Exercise 16.2 – Open Session in View

The Setup:

The main goal of this exercise is to have you use the **Open Session in View** pattern in a web application to avoid **LazyInitializationException** problems.

This project requires that a web server is setup, first install Apache Tomcat v8.5.
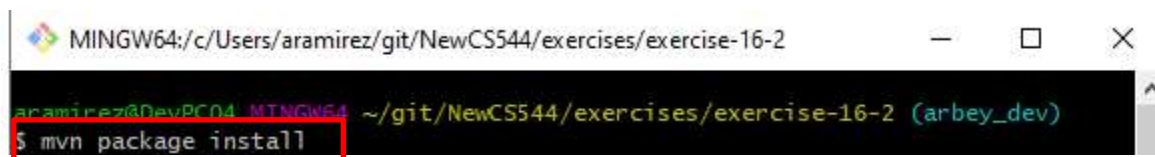
Start the exercise by downloading the project Azure repository (**exercise-16-2).** The following JSTL dependency is already inside:

```xml
<dependency>
    <groupId>javax.servlet</groupId>
    <artifactId>jstl</artifactId>
    <version>1.2</version>
</dependency>
```

Do not add the exercise to STS project, instead go to the source code folder, right click in exercise-16-2 folder:
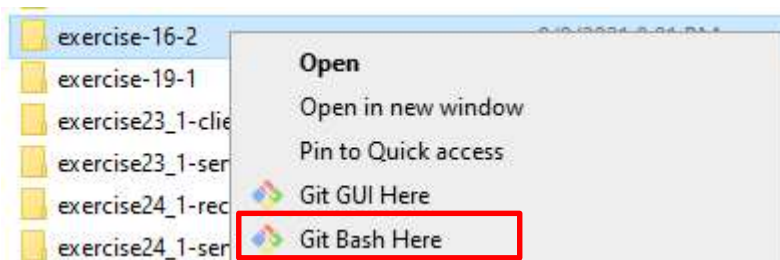
Choose Git Bash Here, this will open a Bash Command Window, now type this command "mvn package install", this will create the war file:

The war file is located into target folder:

Copy de the war file and paste it into webapp folder in Tomcat folder (for the example we change the name of the war file after pasting it):

Now start Tomcat server, for this go to windows services:
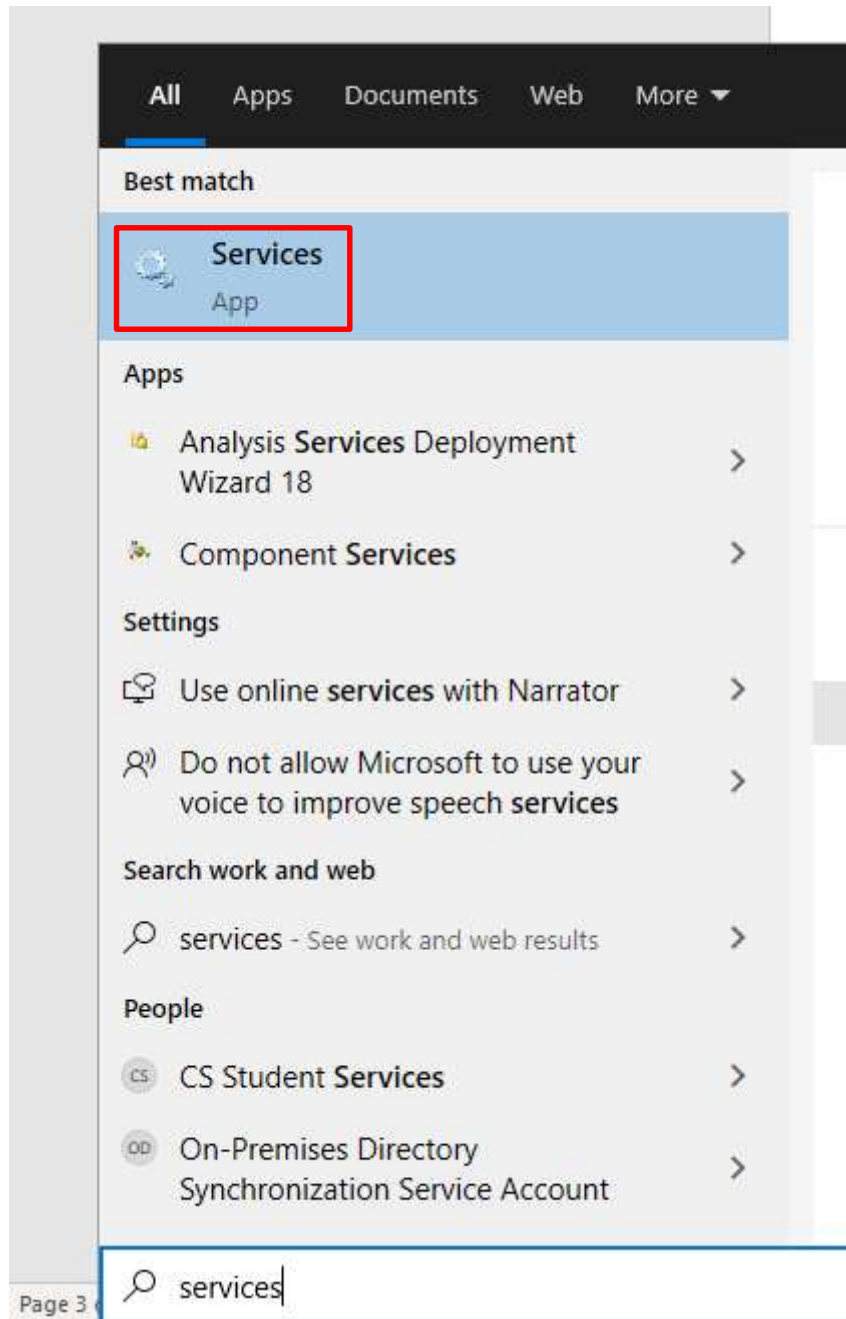
Then start Tomcat 8.5 server (right click -> Start or in the right menu is also the start link):
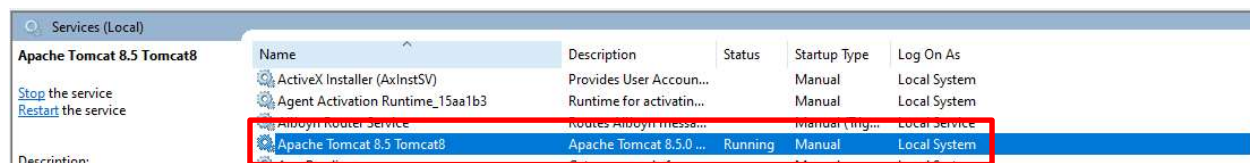
After Tomcat is running, it will create a new folder with the name of the war file (in this example we named the folder exercise-16) in webapp folder:

> This PC > Local Disk (C:) > Program Files > Apache Software Foundation > Tomcat 8.5 > webapps

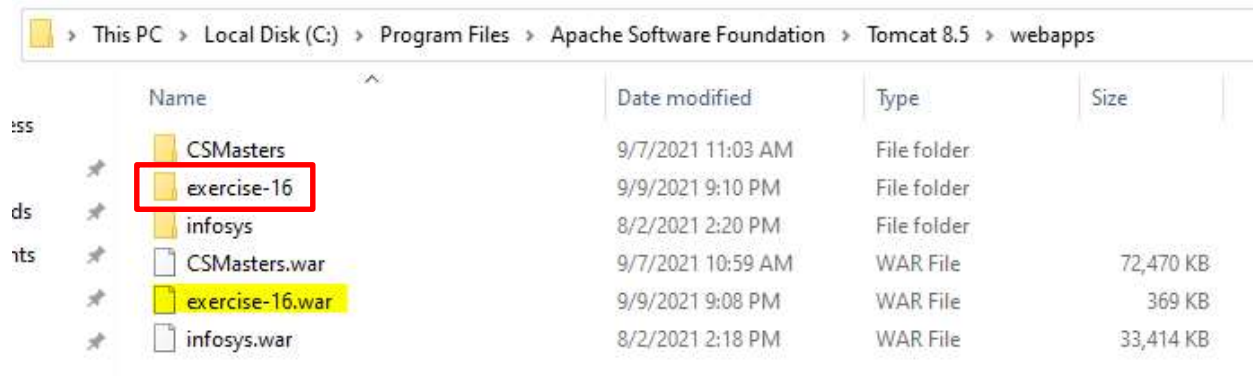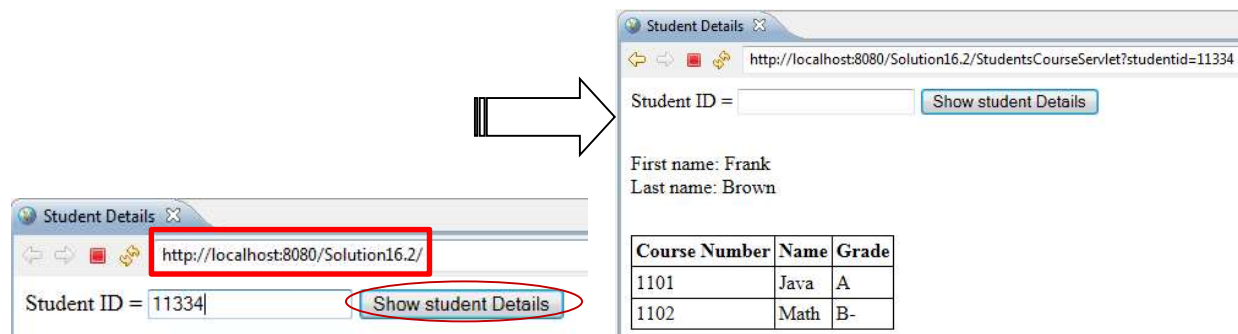| Name	Date modified	Type	Size
CSMasters	9/7/2021 11:03 AM	File folder	
exercise-16	9/9/2021 9:10 PM	File folder	
infosys	8/2/2021 2:20 PM	File folder	
CSMasters.war	9/7/2021 10:59 AM	WAR File	72,470 KB
exercise-16.war	9/9/2021 9:08 PM	WAR File	369 KB
infosys.war	8/2/2021 2:18 PM	WAR File	33,414 KB

Now go to the browser and type: http://localhost:8080/exercise-16/student.jsp

Note: Check the port configured in Tomcat, for that go to Tomcat 8.5\conf, seek for server.xml file, open it and search for Connector tag, inside in port, that is the port you should use in previous URL (in the exercise we use 8080).

The Application:

After the server is running and open a browser with URL given, entering the Student Id 11334 should bring up the following screen:

Student Details
http://localhost:8080/Solution16.2/
Student ID = 11334   Show student Details

Student Details
http://localhost:8080/Solution16.2/StudentsCourseServlet?studentid=11334
Student ID =   Show student Details

First name: Frank
Last name: Brown

Course Number	Name	Grade
1101	Java	A
1102	Math	B-

The Exercise:

The code currently does not use a database, instead the Students and their courses are stored in stub DAO objects.

a) Update the code to use Hibernate to store the Student and Course objects in MySQL. Use eager fetching or Hibernate.Initialize() to avoid LazyInitializationException errors.

   Note: the hibernate.cfg.xml file should go into this project's WEB-INF directory

b) Once this works, change the code to use the Open Session in View Filter and remove the eager fetching or Hibernate.Initialize() code