


Web API Design with Spring Boot Week 2 Coding Assignment

Points possible: 70

Category	Criteria	% of Grade
Functionality	Does the code work?	25
Organization	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
Creativity	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
Completeness	All requirements of the assignment are complete.	25

Instructions: In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your Java project code, to the repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

Here's a friendly tip: as you watch the videos, code along with the videos. This will help you with the homework. When a screenshot is required, look for the icon:  You will keep adding to this project throughout this part of the course. When it comes time for the final project, use this project as a starter.

Project Resources: <https://github.com/promineotech/Spring-Boot-Course-Student-Resources>

Coding Steps:

- In the project you started last week, use Lombok to add an info-level logging statement in the controller implementation method that logs the parameters that were input to the method. Remember to add the `@Slf4j` annotation to the class.
- Start the application (not an integration test). Use a browser to navigate to the application passing the parameters required for your selected operation. (A browser,

used in this manner, sends an HTTP GET request to the server.) Produce a screenshot showing the browser navigation bar and the log statement that is in the IDE console showing that the controller method was reached (as in the video). 🖥️

- With the application still running, use the browser to navigate to the OpenAPI documentation. Use the OpenAPI documentation to send a GET request to the server with a valid model and trim level. (You can get the model and trim from the provided `data.sql` file.) Produce a screenshot showing the `curl` command, the request URL, and the response headers. 🖥️
- Run the integration test and show that the test status is green. Produce a screenshot of the test class and the status bar. 🖥️
- Add a method to the test to return a list of expected Jeep (`model`) objects based on the model and trim level you selected. You can get the expected list of Jeeps from the file `src/test/resources/flyway/migrations/V1.1__Jeep_Data.sql`. So, for example, using the model Wrangler and trim level "Sport", the query should return two rows:


	Row 1	Row 2
Model ID	WRANGLER	WRANGLER
Trim Level	Sport	Sport
Num Doors	2	4
Wheel Size	17	17
Base Price	\$28,475.00	\$31,975.00

The method should be named `buildExpected()`, and it should return a `List` of `Jeep`. The video put this method into a support superclass but you can include it in the main test class if you want.

- Write an `AssertJ` assertion in the test to assert that the actual list of jeeps returned by the server is the same as the expected list. Run the test. Produce a screenshot showing...
 - The test with the assertion.
 - The JUnit status bar (should be red).
 - The method returning the expected list of Jeeps. 🖥️
- Add a service layer in your application as shown in the videos:

- Add a package named `com.promineotech.jeepp.service`.
- In the new package, create an interface named `JeepSalesService`.
- In the same package (service), create a class named `DefaultJeepSalesService` that implements the `JeepSalesService` interface. Add the class-level annotation, `@Service`.
- Inject the service interface into `DefaultJeepSalesController` using the `@Autowired` annotation. The instance variable should be private, and the variable should be named `jeepSalesService`.
- Define the `fetchJeeps` method in the interface. Implement the method in the service class. Call the method from the controller (make sure the controller returns the list of Jeeps returned by the service method). The method signature looks like this:


```
List<Jeep> fetchJeeps(JeepModel model, String trim);
```

- Add a Lombok info-level log statement in the service implementation showing that the service was called. Print the parameters passed to the method. Let the method return `null` for now.
- Run the test again. Produce a screenshot showing the service class implementation, the log line in the console, and the red status bar. 
- Add the database dependencies described in the video to the POM file (MySQL driver and Spring Boot Starter JDBC). To find them, navigate to <https://mvnrepository.com/>. Search for `mysql-connector-j` and `spring-boot-starter-jdbc`. In the POM file you don't need version numbers for either dependency because the version is included in the Spring Boot Starter Parent.
- Create `application.yaml` in `src/main/resources`. Add the `spring.datasource.url`, `spring.datasource.username`, and `spring.datasource.password` properties to `application.yaml`. The url should be the same as shown in the video (`jdbc:mysql://localhost:3306/jeep`). The password and username should match your setup. If you created the database under your root user, the username is "root", and the password is the root user password. If you created a "jeep" user or other user, use the correct username and password.

Be careful with the indentation! YAML allows hierarchical configuration but it reads the hierarchy based on the indentation level. The keyword "spring" MUST start in the first column. It should look similar to this when done:


```
spring:
  datasource:
```

```
username: username  
password: password  
url: jdbc:mysql://localhost:3306/jeep
```

- Start the application (the real application, not the test). Produce a screenshot that shows application.yaml and the console showing that the application has started with no errors. 
- Add the H2 database as dependency. Search for the dependency in the Maven repository like you did above. Search for "h2" and pick the latest version. Again, you don't need the version number, but the scope should be set to "test".
- Create application-test.yaml in src/test/resources. Add the setting spring.datasource.url that points to the H2 database. It should look like this:

```
spring:  
  datasource:  
    url: jdbc:h2:mem:jeep
```

You do not need to set the username and password because the in-memory H2 database does not require them.

Produce a screenshot showing application-test.yaml. 

Screenshots of Code:

STS-workspace - jeep-sales/src/main/java/com/promineotech/jeep/service/DefaultJeepSalesService.java - Spring Tool Suite 4

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit x

Finished after 5.588 seconds

Runs: 1/1 Errors: 0 Failures: 1

FetchJeepTest [Runner: JUnit 5] (0.931 s)

testThatJeepsAreReturnedWhenAValidModelA

```
1 package com.promineotech.jeep.service;
2
3 import java.util.List;
4
5 @Service
6 @Slf4j
7 public class DefaultJeepSalesService implements JeepSalesService {
8
9     @Override
10    public List<Jeep> fetchJeeps(String model, String trim) {
11        log.info("The fetchJeeps method was called with model={} and trim={}", model, trim);
12        return null;
13    }
14 }
```

Failure Trace

org.opentest4j.AssertionFailedError:
expected: [Jeep(modelPK=null, modelId=WRANGLER, trimLe
Jeep(modelPK=null, modelId=WRANGLER, trimLe
but was : null
at java.base/java.lang.reflect.Constructor.newInstance
at com.promineotech.jeep.controller.FetchJeepTest.
at java.base/java.util.ArrayList.forEach(ArrayList.java
at java.base/java.util.ArrayList.forEach(ArrayList.java

Problems Javadoc Declaration Console x

<terminated> FetchJeepTest [JUnit] C:\Users\Sojian\STS\sts-4.11.0.RELEASE\plugins\org.eclipse

```
17:08:46.441 [main] DEBUG org.springframework.test.context.BootstrapUtili
17:08:46.458 [main] DEBUG org.springframework.test.context.BootstrapUtili
17:08:46.504 [main] DEBUG org.springframework.test.context.BootstrapUtili
17:08:46.515 [main] INFO org.springframework.boot.test.context.SpringBoo
17:08:46.520 [main] DEBUG org.springframework.test.context.support.Abstr
17:08:46.520 [main] DEBUG org.springframework.test.context.support.Abstr
17:08:46.520 [main] INFO org.springframework.test.context.support.Abstr
17:08:46.521 [main] INFO org.springframework.test.context.support.Annot
17:08:46.670 [main] DEBUG org.springframework.context.annotation.ClassPa
17:08:46.671 [main] INFO org.springframework.boot.test.context.SpringBoo
17:08:46.798 [main] DEBUG org.springframework.boot.test.context.SpringBo
17:08:46.798 [main] INFO org.springframework.boot.test.context.SpringBo
17:08:46.819 [main] INFO org.springframework.boot.test.context.SpringBoo
17:08:46.823 [main] DEBUG org.springframework.test.context.support.Abstr
17:08:46.838 [main] INFO org.springframework.test.context.support.Deper
17:08:46.871 [main] DEBUG org.springframework.core.env.StandardEnvironme
17:08:46.875 [main] DEBUG org.springframework.test.context.support.Test
```

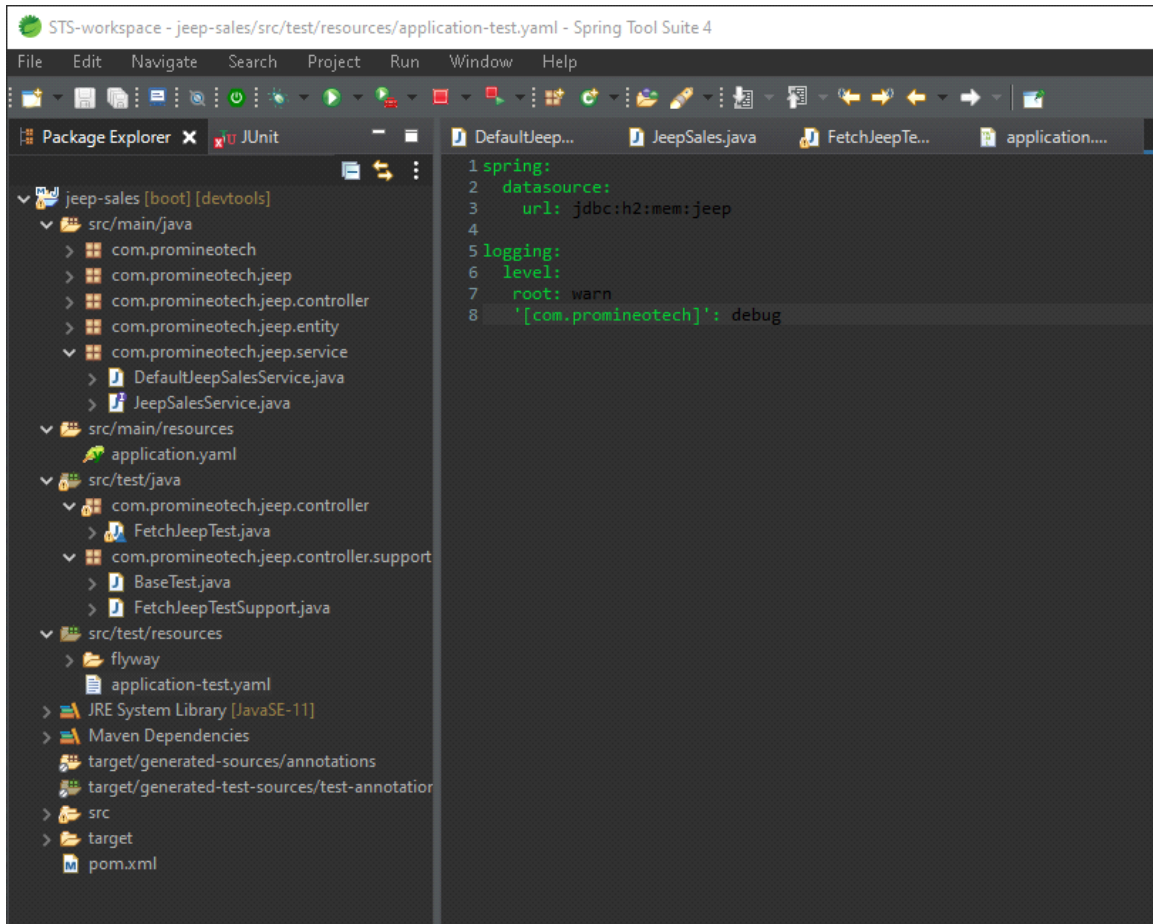
Boot Dashboard x

Type tags, projects, or working set names to match (in

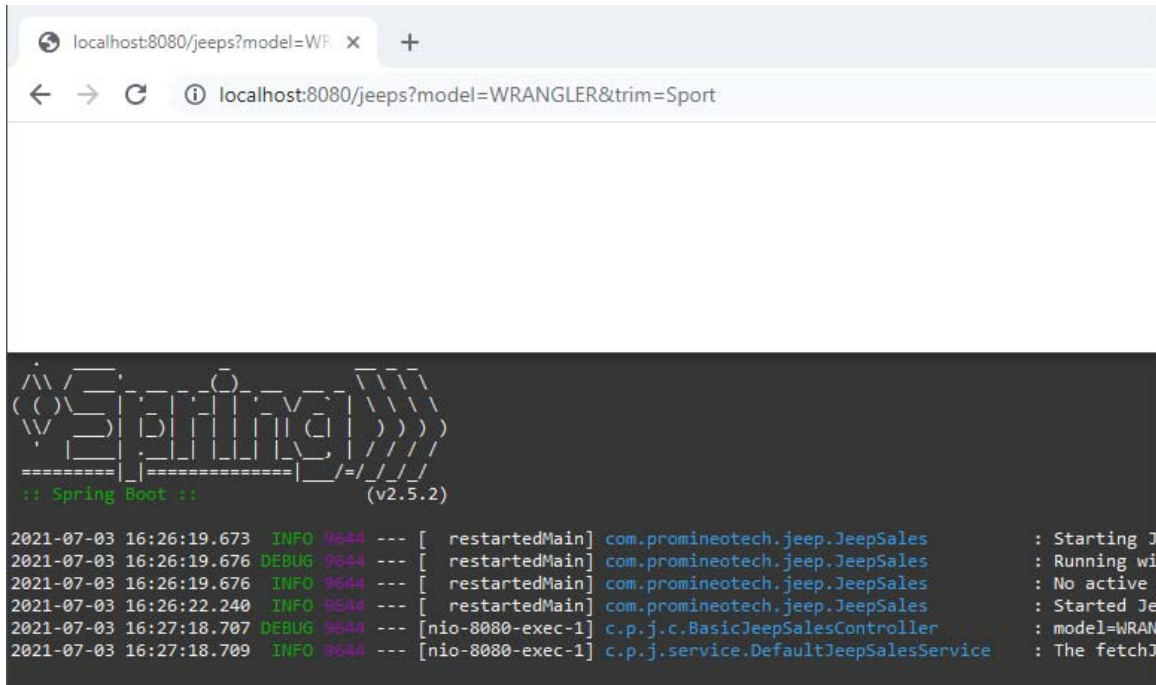
local

Spring Boot (v2.5.2)

2021-07-03 17:08:47 310 INFO 7004 [main] c.p.jeep.contro



Screenshots of Running Application:



The screenshot shows a web browser window at the top and a terminal window below it. The browser's address bar displays the URL `localhost:8080/jeeps?model=WRANGLER&trim=Sport`. The terminal window shows the output of a REST client request. It starts with a JSON request body for a Jeep Wrangler Sport. The response is a 201 status code with a new Jeep object in the body. The terminal also shows log messages from Spring Boot and the application's main method.

```
{}
{
  "model": "WRANGLER",
  "trim": "Sport"
}

{
  "id": 1,
  "model": "WRANGLER",
  "trim": "Sport"
}

2021-07-03 16:26:19.673 INFO 9644 --- [ restartedMain] com.promineotech.jeep.JeepSales : Starting J
2021-07-03 16:26:19.676 DEBUG 9644 --- [ restartedMain] com.promineotech.jeep.JeepSales : Running wi
2021-07-03 16:26:19.676 INFO 9644 --- [ restartedMain] com.promineotech.jeep.JeepSales : No active
2021-07-03 16:26:22.240 INFO 9644 --- [ restartedMain] com.promineotech.jeep.JeepSales : Started Je
2021-07-03 16:27:18.707 DEBUG 9644 --- [nio-8080-exec-1] c.p.j.c.BasicJeepSalesController : model=WRAN
2021-07-03 16:27:18.709 INFO 9644 --- [nio-8080-exec-1] c.p.j.service.DefaultJeepSalesService : The fetchJ
```


Parameters

Name	Description
model string (query)	The model name (i.e., 'WRANGLER')
	<input type="text" value="CHEROKEE"/>
trim string (query)	The trim level (i.e., 'Sport')
	<input type="text" value="Sport"/>

Execute

Responses

Curl

```
curl -X 'GET' \
  'http://localhost:8080/jeeps?model=CHEROKEE&trim=Sport' \
  -H 'accept: application/json'
```

Request URL

```
http://localhost:8080/jeeps?model=CHEROKEE&trim=Sport
```

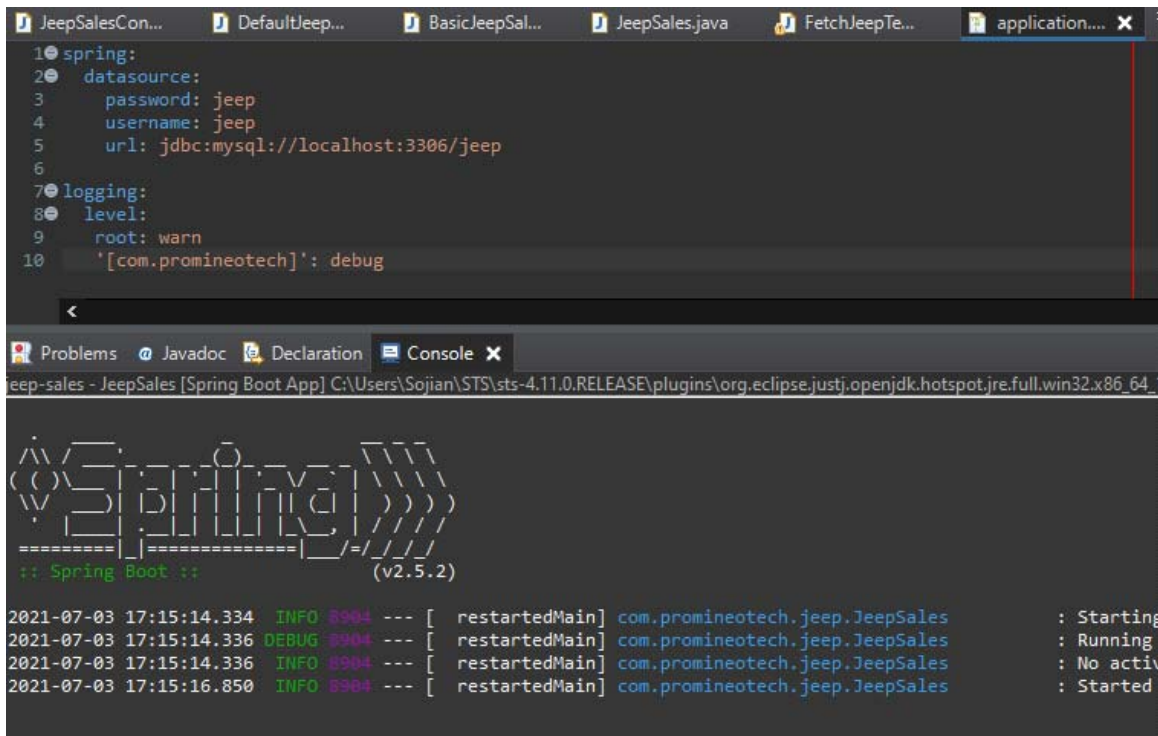
Server response

Code	Details
------	---------

200

Response headers

```
connection: keep-alive
content-length: 0
date: Sat, 03 Jul 2021 23:31:24 GMT
keep-alive: timeout=60
```



The screenshot shows the Eclipse IDE interface. The top editor displays the `application.yml` configuration file with the following content:

```
1 spring:
2   datasource:
3     password: jeep
4     username: jeep
5     url: jdbc:mysql://localhost:3306/jeep
6
7 logging:
8   level:
9     root: warn
10    '[com.promineotech]': debug
```

The bottom console window shows the application's startup logs. It features a decorative ASCII art logo for Spring Boot (v2.5.2) and the following log entries:

```
2021-07-03 17:15:14.334 INFO 8904 --- [ restartedMain] com.promineotech.jee... : Starting
2021-07-03 17:15:14.336 DEBUG 8904 --- [ restartedMain] com.promineotech.jee... : Running
2021-07-03 17:15:14.336 INFO 8904 --- [ restartedMain] com.promineotech.jee... : No activ
2021-07-03 17:15:16.850 INFO 8904 --- [ restartedMain] com.promineotech.jee... : Started
```

URL to GitHub Repository:

<https://github.com/sojians/Week-13-SpringBoot>