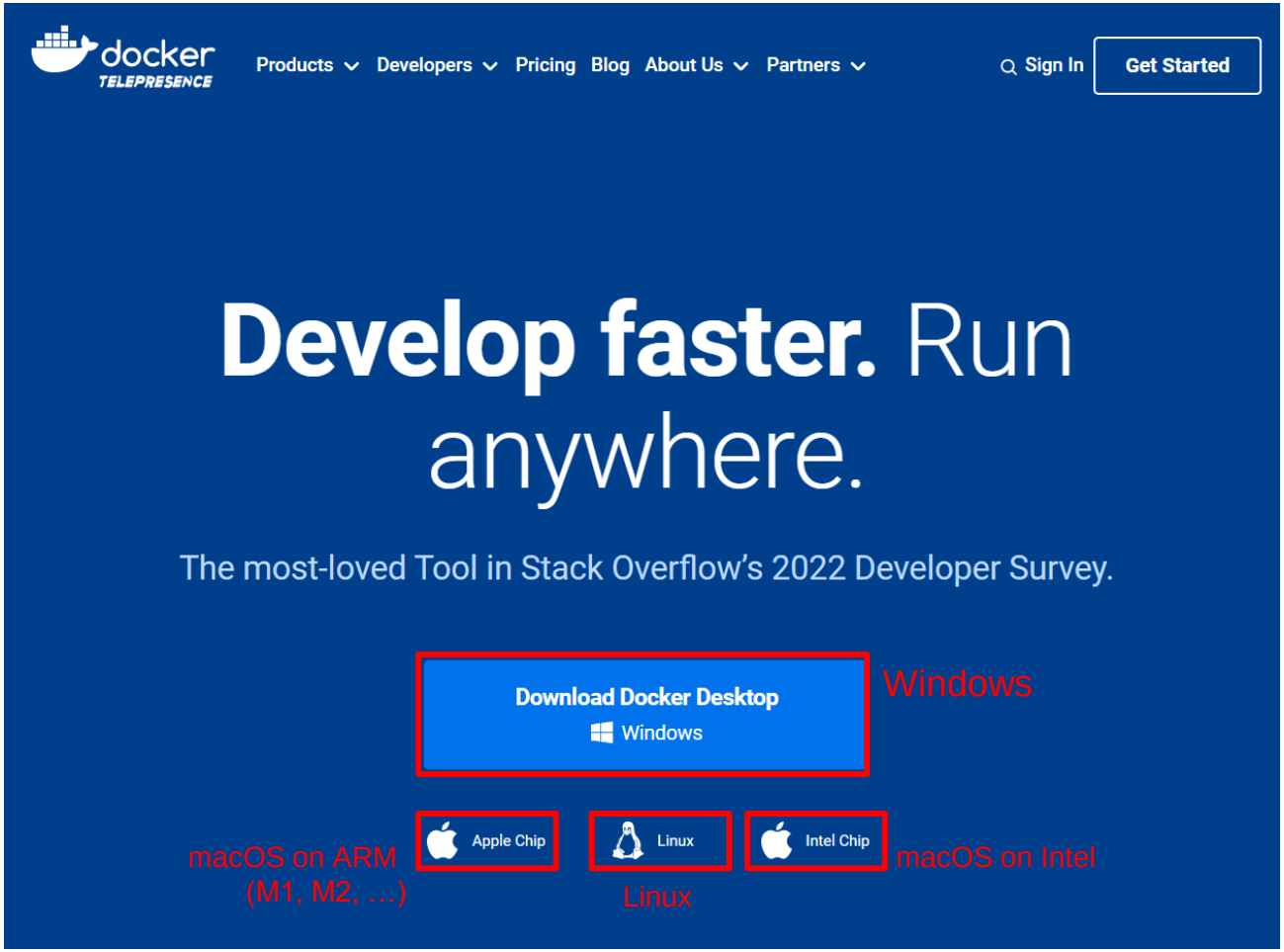
Docker Environment Setup

Pre-installation

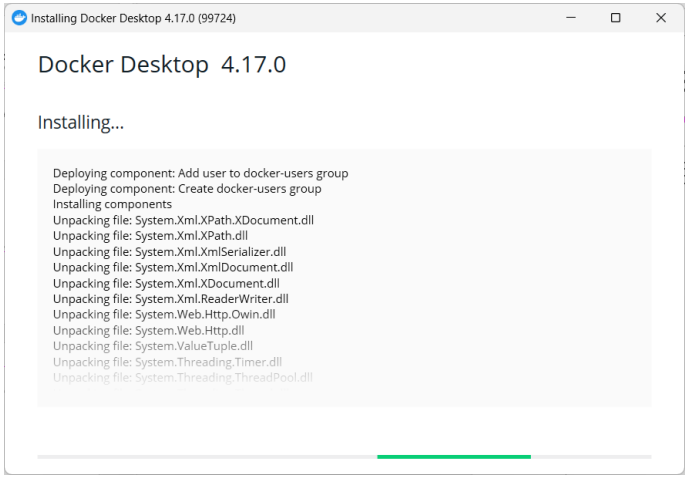
- Docker
  - Requirement for Homework Environment
  - We provide preset Docker configuration files for your convenience.
  - https://www.docker.com/

- Visual Studio Code
  - Required for Development
  - https://code.visualstudio.com/

Install Docker



Install Docker (References)

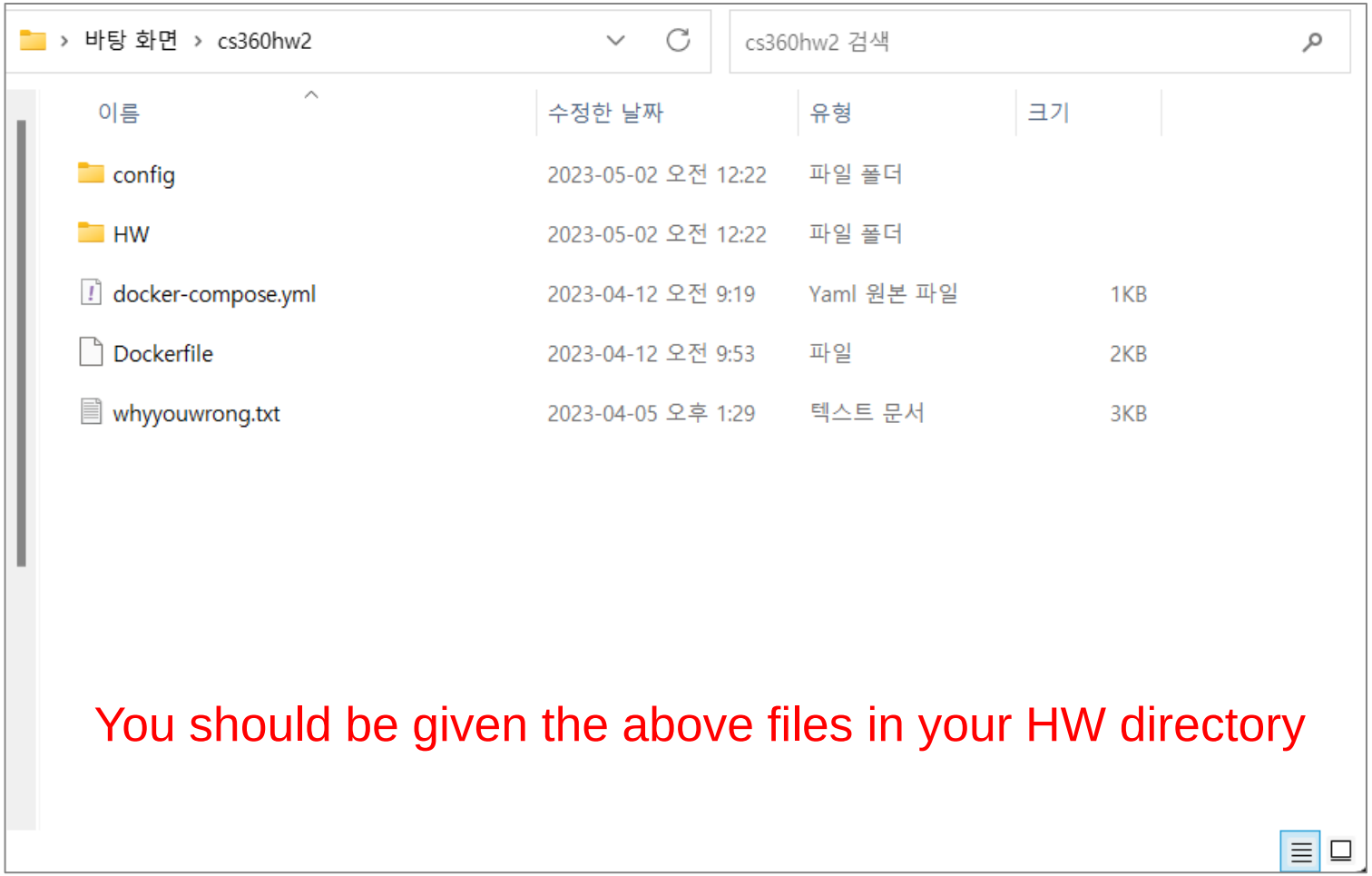


1. Install on Windows :
https://docs.docker.com/desktop/install/windows-install/
2. Install on Mac :
https://docs.docker.com/desktop/install/mac-install/
3. Install on Linux :
https://docs.docker.com/desktop/install/linux-install/

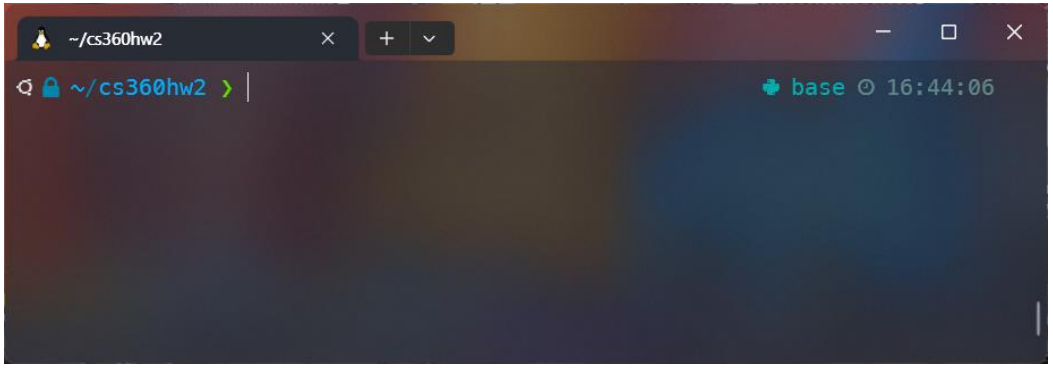
If you have errors installing Docker, refer to
https://docs.docker.com/desktop/troubleshoot/topics/

Or you can install a previous version of Docker :
https://docs.docker.com/desktop/release-notes/

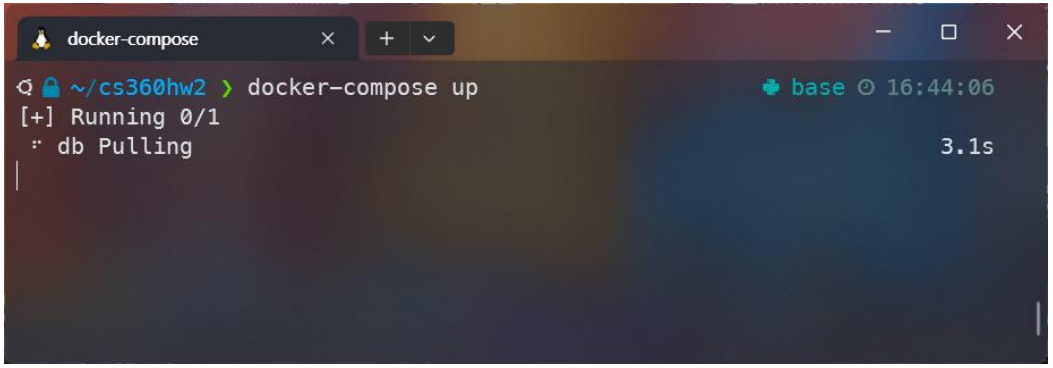
HW File Directory



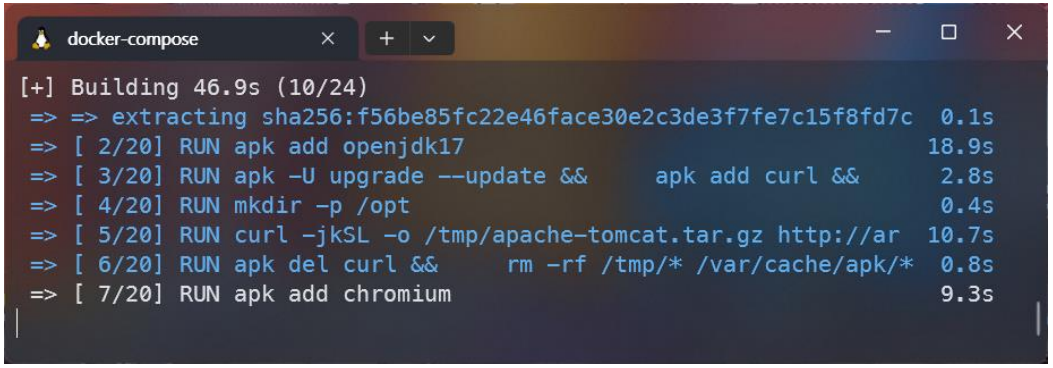
Running Docker



Go to the HW directory.

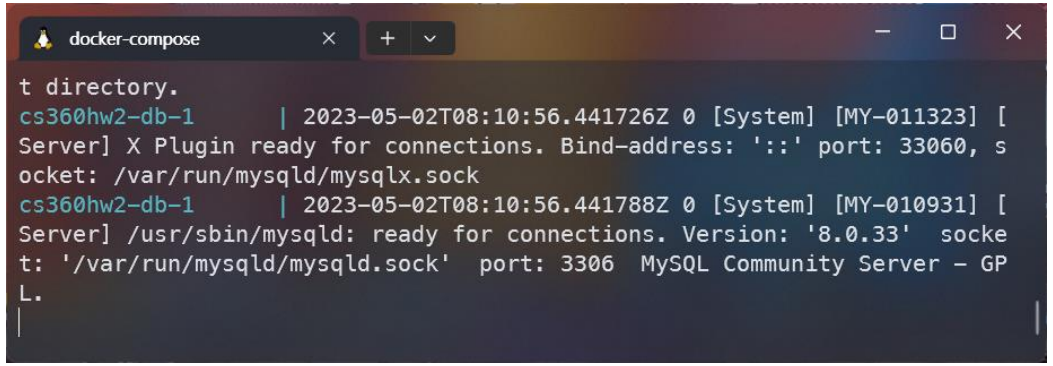


Run the command `docker-compose up`

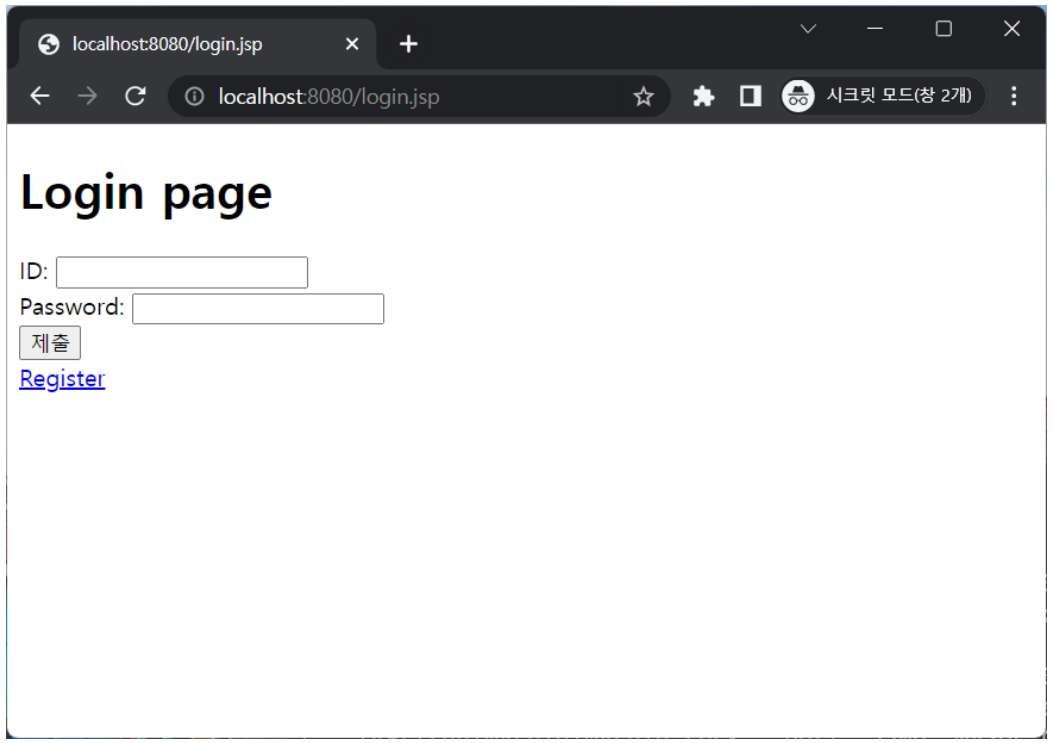


If it is your first time running,
it will take a few minutes to configure.

Running Docker

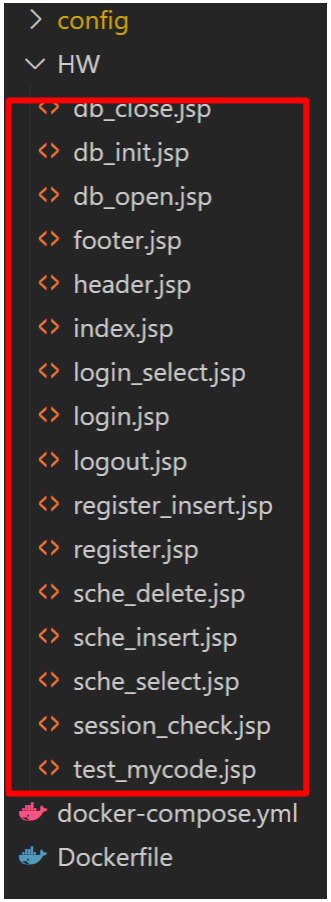


When the configuration is done,
the terminal will pause at this screen.

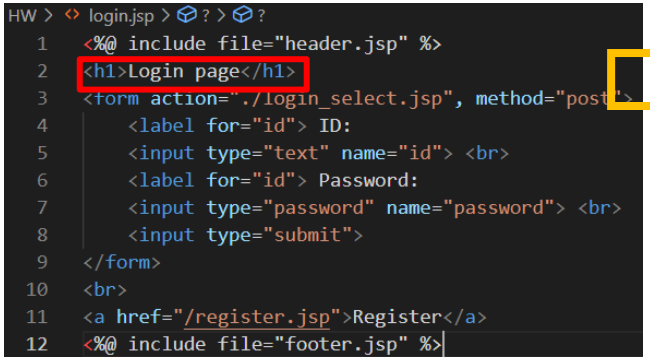


On your web browser, enter
`localhost:8080/login.jsp`
You will see the login page of this assignment.

Writing Code

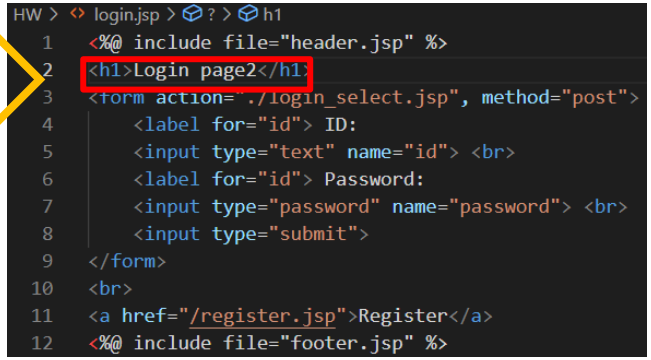


The code you have to modify is located inside the `HW` directory. Any changes made to the files will be applied directly to the web browser once you refresh the page.

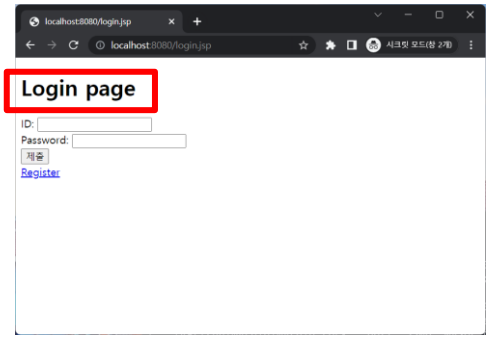


```
1  <%@ include file="header.jsp" %>
2  <h1>Login page</h1>
3  <form action="./login_select.jsp", method="post">
4      <label for="id"> ID:
5      <input type="text" name="id"> <br>
6      <label for="id"> Password:
7      <input type="password" name="password"> <br>
8      <input type="submit">
9  </form>
10 <br>
11 <a href="/register.jsp">Register</a>
12 <%@ include file="footer.jsp" %>
```

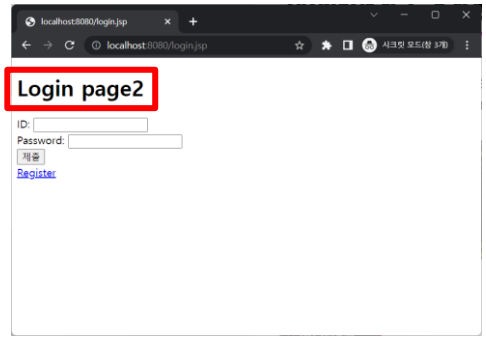
save



```
1  <%@ include file="header.jsp" %>
2  <h1>Login page2</h1>
3  <form action="./login_select.jsp", method="post">
4      <label for="id"> ID:
5      <input type="text" name="id"> <br>
6      <label for="id"> Password:
7      <input type="password" name="password"> <br>
8      <input type="submit">
9  </form>
10 <br>
11 <a href="/register.jsp">Register</a>
12 <%@ include file="footer.jsp" %>
```



refresh



Manual Environment Setup

When you cannot use the Docker environment

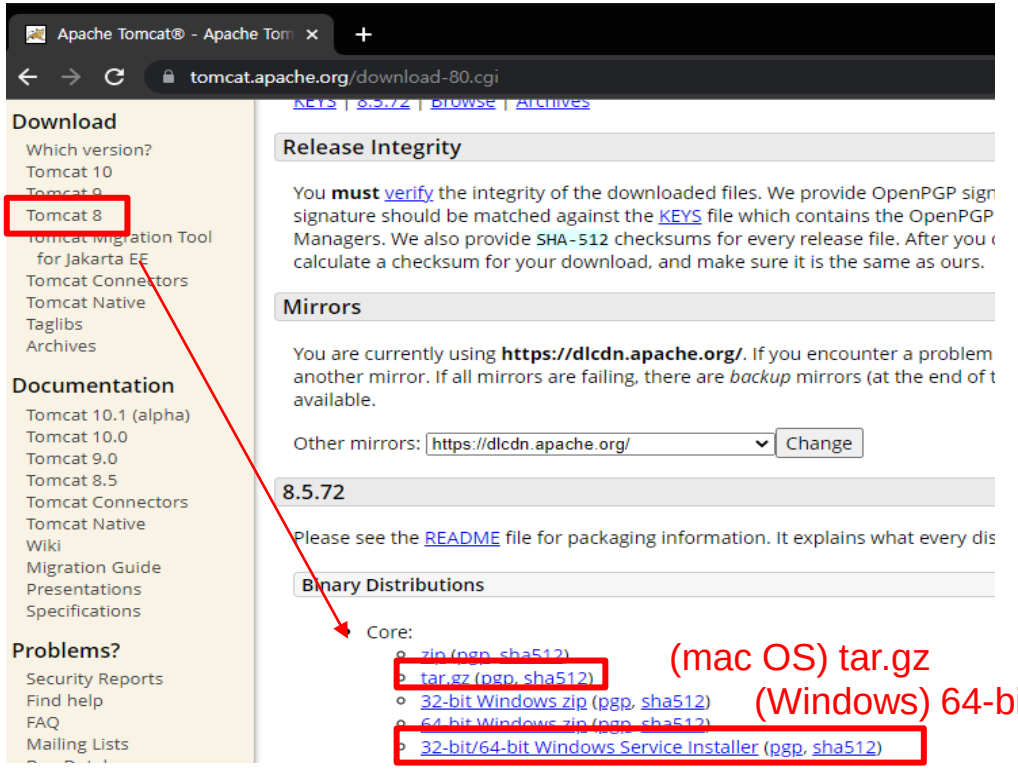
(Not recommended)

Pre-installation

- OpenJDK
  - Required for Java development
  - https://docs.microsoft.com/en-us/java/openjdk/download
- MySQL
  - Required for RDBMS
  - https://dev.mysql.com/downloads/installer/
- Visual Studio Code
  - Required for Development
  - You need to install Java, MySQL extension
  - https://code.visualstudio.com/

Install Apache Tomcat

- Apache Tomcat 8 installation
  - Download the apache-tomcat file
  - https://tomcat.apache.org/download-80.cgi



(mac OS) tar.gz

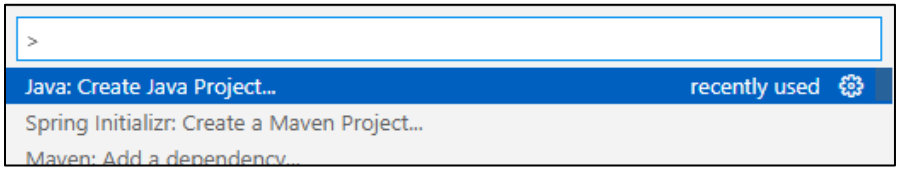
(Windows) 64-bit Window.zip

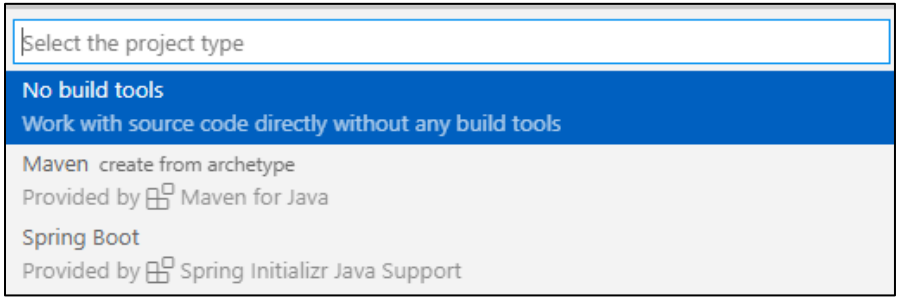
If you use window OS,
Click next button
until the installation is over

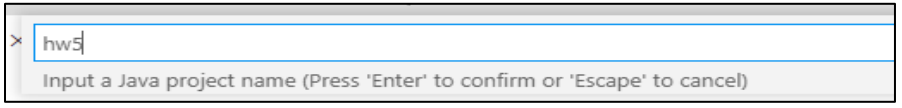
Environment setup at VSCode

- Create a java project for hw2

1. Open the command palette(Ctrl+Shift+P)
2. Select ‘Java: Create Java Project’
3. Select ‘No build tools’
4. Browse your folder to save your project
5. Input your java project name

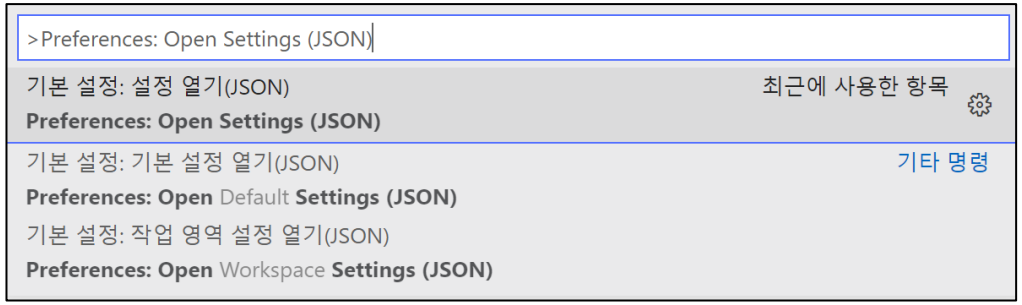






JDK Environment Setup at VSCode

- JDK Environment Setting
  - Open the command palette (Ctrl+Shift+P)
  - Add JDK path in settings.json



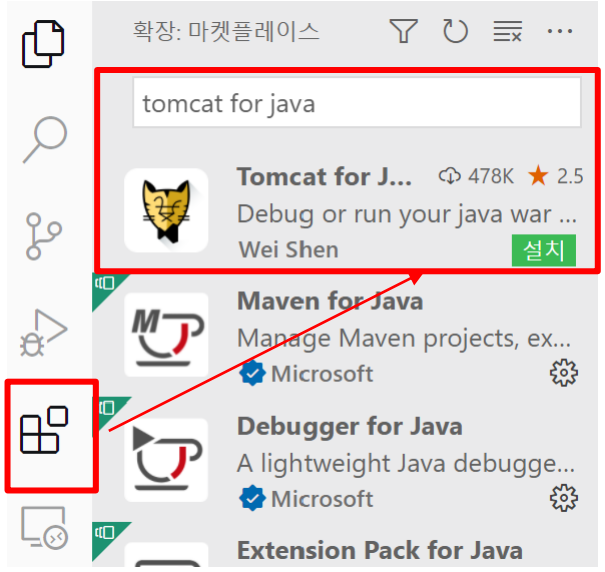

```
"java.jdt.ls.java.home": "[JDK Path]"
```

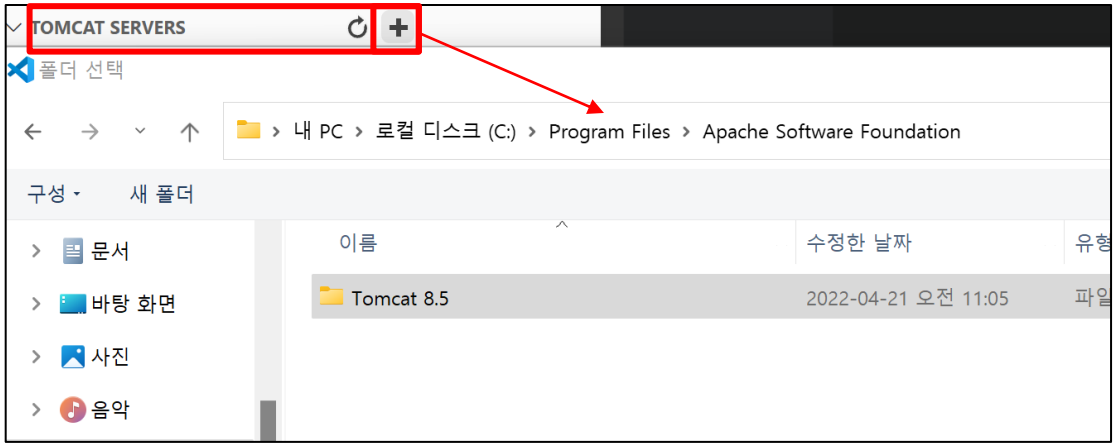
C: > Users > MJPark > AppData > Roaming > Code > User > {} settings.json > ...

```
1  {
2      "java.jdt.ls.java.home": "C:\\Program Files\\Microsoft\\jdk-17.0.2.8-hotspot"
3  }
```

Using Tomcat with VSCode

- Download the ‘Tomcat for Java’ extension
  - Reload the vscode then you can see ‘TOMCAT SERVERS’
- Open the Tomcat Server
  - Browse the ‘Tomcat directory’ that you downloaded
  - C:\Program Files\Apache Software Foundation\Tomcat 8.5

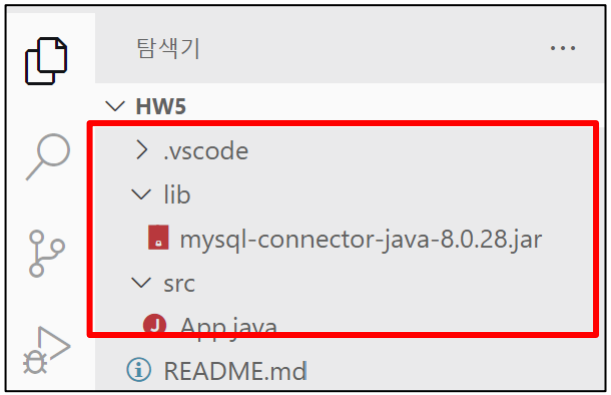




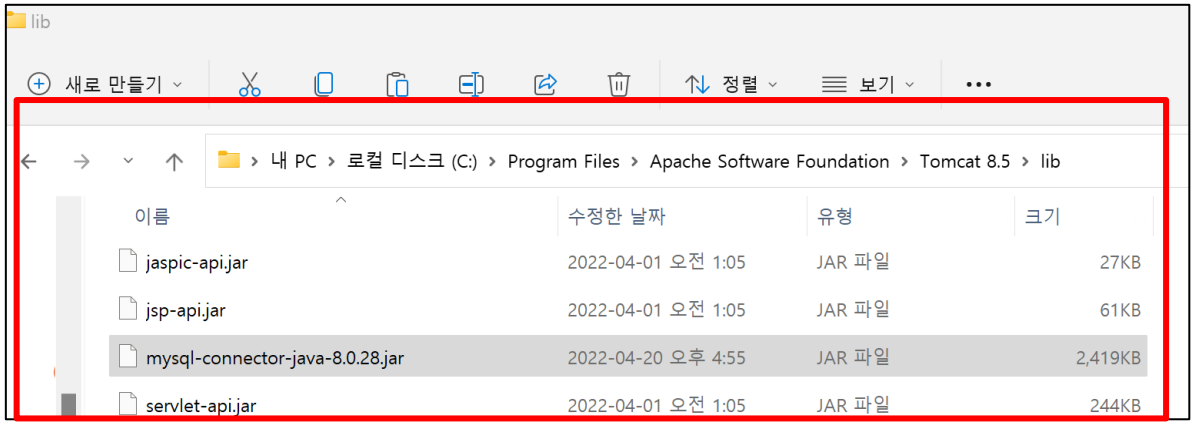
Install JDBC

- Please download the ‘mysql-connector-java-8.0.22.jar’ file
  - https://repo1.maven.org/maven2/mysql/mysql-connector-java/8.0.22/mysql-connector-java-8.0.22.jar
  - https://repo1.maven.org/maven2/mysql/mysql-connector-java/**8.0.28**/mysql-connector-java-**8.0.28**.jar

(For Example)
1) C:\Users\MJPark\Documents\HW\lib



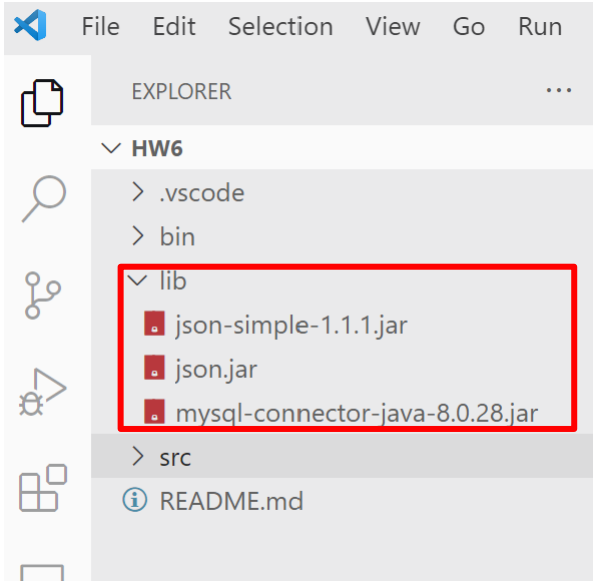
2) (windows) C:\Program Files\Apache Software Foundation\Tomcat 8.5
(macOS) \Downloads\apache-tomcat-8.5.72\lib



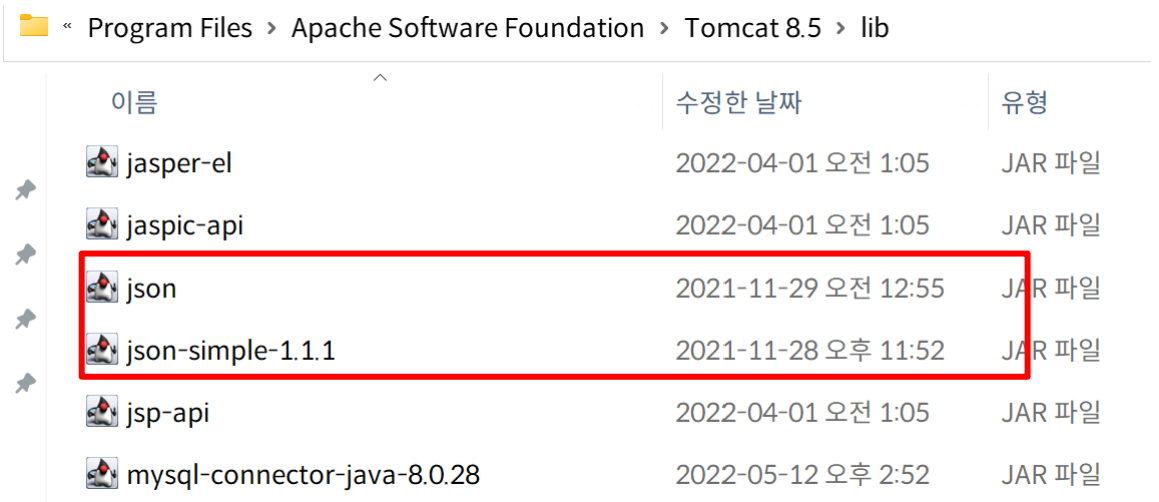
Install JSON

- Download 'json' & 'json-simple-1.1.1.jar' in hw5.zip
- Copy 'json' & 'json-simple-1.1.1.jar', 'mysql-connector-java-8.0.22.jar' to **1)java project > lib directory** & **2) tomcat > lib directory**

(For Example)
1) C:\Users\User\Desktop\hw5\hw5\lib



2) (windows)C:\Program Files\Apache Software Foundation\Tomcat 8.5\lib
(macOS)\Downloads\apache-tomcat-8.5.72\lib



Tomcat configuration

Step1) Click the right button of the mouse at Tomcat 8.5

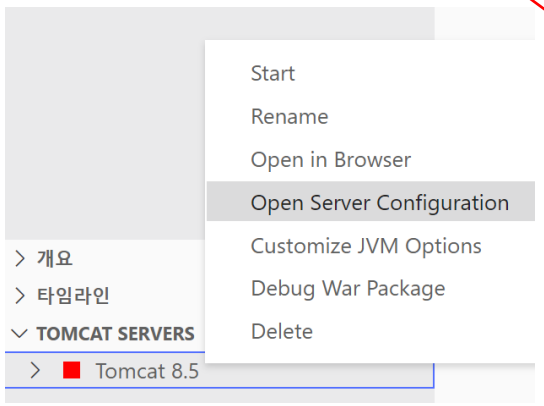
- Click the Open Server Configuration => then you can get ‘server.xml’ file

Step2) Modify the ‘server.xml’ file

- Connector port
- <Context />

2) Put `<Context docBase=" [Java project path]" path="" reloadable="true" />`

1) Change the port number




```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<Server port="8081" shutdown="SHUTDOWN">
  <Listener className="org.apache.catalina.startup.VersionLoggerListener"/>
  <Listener className="org.apache.catalina.core.AprLifecycleListener" SSLEngine="on"/>
  <Listener className="org.apache.catalina.core.JreMemoryLeakPreventionListener"/>
  <Listener className="org.apache.catalina.mbeans.GlobalResourcesLifecycleListener"/>
  <Listener className="org.apache.catalina.core.ThreadLocalLeakPreventionListener"/>
  <GlobalNamingResources>
    <Resource name="UserDatabase" auth="Container" type="org.apache.catalina.UserDatabase" desc
  </GlobalNamingResources>
  <Service name="Catalina">
    <Connector port="8080" protocol="HTTP/1.1" connectionTimeout="20000" URIEncoding="UTF-8" re
    <Engine name="Catalina" defaultHost="localhost">
      <Realm className="org.apache.catalina.realm.LockOutRealm">
        <Realm className="org.apache.catalina.realm.UserDatabaseRealm" resourceName="UserDataba
      </Realm>
      <Host name="localhost" appBase="webapps" unpackWARs="true" autoDeploy="true">
        <Context docBase="C:\Users\MJPark\Documents\HW5\HW5\src\" path="" reloadable="true" />
        <Valve className="org.apache.catalina.valves.AccessLogValve" directory="logs" prefix="
```

Tomcat configuration

Step3) Open the '**Tomcat 8.5(apache-tomcat-8.5.72)/conf/context.xml**' file

- Put the <Resource / > tag

C: > Program Files > Apache Software Foundation > Tomcat 8.5 > conf > context.xml

```
12    Unless required by applicable law or agreed to in writing, software
13    distributed under the License is distributed on an "AS IS" BASIS,
14    WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
15    See the License for the specific language governing permissions and
16    limitations under the License.
17  -->
18  <!-- The contents of this file will be loaded for each web application -->
19  <Context>
20
21    <!-- Default set of monitored resources. If one of these changes, the    -->
22    <!-- web application will be reloaded.                                   -->
23    <WatchedResource>WEB-INF/web.xml</WatchedResource>
24    <WatchedResource>${catalina.base}/conf/web.xml</WatchedResource>
25    <Resource name="jdbc/mysql_connect"
26      auth="Container"
27      type="javax.sql.DataSource"
28      maxActive="100"
29      maxIdle="30"
30      maxWait="10000"
31      username="root"
32      password="root1234"
33      driverClassName="com.mysql.jdbc.Driver"
34      url="jdbc:mysql://localhost:3306/HW5"
35      />
```

Write your database(mysql) username &password

```
<Resource name="jdbc/mysql_connect"
  auth="Container"
  type="javax.sql.DataSource"
  maxActive="100"
  maxIdle="30"
  maxWait="10000"
  username="dbuser"
  password="dbuser1234"
  driverClassName="com.mysql.jdbc.Driver"
  url="jdbc:mysql://localhost:3306/HW"
/>
```

Tomcat configuration

Step4) Open the **'Tomcat 8.5(apache-tomcat-8.5.72)/webapps/ROOT/WEB-INF/web.xml'**

- Put the <resource-ref> </resource-ref> tag

C: > Program Files > Apache Software Foundation > Tomcat 8.5 > webapps > ROOT > WEB-INF > web.xml

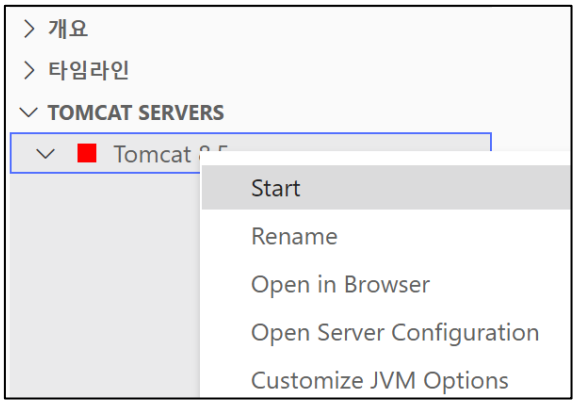
```
17  -->
18  <web-app xmlns="http://xmlns.jcp.org/xml/ns/javaee"
19    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
20    xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
21                        http://xmlns.jcp.org/xml/ns/javaee/web-app_3_1.xsd"
22    version="3.1"
23    metadata-complete="true">
24
25    <display-name>Welcome to Tomcat</display-name>
26    <description>
27      Welcome to Tomcat
28    </description>
29    <resource-ref>
30      <res-ref-name>jdbc/mysql_connect</res-ref-name>
31      <res-type>javax.sql.DataSource</res-type>
32      <res-auth>Container</res-auth>
33    </resource-ref>
34  </web-app>
```

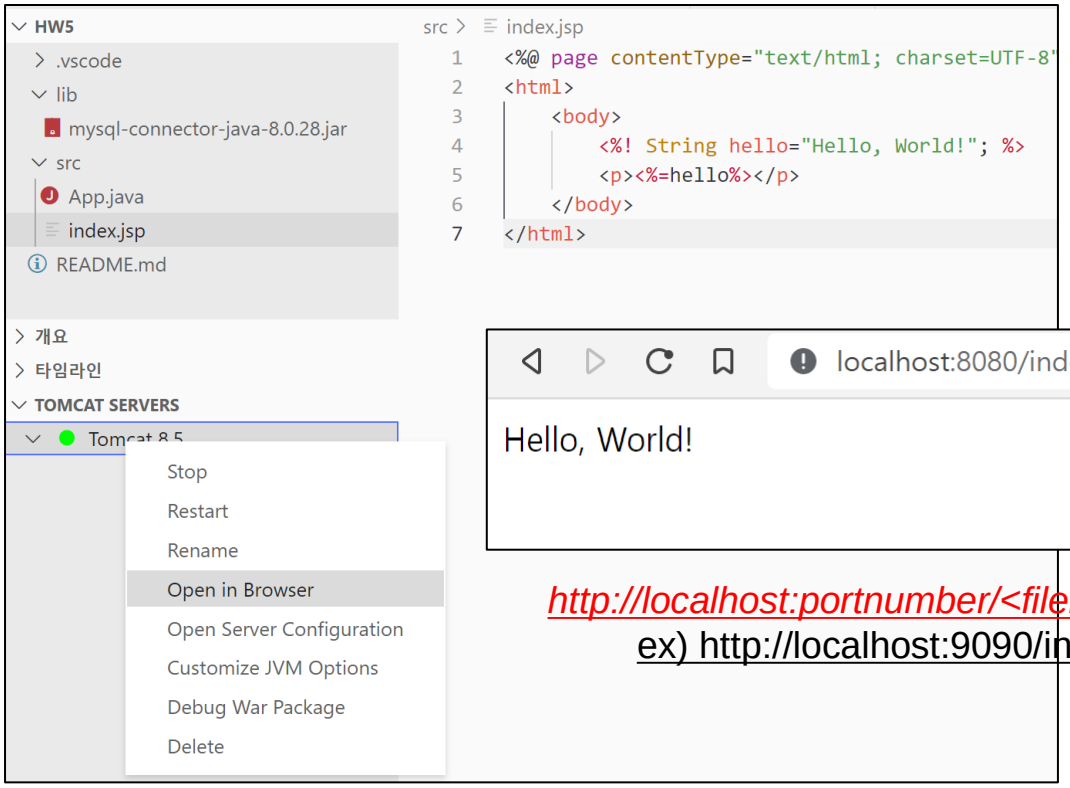
<res-ref-name> is same as
Resource name that we set at '/conf/context.xml'

```
<resource-ref>
  <res-ref-name>
      jdbc/mysql_connect
  </res-ref-name>
  <res-type>
      javax.sql.DataSource
  </res-type>
  <res-auth>
      Container
  </res-auth>
</resource-ref>
```

How to Browse your JSP file in PC

- Restart the Tomcat Server
- Browse your JSP file with ‘Open in Browse’
  - You can access the files with any web browser





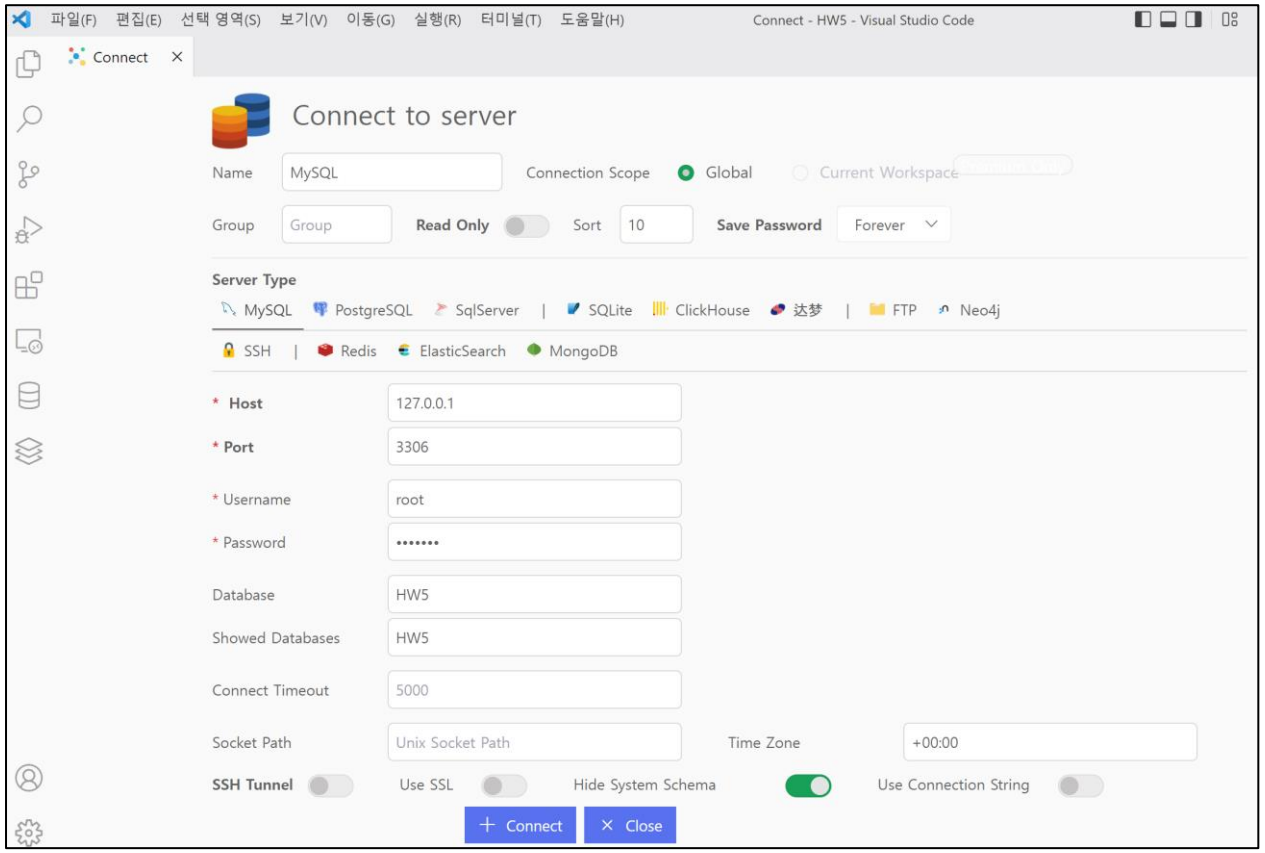
http://localhost:portnumber/<filename>

ex) http://localhost:9090/index.*jsp*

Connect to MySQL

Connect to MySQL

- Connect to your MySQL server that we used in Assignment 1
- Create the database name



Example

Search.jsp

```
<body>
    <table border="1">
        <tr>
        <td> model </td>
        <td> marker </td>
        <td> color </td>
        <td> type </td>
        <td> price </td>
        <td> delete </td>
        <%
            try {
                stmt = con.createStatement();
                String query = "SELECT product.model, maker, color, printer.type, price
                                FROM product, printer
                                WHERE product.model=printer.model ORDER BY model";
                rs = stmt.executeQuery(query);
                while(rs.next()) {
            %>
                <tr>
                    <td><%=rs.getString(1)%></td>
                    <td><%=rs.getString(2)%></td>
                    <td><%=rs.getString(3)%></td>
                    <td><%=rs.getString(4)%></td>
                    <td><%=rs.getString(5)%></td>
                    <td><a href="del_register.jsp?model=<%=rs.getString(1)%>">del</a></td>
                <tr>
            <%
                }
            } catch (SQLException e) {
                out.println(e.toString());
            }
        %>
    </table>
</body>
```