

Spring Boot Microservices API Test using Rest Assured

REST Assured is a Java DSL for simplifying testing of REST based services built on top of HTTP Builder. It supports POST, GET, PUT, DELETE, OPTIONS, PATCH and HEAD requests and can be used to validate and verify the response to these requests.

<https://github.com/rest-assured/rest-assured/wiki/Usage>

In this lab, Let us test a spring boot microservice that can service the following API requests: GET, POST, PUT DELETE API requests to perform CRUD (Create Read Update Delete) operations.

How to test the API end points using REST Assured?

We will add a test code to customer service.

Open a File explorer to navigate to the directory

C:\apitestlabs\customerservice

This directory contains a simple spring boot customer microservice that handles the following requests:

GET request to get all customers

URL: <http://localhost:8090/api/customers>

GET request to get a customer using customer id

URL: <http://localhost:8090/api/customers/{id}>

id is the template variable

For example <http://localhost:8090/api/customers/2> will return customer data for a customer id value 2

POST request to create a new customer

URL: <http://localhost:8090/api/customers>

Post a Json data via request body

PUT request to update an existing customer with an id

URL: <http://localhost:8090/api/customers/{id}>

id is the template variable

For example <http://localhost:8090/api/customers/2>

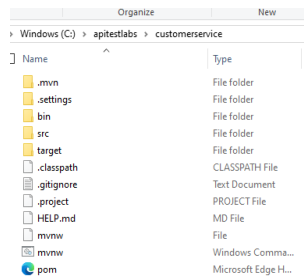
DELETE request to delete an existing customer with an id

URL: <http://localhost:8090/api/customers/{id}>

id is the template variable

For example <http://localhost:8090/api/customers/2>

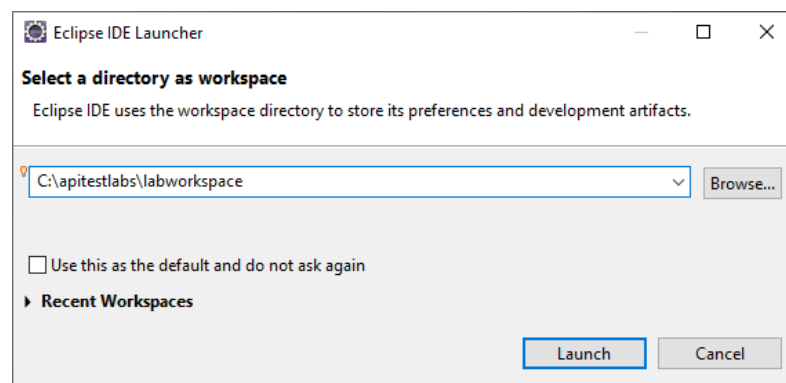
1. Open a File Explorer, Navigate to **C:\apitestlabs\customerservice**



Review the resources in this microservice directory.

You may open this project in Eclipse and review the source code and configuration.

2. Start your eclipse and go to your lab workspace: **C:\apitestlabs\labworkspace**



3. Let us import the customer service project. In Eclipse,

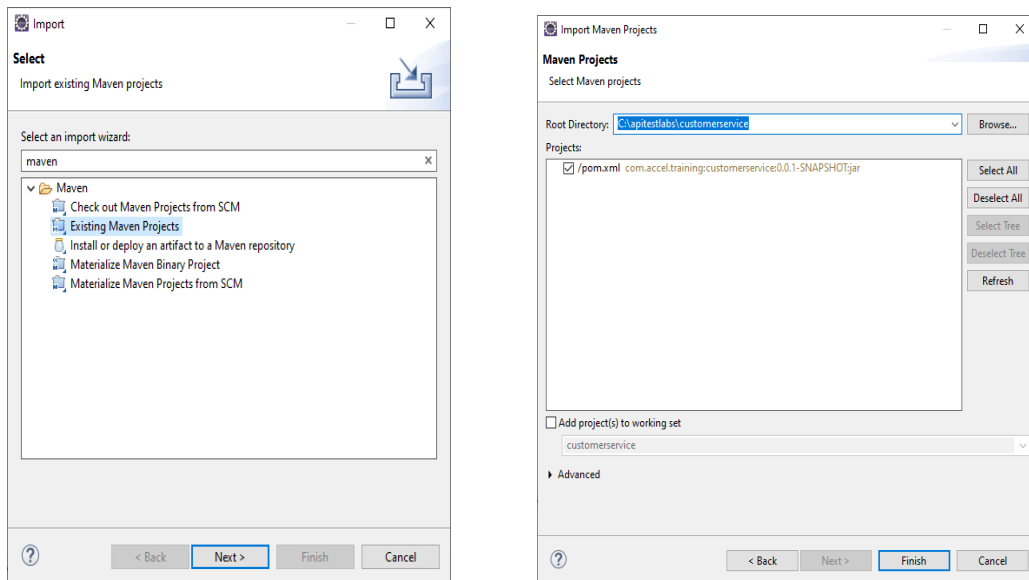
Click on **File → Import → Maven → Existing maven projects**

Click on **Next**.

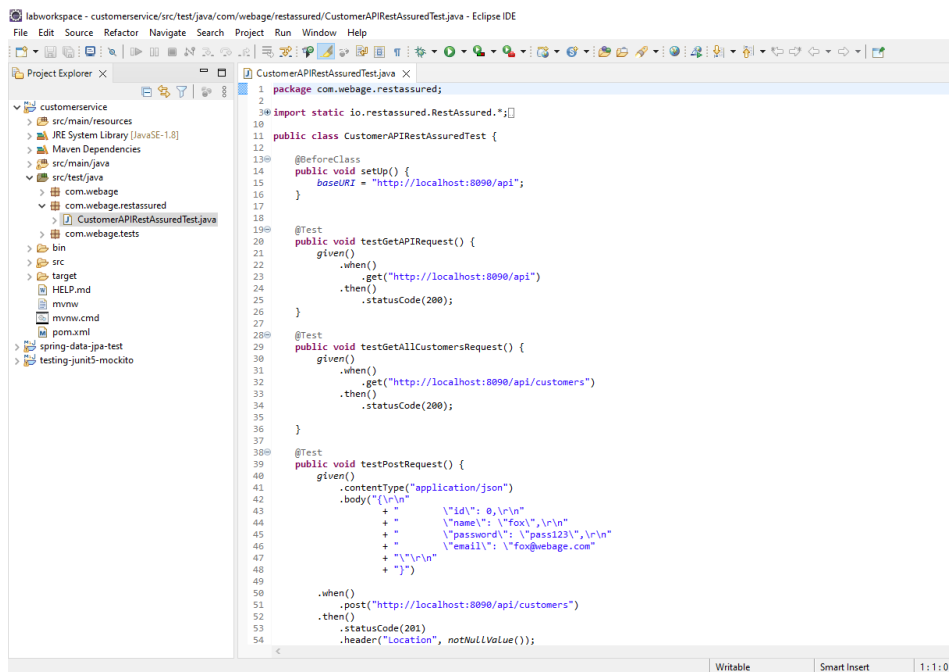
Navigate to **C:\apitestlabs\customerservice**

Select this project.

Click on **Finish**.



4. In Eclipse Project Explorer view, Select the project → right click on customer service project → Maven → Update Project
5. In Project Explorer view, click on **src/test/java** → **com.webage.restassured** → **CustomerAPIRestAssuredTest.java** and open this source code.



6. Review the Test code in this file.

7. Let us test API GET requests. Uncomment the `@Test` annotation above the following method: **testGetAPIRequest()**

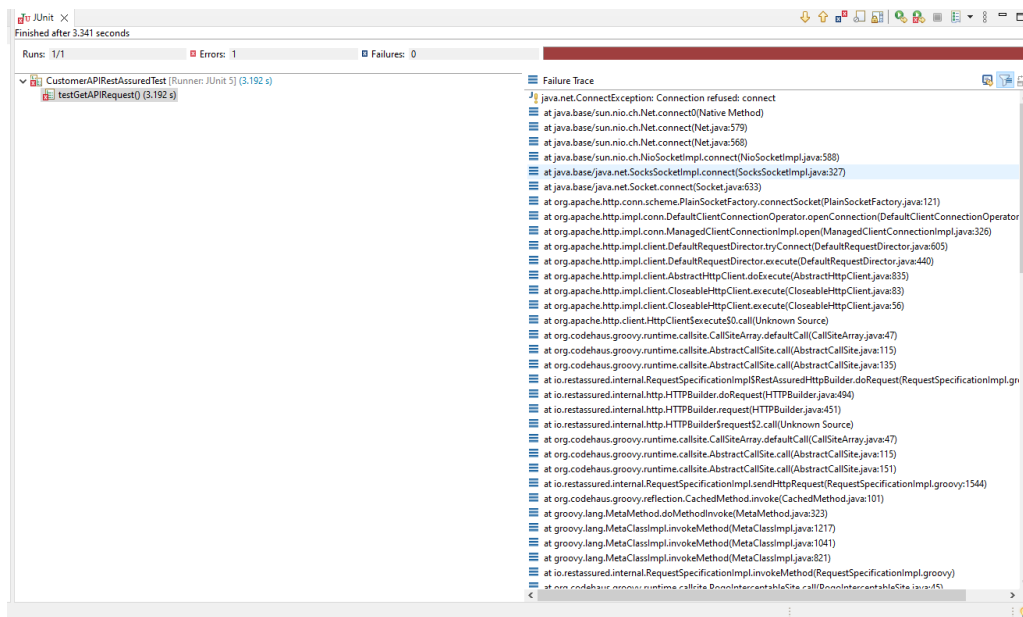
```
@Test
public void testGetAPIRequest() {
    given()
        .when()
        .get("http://localhost:8090/api")
        .then()
        .statusCode(200);
}
```

and save the file.

8. Select the file **CustomersAPIRestAssuredTests.java** → right click → **Run As** → **JUnit Test**

and run the JUnit Test.

What is the result? Pass | Fail ?



If the application is not running, this test should fail as shown in the screen shot.

9. Click on the console view to see the log messages.

```

<terminated> CustomerAPITest [JUnit] C:\eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.7.v20230425-1502\jre\bin\javaw.exe (Mar 16, 2024, 10:32:54 AM - 10:33:01 AM) [pid: 9804]
10:33:01.306 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Get connection for route {} ->http://localhost:8090
10:33:01.357 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
10:33:01.362 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090 timed out. Connection will be retried using another IP address
10:33:01.362 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
10:33:01.364 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Connection org.apache.http.impl.conn.DefaultClientConnection@661c46bc closed
10:33:01.364 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Connection org.apache.http.impl.conn.DefaultClientConnection@661c46bc shut down
10:33:01.364 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Releasing connection org.apache.http.impl.conn.ManagedClientConnectionImpl@37864b77
  
```

Review the messages.

10. Let us start and run the application. Click on **src/main/java ---> com.webage -> CustomerServiceApplication.java -> right click --> Run As -> Java Application**

```

CustomerServiceApplication [Java Application] C:\eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.7.v20230425-1502\jre\bin\javaw.exe (Mar 16, 2024, 10:40:21 AM) [pid: 12692]
Spring Boot :: (v2.2.6.RELEASE)
2024-03-16 10:40:24.686 INFO 12692 --- [main] com.webage.CustomerServiceApplication : Starting CustomerServiceApplication on DESKTOP-9938A2R with PID 12692 (C:\apitestlabs\customer-service\src\main\java\com\webage\CustomerServiceApplication)
2024-03-16 10:40:24.611 INFO 12692 --- [main] com.webage.CustomerServiceApplication : No active profile set, falling back to default profiles: default
2024-03-16 10:40:25.684 INFO 12692 --- [main] s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode.
2024-03-16 10:40:25.792 INFO 12692 --- [main] s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 92ms. Found 1 JPA repository interfaces.
2024-03-16 10:40:26.986 INFO 12692 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8090 (http)
2024-03-16 10:40:27.001 INFO 12692 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2024-03-16 10:40:27.001 INFO 12692 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.33]
2024-03-16 10:40:27.175 INFO 12692 --- [main] o.a.c.c.c.[Tomcat].[localhost].[/api] : Initializing Spring embedded WebApplicationContext
2024-03-16 10:40:27.177 INFO 12692 --- [main] o.s.web.context.ContextLoader : Root WebApplicationContext: initialization completed in 2480 ms
2024-03-16 10:40:27.344 INFO 12692 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2024-03-16 10:40:27.356 WARN 12692 --- [main] com.zaxxer.hikari.util.DriverDataSource : Registered driver with driverClassName=org.hsqldb.jdbcDriver was not found, trying direct instantiation
2024-03-16 10:40:27.697 INFO 12692 --- [main] com.zaxxer.hikari.pool.PoolBase : HikariPool-1 - Driver does not support get/set network timeout for connections. (feature not supported)
2024-03-16 10:40:27.782 INFO 12692 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Start completed.
2024-03-16 10:40:27.888 INFO 12692 --- [main] o.hibernate.jpa.internal.util.LogHelper : MH0000204: Processing PersistenceUnitInfo [name: default]
2024-03-16 10:40:28.059 INFO 12692 --- [main] org.hibernate.Version : HH0000412: Hibernate ORM core version 5.4.12.Final
2024-03-16 10:40:28.302 INFO 12692 --- [main] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations {5.1.0.Final}
2024-03-16 10:40:28.529 INFO 12692 --- [main] org.hibernate.dialect.Dialect : HH0000400: Using dialect: org.hibernate.dialect.HSQLDialect
2024-03-16 10:40:29.571 INFO 12692 --- [main] o.h.e.t.j.p.i.JtaPlatformInitiator : HH0000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.JBossPlatform]
2024-03-16 10:40:29.590 INFO 12692 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2024-03-16 10:40:30.061 WARN 12692 --- [main] jpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database queries may be performed during view rendering.
2024-03-16 10:40:30.343 INFO 12692 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Initializing ExecutorService 'applicationTaskExecutor'
2024-03-16 10:40:30.718 INFO 12692 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8090 (http) with context path '/api'
2024-03-16 10:40:30.723 INFO 12692 --- [main] com.webage.CustomerServiceApplication : Started CustomerServiceApplication in 7.267 seconds (JVM running for 8.056)
  
```

Review the application log messages.

11. Select the file **CustomersAPIRestAssuredTests.java -> right click -> Run As -> JUnit Test** and run the JUnit Test.

What is the result? Pass | Fail ?

```

Finished after 2.99 seconds
Runs: 1/1 Errors: 0 Failures: 0
CustomerAPITest (JUnit 5) (2.783 s)
  testGetAPIRequest (2.783 s)
  
```

12. Click on the **console** view and review the log messages.

```

labworkspace - customerservice/src/test/java/com/webage/restassured/CustomerAPITest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Markers Properties Servers Data Source Explorer Snippets Terminal Console X JUnit
*terminated- CustomerAPITest [JUnit] C:\eclipse\plugins\org.eclipse.jdt.junit\org.eclipse.jdt.junit.full.win32.x86_64.17.0.7-20230425-1502\jre\bin\java.exe (Mar 16, 2024, 10:43:01 AM - 10:43:06 AM) [pid: 9264]
10:43:05.923 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Get connection for route {}->http://localhost:8090
10:43:05.957 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
10:43:06.001 [main] DEBUG org.apache.http.client.protocol.RequestAddCookies - CookieSpec selected: ignoreCookies
10:43:06.006 [main] DEBUG org.apache.http.client.protocol.RequestAuthCache - Auth cache not set in the context
10:43:06.007 [main] DEBUG org.apache.http.client.protocol.RequestTargetAuthentication - Target auth state: UNCHALLENGED
10:43:06.009 [main] DEBUG org.apache.http.client.protocol.RequestProxyAuthentication - Proxy auth state: UNCHALLENGED
10:43:06.010 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Attempt 1 to execute request
10:43:06.011 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Sending request: GET /api HTTP/1.1
10:43:06.014 [main] DEBUG org.apache.http.wire - >> "GET /api HTTP/1.1[\r\n]"
10:43:06.016 [main] DEBUG org.apache.http.wire - >> "Accept: */*[\r\n]"
10:43:06.016 [main] DEBUG org.apache.http.wire - >> "Host: localhost:8090[\r\n]"
10:43:06.016 [main] DEBUG org.apache.http.wire - >> "Connection: keep-alive[\r\n]"
10:43:06.017 [main] DEBUG org.apache.http.wire - >> "User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.7)[\r\n]"
10:43:06.017 [main] DEBUG org.apache.http.wire - >> "Accept-Encoding: gzip,deflate[\r\n]"
10:43:06.017 [main] DEBUG org.apache.http.wire - >> "[\r\n]"
10:43:06.017 [main] DEBUG org.apache.http.wire - >> GET /api HTTP/1.1
10:43:06.018 [main] DEBUG org.apache.http.headers - >> Accept: */*
10:43:06.018 [main] DEBUG org.apache.http.headers - >> Host: localhost:8090
10:43:06.018 [main] DEBUG org.apache.http.headers - >> Connection: Keep-Alive
10:43:06.018 [main] DEBUG org.apache.http.headers - >> User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.7)
10:43:06.019 [main] DEBUG org.apache.http.headers - >> Accept-Encoding: gzip,deflate
10:43:06.192 [main] DEBUG org.apache.http.wire - << "HTTP/1.1 302 [\r\n]"
10:43:06.197 [main] DEBUG org.apache.http.wire - << "Location: http://localhost:8090/api/[\r\n]"
10:43:06.198 [main] DEBUG org.apache.http.wire - << "Transfer-Encoding: chunked[\r\n]"
10:43:06.198 [main] DEBUG org.apache.http.wire - << "Date: Sat, 16 Mar 2024 14:43:06 GMT[\r\n]"
10:43:06.199 [main] DEBUG org.apache.http.wire - << "Keep-Alive: timeout=60[\r\n]"
10:43:06.199 [main] DEBUG org.apache.http.wire - << "Connection: keep-alive[\r\n]"
10:43:06.199 [main] DEBUG org.apache.http.wire - << "[\r\n]"
10:43:06.201 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Receiving response: HTTP/1.1 302
10:43:06.205 [main] DEBUG org.apache.http.headers - << HTTP/1.1 302
10:43:06.205 [main] DEBUG org.apache.http.headers - << Location: http://localhost:8090/api/
10:43:06.205 [main] DEBUG org.apache.http.headers - << Transfer-Encoding: chunked
10:43:06.205 [main] DEBUG org.apache.http.headers - << Date: Sat, 16 Mar 2024 14:43:06 GMT
10:43:06.205 [main] DEBUG org.apache.http.headers - << Keep-Alive: timeout=60
10:43:06.205 [main] DEBUG org.apache.http.headers - << Connection: keep-alive
10:43:06.219 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Connection can be kept alive for 60000 MILLISECONDS
10:43:06.221 [main] DEBUG org.apache.http.impl.client.DefaultRedirectStrategy - Redirect requested to location 'http://localhost:8090/api/'
10:43:06.225 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Redirecting to 'http://localhost:8090/api/' via {}->http://localhost:8090
10:43:06.229 [main] DEBUG org.apache.http.wire - << "0[\r\n]"
10:43:06.229 [main] DEBUG org.apache.http.wire - << "[\r\n]"
10:43:06.230 [main] DEBUG org.apache.http.wire - << "0[\r\n]"
10:43:06.231 [main] DEBUG org.apache.http.client.protocol.RequestAddCookies - CookieSpec selected: ignoreCookies
10:43:06.231 [main] DEBUG org.apache.http.client.protocol.RequestAuthCache - Auth cache not set in the context
10:43:06.231 [main] DEBUG org.apache.http.client.protocol.RequestTargetAuthentication - Target auth state: UNCHALLENGED
10:43:06.231 [main] DEBUG org.apache.http.client.protocol.RequestProxyAuthentication - Proxy auth state: UNCHALLENGED
10:43:06.231 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Attempt 2 to execute request
10:43:06.232 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Sending request: GET /api/ HTTP/1.1
10:43:06.232 [main] DEBUG org.apache.http.wire - >> "GET /api/ HTTP/1.1[\r\n]"

```

13. Let us test the GET request to retrieve all customers data. In `CustomerAPITest.java`, uncomment the `@Test` annotation above the method `testGetAllCustomersRequest()`

```

@Test
public void testGetAllCustomersRequest() {
    given()
        .when()
        .get("http://localhost:8090/api/customers")
        .then()
        .statusCode(200);
}

```

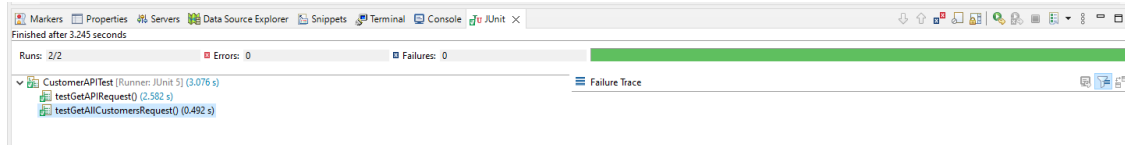
and save the file.

14. Select the file `CustomersAPIRestAssuredTests.java` → right click → Run As → Junit Test

and run the Junit Test.

What is the result? Pass | Fail ?

Review the **console** messages.



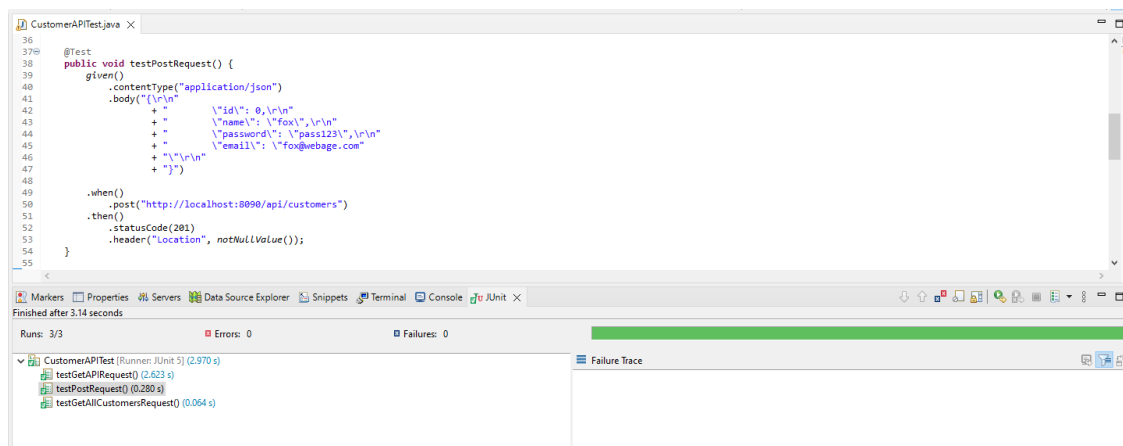
15. Let us test API POST request to create a new customer. In CustomerAPITest.java, uncomment the `@Test` annotation above the method `testPostRequest()`

```
@Test
public void testPostRequest() {
    given()
        .contentType("application/json")
        .body("{\r\n"
            + "        \"id\": 0,\r\n"
            + "        \"name\": \"fox\",\r\n"
            + "        \"password\": \"pass123\",\r\n"
            + "        \"email\": \"fox@webage.com\"
            + \"\r\n"
            + \"}\")

    .when()
        .post("http://localhost:8090/api/customers")
    .then()
        .statusCode(201)
        .header("Location", notNullValue());
}
```

and save the file.

16. Run the test. Select the file **CustomersRestAssuredAPITests.java** → right click → **Run As** → **JUnit Test** and run the JUnit Test.



What is the result? Pass | Fail ?

Review the **console messages**.

```

11:55:40.118 [main] DEBUG io.restassured.internal.RequestSpecificationImpl$RestAssuredHttpBuilder - Parsed data to instance of: class org.apache.http.conn.EofSensorInputStream
11:55:40.329 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
11:55:40.335 [main] DEBUG org.apache.http.client.protocol.RequestAddCookies - CookieSpec selected: ignoreCookies
11:55:40.336 [main] DEBUG org.apache.http.client.protocol.RequestAuthCache - Auth cache not set in the context
11:55:40.338 [main] DEBUG org.apache.http.client.protocol.RequestTargetAuthentication - Target auth state: UNCHALLENGED
11:55:40.340 [main] DEBUG org.apache.http.client.protocol.RequestProxyAuthentication - Proxy auth state: UNCHALLENGED
11:55:40.341 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Attempt 1 to execute request
11:55:40.341 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Sending request: POST /api/customers HTTP/1.1
11:55:40.343 [main] DEBUG org.apache.http.wire - >> "POST /api/customers HTTP/1.1[\n]"
11:55:40.343 [main] DEBUG org.apache.http.wire - >> "Accept: */*[\n]"
11:55:40.343 [main] DEBUG org.apache.http.wire - >> "Content-Type: application/json; charset=UTF-8[\n]"
11:55:40.343 [main] DEBUG org.apache.http.wire - >> "Content-length: 113[\n]"
11:55:40.344 [main] DEBUG org.apache.http.wire - >> "Host: localhost:8090[\n]"
11:55:40.344 [main] DEBUG org.apache.http.wire - >> "Connection: Keep-Alive[\n]"
11:55:40.345 [main] DEBUG org.apache.http.wire - >> "User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.2)[\n]"
11:55:40.346 [main] DEBUG org.apache.http.wire - >> "Accept-encoding: gzip, deflate[\n]"
11:55:40.346 [main] DEBUG org.apache.http.wire - >> "[\n]"
11:55:40.346 [main] DEBUG org.apache.http.headers - >> POST /api/customers HTTP/1.1
11:55:40.347 [main] DEBUG org.apache.http.headers - >> Accept: */*
11:55:40.347 [main] DEBUG org.apache.http.headers - >> Content-Type: application/json; charset=UTF-8
11:55:40.348 [main] DEBUG org.apache.http.headers - >> Content-Length: 113
11:55:40.351 [main] DEBUG org.apache.http.headers - >> Host: localhost:8090
11:55:40.351 [main] DEBUG org.apache.http.headers - >> Connection: Keep-Alive
11:55:40.351 [main] DEBUG org.apache.http.headers - >> User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.2)
11:55:40.352 [main] DEBUG org.apache.http.headers - >> Accept-Encoding: gzip, deflate
11:55:40.353 [main] DEBUG org.apache.http.wire - << "[\n]"
11:55:40.353 [main] DEBUG org.apache.http.wire - << "id": 1, [\n]"
11:55:40.357 [main] DEBUG org.apache.http.wire - << "name": "steve", [\n]"
11:55:40.357 [main] DEBUG org.apache.http.wire - << "password": "steve123", [\n]"
11:55:40.358 [main] DEBUG org.apache.http.wire - << "email": "steve@webage.com" [\n]"
11:55:40.359 [main] DEBUG org.apache.http.wire - << "}"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "HTTP/1.1 201 [\n]"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "Location: http://localhost:8090/api/customers/1[\n]"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "Content-length: 0[\n]"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "Date: Sat, 16 Mar 2024 15:55:39 GMT[\n]"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "Keep-Alive: timeout=60[\n]"
11:55:40.400 [main] DEBUG org.apache.http.wire - << "Connection: keep-alive[\n]"
11:55:40.401 [main] DEBUG org.apache.http.wire - << "[\n]"
11:55:40.401 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Receiving response: HTTP/1.1 201
11:55:40.401 [main] DEBUG org.apache.http.headers - << HTTP/1.1 201
11:55:40.401 [main] DEBUG org.apache.http.headers - << Location: http://localhost:8090/api/customers/1
11:55:40.401 [main] DEBUG org.apache.http.headers - << Content-Length: 0
11:55:40.401 [main] DEBUG org.apache.http.headers - << Date: Sat, 16 Mar 2024 15:55:39 GMT
11:55:40.401 [main] DEBUG org.apache.http.headers - << Keep-Alive: timeout=60
11:55:40.401 [main] DEBUG org.apache.http.headers - << Connection: keep-alive
11:55:40.401 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Connection can be kept alive for 60000 MILLISECONDS

```

17. Let us test API PUT request to update an existing customer with id 1. In CustomerAPITest.java, uncomment the `@Test` annotation above the method **testPutRequest()**

```

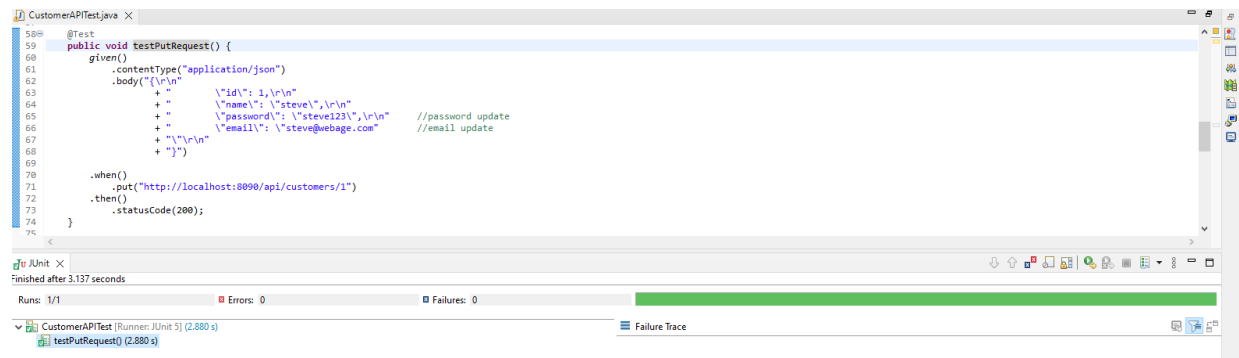
@Test
public void testPutRequest() {
    given()
        .contentType("application/json")
        .body("{\r\n"
            + "    \"id\": 1,\r\n"
            + "    \"name\": \"steve\", \r\n"
            + "    \"password\": \"steve123\", \r\n" //password update
            + "    \"email\": \"steve@webage.com\" //email update
            + "\"\r\n"
            + "}")

    .when()
    .put("http://localhost:8090/api/customers/1")
    .then()
    .statusCode(200);
}

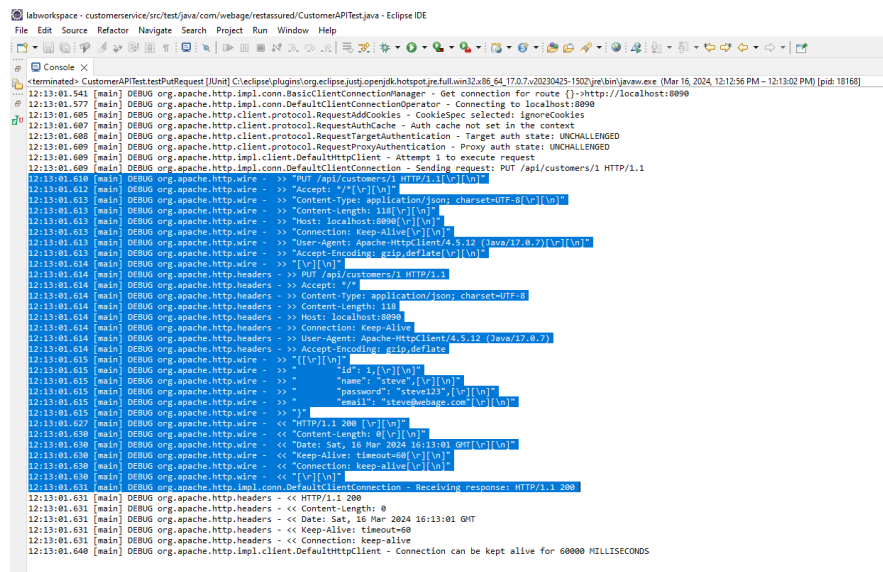
```

and save the file.

18. Run the JUnit Test. Review the test results in JUnit view.



19. Review the console view and messages.



20. Let us test API GET request for an existing customer with id 1. We want to display the response body to console. In CustomerAPITest.java, uncomment the @Test annotation above the method testRetrieveResponseBody()

```

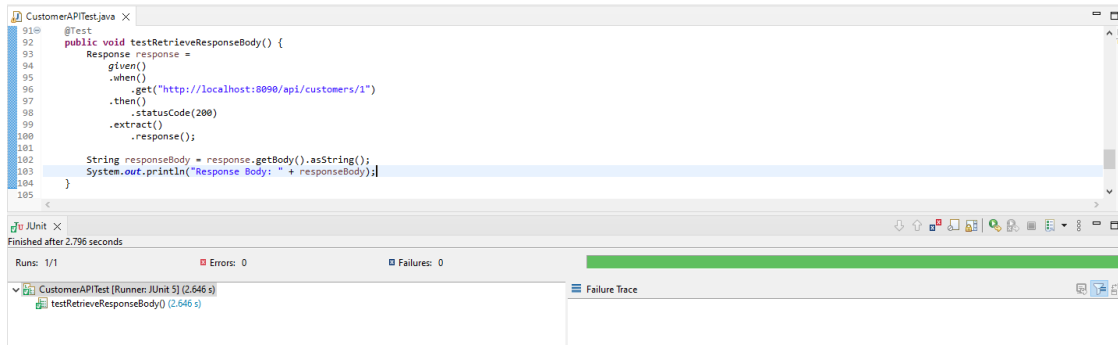
@Test
public void testRetrieveResponseBody() {
    Response response =
        given()
        .when()
        .get("http://localhost:8090/api/customers/1")
        .then()
        .statusCode(200)
        .extract()
        .response();

    String responseBody = response.getBody().asString();
    System.out.println("Response Body: " + responseBody);
}

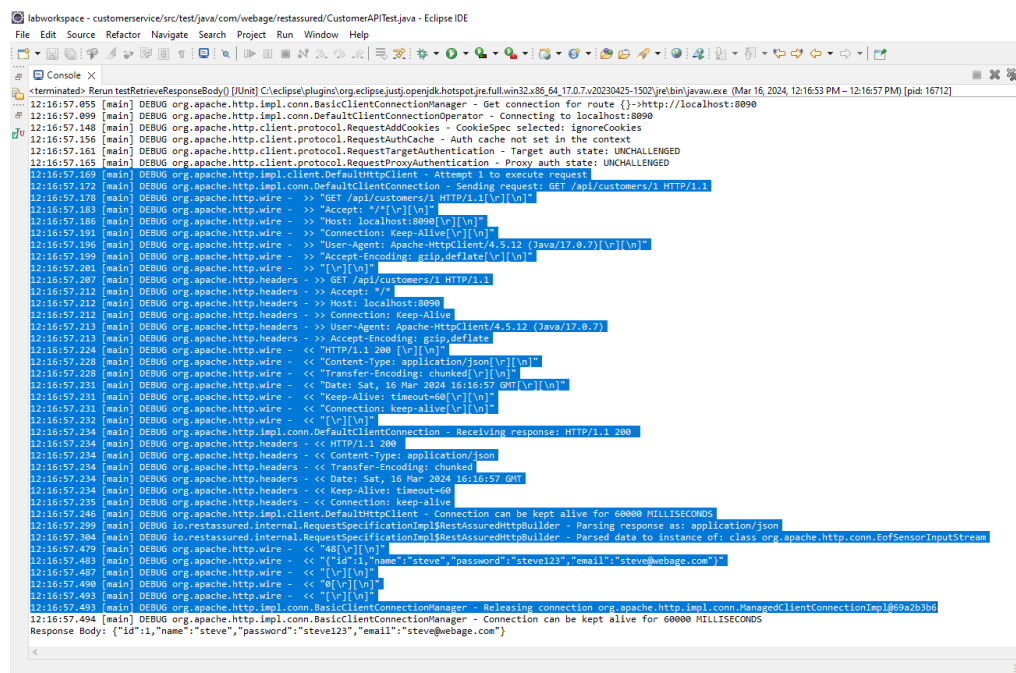
```

and save the file.

21. Run the JUnit test. What is the result?



22. Review the console log messages for this test. Can you get the response body data ?

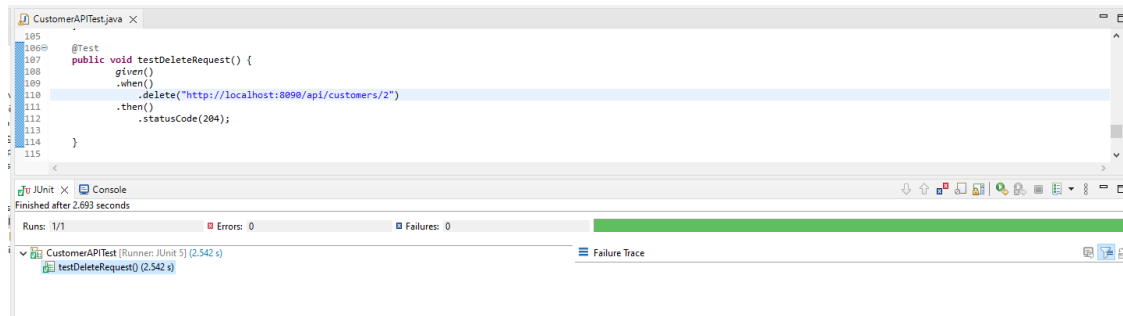


23. Let us test API DELETE request to delete an existing customer with id 2. In CustomerAPITest.java, uncomment the `@Test` annotation above the method `testDeleteRequest()`

```
@Test
public void testDeleteRequest() {
    given()
    .when()
    .delete("http://localhost:8090/api/customers/2")
    .then()
    .statusCode(204);
}
```

and save the file.

24. Run the test and view the results.



25. Review the console log messages.

```
labworkspace - customerservice/src/test/java/com/webpage/restassured/CustomerAPITest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

JUnit Console
<terminated> Rerun testDeleteRequest() [JUnit] C:\eclipse\plugins\org.eclipse.jdt.launcher\org.eclipse.jdt.launcher.exe (Mar 16, 2024, 12:26:48 PM - 12:26:55 PM) [pid: 10508]
12:26:55.095 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Get connection for route {}->http://localhost:8090
12:26:55.128 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
12:26:55.157 [main] DEBUG org.apache.http.client.protocol.RequestAddCookies - CookieSpec selected: ignoreCookies
12:26:55.161 [main] DEBUG org.apache.http.client.protocol.RequestAuthCache - Auth cache not set in the context
12:26:55.162 [main] DEBUG org.apache.http.client.protocol.RequestTargetAuthentication - Target auth state: UNCHALLENGED
12:26:55.164 [main] DEBUG org.apache.http.client.protocol.RequestProxyAuthentication - Proxy auth state: UNCHALLENGED
12:26:55.166 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Attempt 1 to execute request
12:26:55.168 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Sending request: DELETE /api/customers/2 HTTP/1.1
12:26:55.171 [main] DEBUG org.apache.http.wire - >> "DELETE /api/customers/2 HTTP/1.1[\r\n]"
12:26:55.173 [main] DEBUG org.apache.http.wire - >> "Accept: */*[\r\n]"
12:26:55.173 [main] DEBUG org.apache.http.wire - >> "Host: localhost:8090[\r\n]"
12:26:55.174 [main] DEBUG org.apache.http.wire - >> "Connection: Keep-Alive[\r\n]"
12:26:55.174 [main] DEBUG org.apache.http.wire - >> "User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.7)[\r\n]"
12:26:55.174 [main] DEBUG org.apache.http.wire - >> "Accept-Encoding: gzip, deflate[\r\n]"
12:26:55.174 [main] DEBUG org.apache.http.wire - >> "[\r\n]"
12:26:55.174 [main] DEBUG org.apache.http.headers - >> DELETE /api/customers/2 HTTP/1.1
12:26:55.174 [main] DEBUG org.apache.http.headers - >> Accept: */*
12:26:55.174 [main] DEBUG org.apache.http.headers - >> Host: localhost:8090
12:26:55.174 [main] DEBUG org.apache.http.headers - >> Connection: Keep-Alive
12:26:55.175 [main] DEBUG org.apache.http.headers - >> User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.7)
12:26:55.175 [main] DEBUG org.apache.http.headers - >> Accept-Encoding: gzip, deflate
12:26:55.192 [main] DEBUG org.apache.http.wire - << "HTTP/1.1 204 [\r\n]"
12:26:55.195 [main] DEBUG org.apache.http.wire - << "Date: Sat, 16 Mar 2024 16:26:55 GMT[\r\n]"
12:26:55.195 [main] DEBUG org.apache.http.wire - << "Keep-Alive: timeout=60[\r\n]"
12:26:55.195 [main] DEBUG org.apache.http.wire - << "Connection: keep-alive[\r\n]"
12:26:55.195 [main] DEBUG org.apache.http.wire - << "[\r\n]"
12:26:55.197 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Receiving response: HTTP/1.1 204
12:26:55.197 [main] DEBUG org.apache.http.headers - << HTTP/1.1 204
12:26:55.197 [main] DEBUG org.apache.http.headers - << Date: Sat, 16 Mar 2024 16:26:55 GMT
12:26:55.197 [main] DEBUG org.apache.http.headers - << Keep-Alive: timeout=60
12:26:55.197 [main] DEBUG org.apache.http.headers - << Connection: keep-alive
12:26:55.210 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Connection can be kept alive for 60000 MILLISECONDS
12:26:55.212 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Releasing connection org.apache.http.impl.conn.ManagedClientConnectionImpl@8b91314
12:26:55.212 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Connection can be kept alive for 60000 MILLISECONDS
```

26. Try to run the testDeleteRequest() test again. What will happen if you try to delete a customer that no longer exist in the database?

```

labworkspace - customerservice/src/test/java/com/webage/restassured/CustomerAPITest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

JUnit Console
Finished after 3.198 seconds

Runs: 1/1 Errors: 1 Failures: 0

CustomerAPITest (Runner: JUnit 5) (3.046 s)
  testDeleteRequest() (3.046 s)

Failure Trace
  groovy.lang.GroovyRuntimeException: could not access constructor: private java.lang.AssertionError(java.lang.String) with arguments: [1 expected status code <204> but was <500>]
  reason: java.lang.IllegalAccessException: class org.codehaus.groovy.reflection.CachedConstructor cannot access a member of class java.lang.AssertionError
  at org.codehaus.groovy.reflection.CachedConstructor.createException(CachedConstructor.java:100)
  at org.codehaus.groovy.reflection.CachedConstructor.invoke(CachedConstructor.java:86)
  at org.codehaus.groovy.reflection.CachedConstructor.doConstructorInvoke(CachedConstructor.java:74)
  at org.codehaus.groovy.runtime.callsite.ConstructorSite$ConstructorSiteNoUnwrap.callConstructor(ConstructorSite.java:84)
  at org.codehaus.groovy.runtime.callsite.CallSiteArray.defaultCallConstructor(CallSiteArray.java:59)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callConstructor(AbstractCallSite.java:237)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callConstructor(AbstractCallSite.java:249)
  at io.restassured.internal.ResponseSpecificationImpl$HamcrestAssertionClosure.validate(ResponseSpecificationImpl.groovy:494)
  at io.restassured.internal.ResponseSpecificationImpl$HamcrestAssertionClosure.validate$1.call(Unknown Source)
  at org.codehaus.groovy.runtime.callsite.CallSiteArray.defaultCall(CallSiteArray.java:47)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.call(AbstractCallSite.java:115)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.call(AbstractCallSite.java:127)
  at io.restassured.internal.ResponseSpecificationImpl.validateResponseIfRequired(ResponseSpecificationImpl.groovy:656)
  at org.codehaus.groovy.runtime.callsite.PlainObjectMetaMethodSite.doInvoke(PlainObjectMetaMethodSite.java:43)
  at org.codehaus.groovy.runtime.callsite.PogoMetaMethodSite$PogoCachedMethodSiteNoUnwrapNoCoerce.invoke(PogoMetaMethodSite.java:58)
  at org.codehaus.groovy.runtime.callsite.PogoMetaMethodSite$PogoCachedMethodSiteNoUnwrapNoCoerce.invoke(PogoMetaMethodSite.java:58)
  at org.codehaus.groovy.runtime.callsite.CallSiteArray.defaultCallCurrent(CallSiteArray.java:51)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callCurrent(AbstractCallSite.java:156)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callCurrent(AbstractCallSite.java:168)
  at io.restassured.internal.ResponseSpecificationImpl.statusCode(ResponseSpecificationImpl.groovy:125)
  at io.restassured.specification.ResponseSpecification$statusCode$1.call(Unknown Source)
  at org.codehaus.groovy.runtime.callsite.CallSiteArray.defaultCallCurrent(CallSiteArray.java:51)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callCurrent(AbstractCallSite.java:156)
  at org.codehaus.groovy.runtime.callsite.AbstractCallSite.callCurrent(AbstractCallSite.java:168)
  at io.restassured.internal.ResponseSpecificationImpl.statusCode(ResponseSpecificationImpl.groovy:133)
  at io.restassured.internal.ValidateableResponseOptionsImpl.statusCode(ValidateableResponseOptionsImpl.java:119)
  at com.webage.restassured.CustomerAPITest.testDeleteRequest(CustomerAPITest.java:112)
  at java.base/java.util.ArrayList.forEach(ArrayList.java:1511)
  at java.base/java.util.ArrayList.forEach(ArrayList.java:1511)

```

```

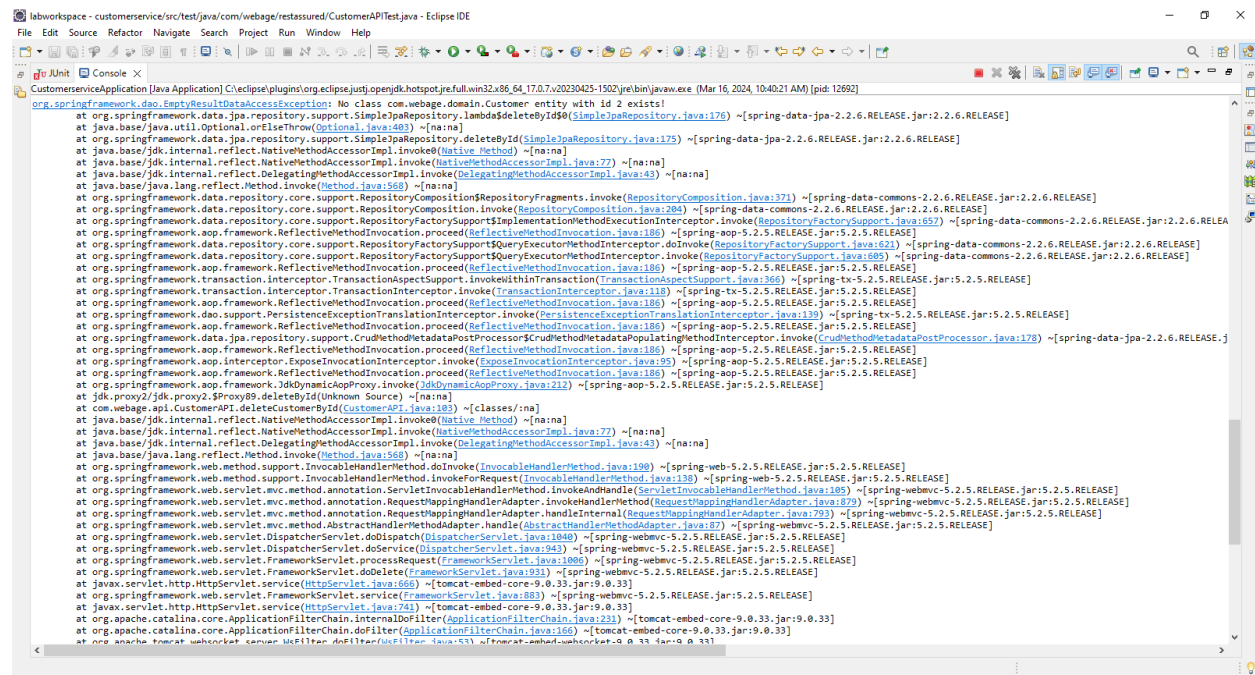
labworkspace - customerservice/src/test/java/com/webage/restassured/CustomerAPITest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

JUnit Console
<terminated> Run testDeleteRequest() [JUnit C:\eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.j7.0.7_20230425-1502\jre\bin\javaw.exe (Mar 16, 2024 12:29:35 PM - 12:29:40 PM) [pid: 15188]]

12:29:39.592 [main] DEBUG org.apache.http.impl.conn.BasicClientConnectionManager - Get connection for route ({}):http://localhost:8090
12:29:39.622 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnectionOperator - Connecting to localhost:8090
12:29:39.653 [main] DEBUG org.apache.http.client.protocol.RequestAddCookies - CookieSpec selected: ignoreCookies
12:29:39.656 [main] DEBUG org.apache.http.client.protocol.RequestAuthCache - Auth cache not set in the context
12:29:39.657 [main] DEBUG org.apache.http.client.protocol.RequestTargetAuthentication - Target auth state: UNCHALLENGED
12:29:39.659 [main] DEBUG org.apache.http.client.protocol.RequestProxyAuthentication - Proxy auth state: UNCHALLENGED
12:29:39.661 [main] DEBUG org.apache.http.impl.client.DefaultHttpClient - Attempt 1 to execute request
12:29:39.663 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Sending request: DELETE /api/customers/2 HTTP/1.1
12:29:39.672 [main] DEBUG org.apache.http.wire - << "DELETE /api/customers/2 HTTP/1.1"
12:29:39.679 [main] DEBUG org.apache.http.wire - >> "Accept: */*"
12:29:39.681 [main] DEBUG org.apache.http.wire - >> "Host: localhost:8090"
12:29:39.681 [main] DEBUG org.apache.http.wire - >> "Connection: Keep-Alive"
12:29:39.683 [main] DEBUG org.apache.http.wire - >> "User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.2)"
12:29:39.684 [main] DEBUG org.apache.http.wire - >> "Accept-Encoding: gzip,deflate"
12:29:39.686 [main] DEBUG org.apache.http.wire - >> "[\r\n]"
12:29:39.688 [main] DEBUG org.apache.http.headers - >> DELETE /api/customers/2 HTTP/1.1
12:29:39.688 [main] DEBUG org.apache.http.headers - >> Accept: */*
12:29:39.688 [main] DEBUG org.apache.http.headers - >> Host: localhost:8090
12:29:39.688 [main] DEBUG org.apache.http.headers - >> Connection: Keep-Alive
12:29:39.688 [main] DEBUG org.apache.http.headers - >> User-Agent: Apache-HttpClient/4.5.12 (Java/17.0.2)
12:29:39.688 [main] DEBUG org.apache.http.headers - >> Accept-Encoding: gzip,deflate
12:29:39.723 [main] DEBUG org.apache.http.wire - << "HTTP/1.1 204"
12:29:39.725 [main] DEBUG org.apache.http.wire - << "Content-Type: application/json"
12:29:39.725 [main] DEBUG org.apache.http.wire - << "Transfer-Encoding: chunked"
12:29:39.725 [main] DEBUG org.apache.http.wire - << "Date: Sat, 16 Mar 2024 16:29:39 GMT"
12:29:39.725 [main] DEBUG org.apache.http.wire - << "Connection: close"
12:29:39.725 [main] DEBUG org.apache.http.wire - << "[\r\n]"
12:29:39.726 [main] DEBUG org.apache.http.impl.conn.DefaultClientConnection - Receiving response: HTTP/1.1 204
12:29:39.726 [main] DEBUG org.apache.http.headers - << HTTP/1.1 204
12:29:39.726 [main] DEBUG org.apache.http.headers - << Content-Type: application/json
12:29:39.726 [main] DEBUG org.apache.http.headers - << Transfer-Encoding: chunked
12:29:39.726 [main] DEBUG org.apache.http.headers - << Date: Sat, 16 Mar 2024 16:29:39 GMT
12:29:39.726 [main] DEBUG org.apache.http.headers - << Connection: close
12:29:39.894 [main] DEBUG io.restassured.internal.RequestSpecificationImpl$RestAssuredHttpBuilder - Parsing response as: application/json
12:29:39.895 [main] DEBUG io.restassured.internal.RequestSpecificationImpl$RestAssuredHttpBuilder - Parsed data to instance of: class org.apache.http.conn.EofSensorInputStream

```

Check the spring boot application console message about this customer.



27. Write your own tests and run the tests.