

Web API Design with Spring Boot Week 14 Coding Assignment


Points possible: 75

URL to GitHub Repository: <https://github.com/comradArman/JeepSales>


URL to Public Link of your Video: It had been so long since I started. I decided to not make the video

Instructions :

1. Follow the **Coding Steps** below to complete this assignment.

- In Spring Tool Suite (STS), or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed.
- Use your existing repo or create a new repository on GitHub for this week's assignment and push your completed code to the repo, including your entire Maven Project Directory (e.g., jeep-sales) and any additional files (e.g. .sql files) that you create. In addition, screenshot your ERD and push the screenshot to your GitHub repo.
- Include the screenshots into this Assignment Document indicated by: 
- Create a video showcasing your work:
 - In this video: record and present your project verbally while showing the results of the working project.
 - Easy way to Create a video: Start a meeting in Zoom, share your screen, open Eclipse with the code and your Console window, start recording & record yourself describing and running the program showing the results.
 - Your video should be a maximum of 5 minutes.
 - Upload your video with a public link.
 - Easy way to Create a Public Video Link: Upload your video recording to YouTube with a public link.


2. In addition, please include the following in your Coding Assignment Document:

- The requested screenshots, indicated by: 
- The URL for this week's GitHub repository.
- The URL of the public link of your video.

3. Save the Coding Assignment Document as a .pdf and do the following:

- Push the .pdf to the GitHub repo for this week.
 - Upload the .pdf to the LMS in your Coding Assignment Submission.
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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:

- 1) 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.
- 2) 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). 
- 3) 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. 
- 4) Run the integration test and show that the test status is green. Produce a screenshot of the test class and the status bar. 

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- 5) 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

1)

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.

- 2) 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...


- a) The test with the assertion.
- b) The JUnit status bar (should be red).
- c) The method returning the expected list of Jeeps. 

- 3) Add a service layer in your application as shown in the videos:

- a) Add a package named `com.promineotech.jeep.service`.
- b) In the new package, create an interface named `JeepSalesService`.
- c) In the same package (service), create a class named `DefaultJeepSalesService` that implements the `JeepSalesService` interface. Add the class-level annotation, `@Service`.

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- d) Inject the service interface into `DefaultJeepSalesController` using the `@Autowired` annotation. The instance variable should be `private`, and the variable should be named `jeepSalesService`.
 - e) 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);
```
 - f) 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.
 - g) Run the test again. Produce a screenshot showing the service class implementation, the log line in the console, and the red status bar. 
- 4) 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.
- 5) 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
```

- 6) 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.



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- 7) 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".
- 8) 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;mode=MYSQL`

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`. 

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Problems Javadoc Declaration Console X Debug

keep-sales - JeepSales [Spring Boot App] C:\Users\arman\Downloads\sts-4.16.1.RELEASE\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_17.0.4.v20221004-1257\jre\bin\javaw.exe (Dec 30, 2022, 1:44:06 PM) [pic

2022-12-30 13:44:22.338 INFO 8950 --- [nio-8080-exec-8] c.p.j.c.BasicJeepSalesController : model=CHEROKEE, trim=Sport

Name	Description
model string (query)	The model name (i.e., 'WRANGLER') <div>CHEROKEE</div>
trim string (query)	The trim level (i.e., 'Sport') <div>Sport</div>

Execute Clear

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	<div>Response headers</div> <div>connection: keep-alive content-length: 0 date: Fri, 30 Dec 2022 20:44:22 GMT keep-alive: timeout=60</div>

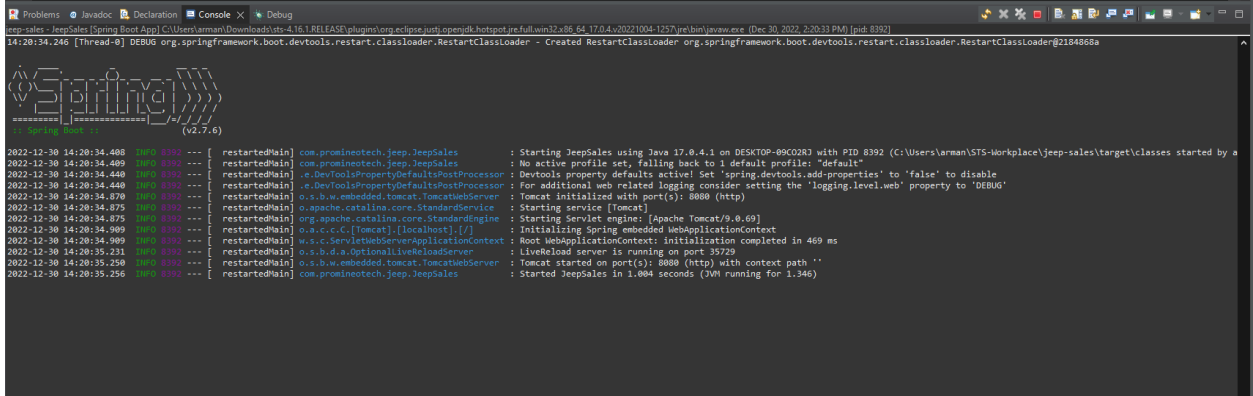
Responses

Code	Description	Links
200	Alist of Jeeps is returned	No links

Media type

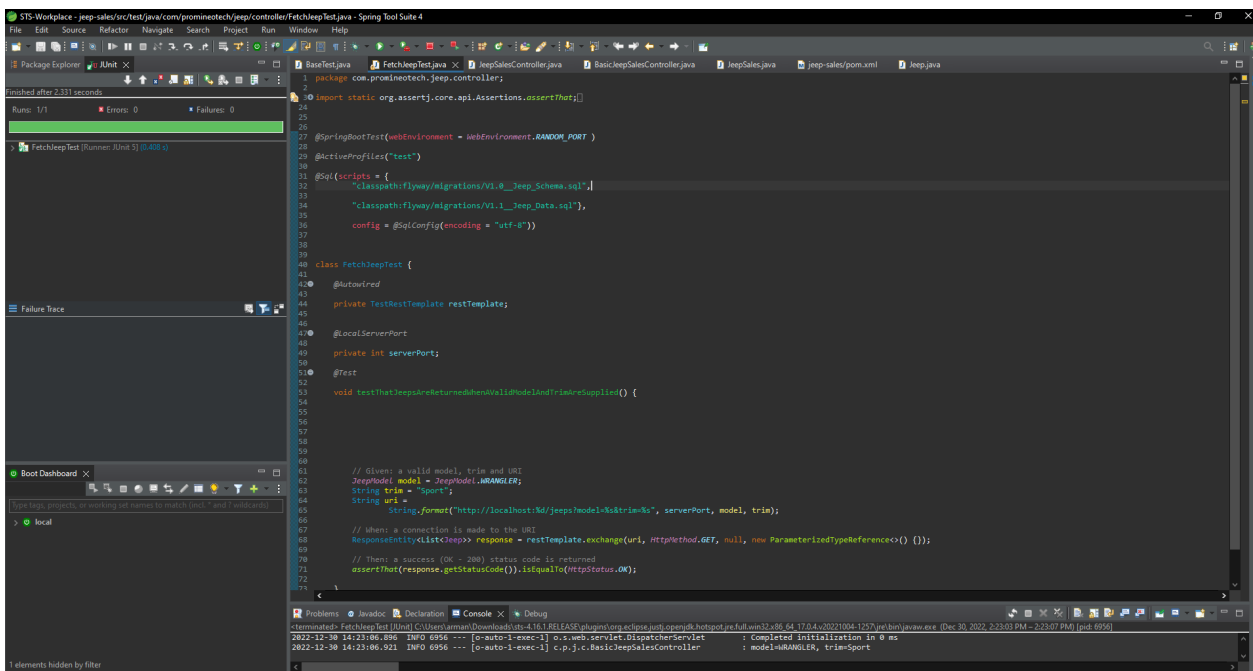
application/json

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```
2022-12-30 14:20:34.488 [INFO] 6392 --- [ restartedMain] com.promineotech.jeepp.JeeppSales : Starting JeeppSales using Java 17.0.4.1 on DESKTOP-89C02RJ with PID 6392 (C:\Users\arman\STS-Workplace\jeepp-sales\target\classes started by a
2022-12-30 14:20:34.489 [INFO] 6392 --- [ restartedMain] com.promineotech.jeepp.JeeppSales : No active profile set, falling back to 1 default profile: "default"
2022-12-30 14:20:34.488 [INFO] 6392 --- [ restartedMain] o.devtools.properties.DefaultPostProcessor : Devtools property defaults active! Set 'spring.devtools.add-properties' to 'false' to disable
2022-12-30 14:20:34.440 [INFO] 6392 --- [ restartedMain] o.devtools.properties.DefaultPostProcessor : For additional web related logging consider setting the 'logging.level.web' property to 'DEBUG'
2022-12-30 14:20:34.870 [INFO] 6392 --- [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2022-12-30 14:20:34.875 [INFO] 6392 --- [ restartedMain] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2022-12-30 14:20:34.875 [INFO] 6392 --- [ restartedMain] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.69]
2022-12-30 14:20:34.909 [INFO] 6392 --- [ restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2022-12-30 14:20:34.909 [INFO] 6392 --- [ restartedMain] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 469 ms
2022-12-30 14:20:35.231 [INFO] 6392 --- [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : LiveReload server is running on port 35729
2022-12-30 14:20:35.250 [INFO] 6392 --- [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2022-12-30 14:20:35.256 [INFO] 6392 --- [ restartedMain] com.promineotech.jeepp.JeeppSales : Started JeeppSales in 1.004 seconds (JVM running for 1.346)
```

localhost:8080/swagger-ui/index.html#/basic-jeepp-sales-controller



```
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26
27 @SpringBootTest(webEnvironment = WebEnvironment.RANDOM_PORT)
28
29 @ActiveProfiles("test")
30
31 @Sql(scripts = {
32     "classpath:flyway/migrations/V1.0_jepp_Schema.sql",
33     "classpath:flyway/migrations/V1.1_jepp_Data.sql"},
34     config = @SqlConfig(encoding = "utf-8"))
35
36
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39
40 class FetchJeeppTest {
41
42     @Autowired
43     private TestRestTemplate restTemplate;
44
45
46
47     @LocalServerPort
48     private int serverPort;
49
50     @Test
51
52     void testThatJeeppReturnsValidModelAndTrimmedSupplier() {
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61 // Given: a valid model, trim and URI
62 JeeppModel model = JeeppModel.WRANGLER;
63 String trim = "Sport";
64 String url =
65     String.format("http://localhost:%d/jeepp/model-%s&trim=%s", serverPort, model, trim);
66
67 // When: a connection is made to the URI
68 ResponseEntity<Jeepp> response = restTemplate.exchange(url, HttpMethod.GET, null, new ParameterizedTypeReference<>());
69
70 // Then: a success (200 - OK) status code is returned
71 assertThat(response.getStatusCode()).isEqualTo(HttpStatus.OK);
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```

Web API Design with Spring Boot Week 14 Coding Assignment

The screenshot displays an IDE with two main windows. The top window shows a Java test file, `FetchJeepTestSupport.java`, with a failure trace. The failure is an `org.opentest4j.AssertionFailedError` at line 151, where the test expects a specific list of objects but receives a different one. The bottom window shows the `JeepSales.java` file, which is a Spring Boot application. The console output indicates that the application has started successfully on port 5304, using Spring Boot 2.7.6 and Spring 5.3.24. The application is running on a Tomcat 9.0.69 embedded web server.

```
package com.promineotech.jeeptest.support;

import java.math.BigDecimal;
import java.util.LinkedList;
import java.util.List;

import com.promineotech.jeeptest.controller.Jeeptest;
import com.promineotech.jeeptest.entity.Jeeptest;

public class FetchJeepTestSupport extends BaseTest {

    protected List<Jeep> buildExpected() {
        List<Jeep> list = new LinkedList<>();

        //formatter:off
        list.add(Jeeptest.builder()
            .modelId("JeepModel.WRANGLER")
            .trimLevel("Sport")
            .numDoors(2)
            .wheelSize(17)
            .basePrice(new BigDecimal("20475.00"))
            .build());

        list.add(Jeeptest.builder()
            .modelId("JeepModel.WRANGLER")
            .trimLevel("Sport")
            .numDoors(2)
            .wheelSize(17)
            .basePrice(new BigDecimal("31975.00"))
            .build());

        //formatter:on

        return list;
    }
}
```

```
org.opentest4j.AssertionFailedError
expected:
[Jeep(modelPK=null, modelId=WRANGLER, trimLevel=Sport, numDoors=2,
Jeep(modelPK=null, modelId=WRANGLER, trimLevel=Sport, numDoors=2,
but was:
null
at java.base/java.lang.reflect.Constructor.newInstanceWithCaller(Constructor.java:490)
at com.promineotech.jeeptest.controller.FetchJeepTestSupport.buildExpected(FetchJeepTestSupport.java:151)
at java.base/java.util.ArrayList.forEach(ArrayList.java:1511)
at java.base/java.util.ArrayList.forEach(ArrayList.java:1511)
```

```
2022-12-30 17:37:22.064 INFO 5304 --- [main] c.p.jeeptest.controller.FetchJeepTest : Starting FetchJeepTest using Java 17.0.4.1 on DESKTOP-09C02B3 with PID 5304 (started by arman in C:\Users\arman\Downloads\jeep-sales\src\test\java\com\promineotech\jeeptest)
2022-12-30 17:37:22.065 INFO 5304 --- [main] c.p.jeeptest.controller.FetchJeepTest : The following profile is active: "test"
2022-12-30 17:37:22.582 INFO 5304 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 0 (http)
2022-12-30 17:37:22.588 INFO 5304 --- [main] o.s.p.catalina.core.StandardService : Starting service [tomcat]
2022-12-30 17:37:22.588 INFO 5304 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.69]
2022-12-30 17:37:22.648 INFO 5304 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded webapplicationContext
2022-12-30 17:37:22.648 INFO 5304 --- [main] o.s.b.w.e.tomcat.EmbeddedTomcat : Tomcat started. URL: http://localhost:5304/
```

```
package com.promineotech.jeeptest;

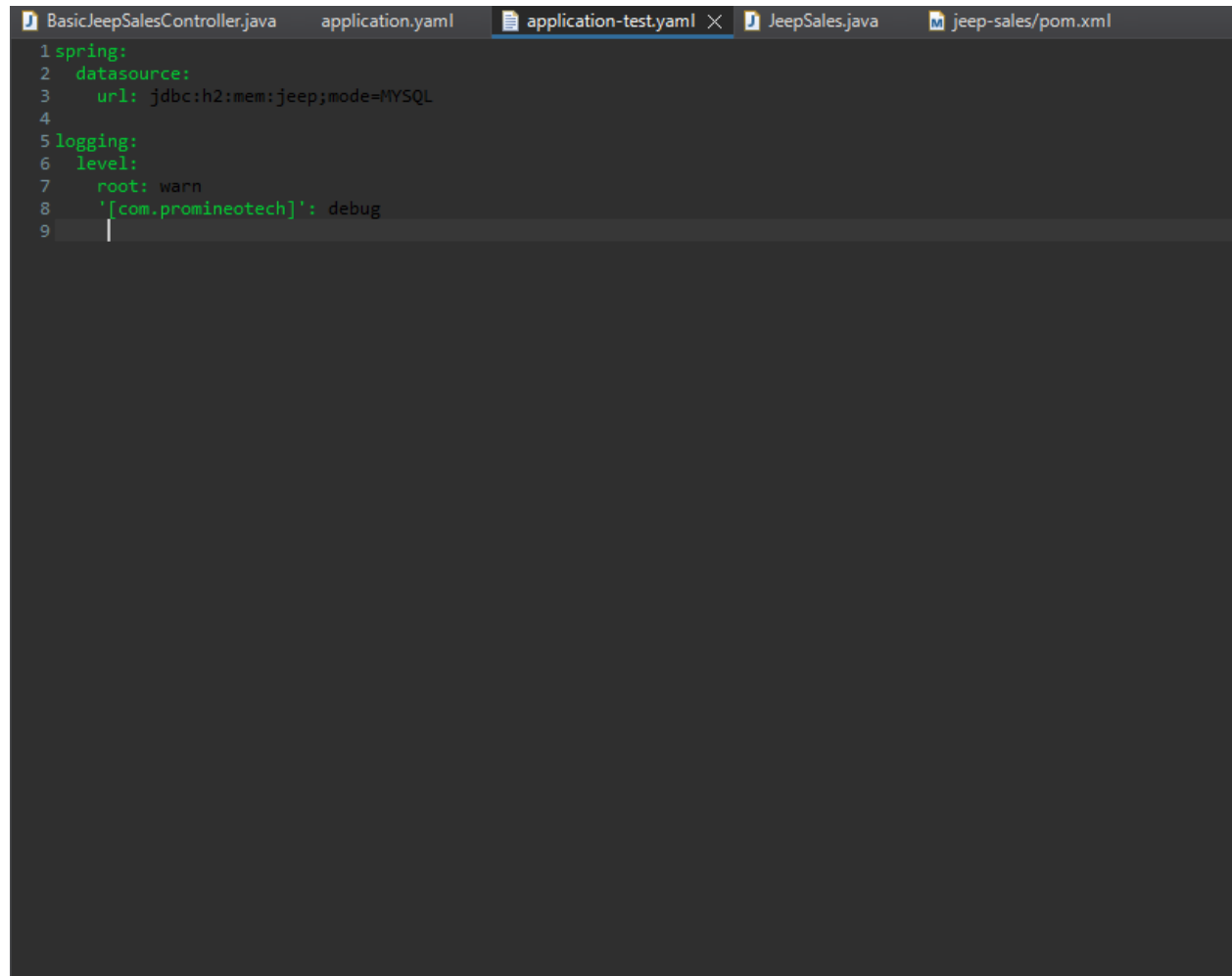
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication(scanBasePackages = {"com.promineotech"})
public class JeepSales {

    public static void main(String[] args) {
        SpringApplication.run(JeepSales.class, args);
    }
}
```

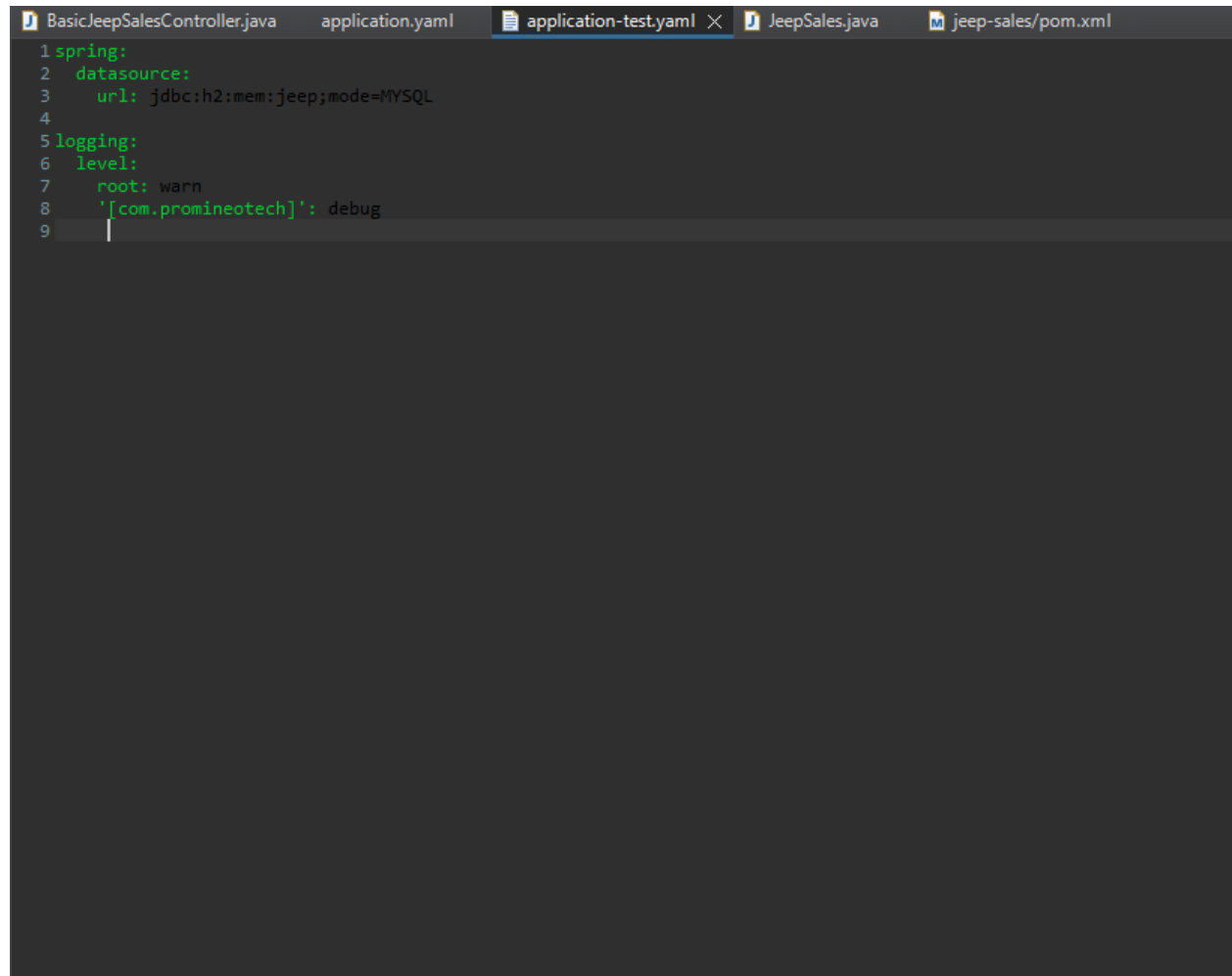
```
2023-03-08 15:56:36.385 INFO 15116 --- [main] com.promineotech.jeeptest.JeepSales : Starting JeepSales using Java 17.0.4.1 on DESKTOP-09C02B3 with PID 15116 (C:\Users\arman\Downloads\jeep-sales\src\test\java\com\promineotech\jeeptest)
2023-03-08 15:56:36.386 INFO 15116 --- [main] com.promineotech.jeeptest.JeepSales : Running with Spring Boot 2.7.6, Spring v5.3.24
2023-03-08 15:56:36.386 INFO 15116 --- [main] com.promineotech.jeeptest.JeepSales : No active profile set, falling back to default profile: "default"
2023-03-08 15:56:37.684 INFO 15116 --- [main] com.promineotech.jeeptest.JeepSales : Started JeepSales in 1.476 seconds (77M running for 1.885)
```


Web API Design with Spring Boot Week 14 Coding Assignment



```
BasicJeepSalesController.java  application.yml  application-test.yml X  JeepSales.java  jeep-sales/pom.xml
1 spring:
2   datasource:
3     url: jdbc:h2:mem:jeep;mode=MYSQL
4
5 logging:
6   level:
7     root: warn
8     '[com.promineotech]': debug
9
```

Web API Design with Spring Boot Week 14 Coding Assignment



The screenshot shows an IDE with several tabs open: BasicJeepSalesController.java, application.yml, application-test.yml (active), JeepSales.java, and jeep-sales/pom.xml. The active tab displays the following configuration:

```
1 spring:
2   datasource:
3     url: jdbc:h2:mem:jeep;mode=MYSQL
4
5 logging:
6   level:
7     root: warn
8     '[com.promineotech]': debug
9
```

Web API Design with Spring Boot Week 14 Coding Assignment

The screenshot shows an IDE with the following components:

- Package Explorer:** Shows the project structure with a package `com.promineotech.jeeptest` containing `FetchJeepTest.java`.
- JUnit Test Results:** Shows a test run with 1/1 runs, 0 errors, and 1 failure. The failure is in `testThatJeepsAreReturnedWhenAValidModelAndTrimAreSupplied()`.
- Failure Trace:** Shows the error message: `org.opentest4j.AssertionFailedError: expected: [Jeep(modelPK=null, modelId=WRANGLER, trim=Jeep(modelPK=null, modelId=WRANGLER, trim=null) but was: null`.
- FetchJeepTest.java:** The test class is shown with the following code:

```
1 package com.promineotech.jeeptest;
2
3 import static org.assertj.core.api.Assertions.assertThat;
4
5 @SpringBootTest(webEnvironment = WebEnvironment.RANDOM_PORT)
6 @ActiveProfiles("test")
7 @Sql(scripts = {
8     "classpath:flyway/migrations/V1.0__Jeep_Schema.sql",
9     "classpath:flyway/migrations/V1.1__Jeep_Data.sql",
10     config = @SqlConfig(encoding = "utf-8"))
11
12 class FetchJeepTest extends FetchJeepTestSupport {
13     @Autowired
14     private TestRestTemplate restTemplate;
15
16     @LocalServerPort
17     private int serverPort;
18
19     @Test
20     void testThatJeepsAreReturnedWhenAValidModelAndTrimAreSupplied() {
21         // Given: a valid model, trim and URI
22         JeepModel model = JeepModel.WRANGLER;
23         String trim = "Sport";
24         String uri =
25             String.format("http://localhost:%d/jeeps?model=%s&trim=%s", serverPort, model, trim);
26
27         // When: a connection is made to the URI
28         ResponseEntity<List<Jeep>> response =
29             restTemplate.exchange(uri, HttpMethod.GET, null, new ParameterizedTypeReference<>() {});
30
31         // Then: a success (OK - 200) status code is returned
32         assertThat(response.getStatusCode()).isEqualTo(HttpStatus.OK);
33
34         // And: the actual list returned is the same as the expected list
35         List<Jeep> expected = buildExpected();
36     }
37 }
```
- Console:** Shows the output of the test run, including the Spring Boot logo and the following log messages:

```
16:41:53.490 [main] DEBUG org.springframework.test.context.support.DependencyInjectionTestExecutionListener - Performing dependency injection
16:41:53.490 [main] INFO 1816 --- [main] c.p.jeeptest.FetchJeepTest : Starting FetchJeepTest using Java 17.0.4.1
16:41:53.490 [main] INFO 1816 --- [main] c.p.jeeptest.FetchJeepTest : The following 1 profile is active: "test"
16:41:53.490 [main] INFO 1816 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 0 (http)
16:41:53.490 [main] INFO 1816 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Starting service [Tomcat]
16:41:53.490 [main] INFO 1816 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.50]
16:41:53.490 [main] INFO 1816 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
16:41:53.490 [main] INFO 1816 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed
16:41:53.490 [main] INFO 1816 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 51418 (http) w
16:41:53.490 [main] INFO 1816 --- [main] c.p.jeeptest.FetchJeepTest : Started FetchJeepTest in 1.454 seconds (JVM
16:41:53.490 [main] INFO 1816 --- [main] o.s.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet 'dis
16:41:53.490 [main] INFO 1816 --- [main] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
16:41:53.490 [main] INFO 1816 --- [main] o.s.web.servlet.DispatcherServlet : Completed initialization in 1 ms
16:41:53.490 [main] INFO 1816 --- [main] c.p.jeeptest.FetchJeepTest : The fetchJeeps method was is called with m
```