RESTful web services, java, Spring Boot, Spring MVC and JPA

## Section 25: H2 in memory Database

You can use this in memory database any time you are developing a new features or during that time you test your project. The good thing is that with an in memory database it is absolutely safe to play and experiment with your data and your code.

You can insert data into your in memory database and deleted from your database as many times as you like and it is not going to affect your team members and it is not going to have the data that you have when you are standalone MySql server. All the test data that you insert into your memory database stays in memory and it is cleared out once you stop the application and the next time you start to use the data in your database tables is cleared and you start fresh.

H2 database is java sql database which is very lightweight and it is very quick to integrate into Spring Boot project. It can be used as embedded in memory database or it can even be used in the server mode.

How to add H2 in memory database to our Spring Boot project (video 179)? We are going to add one additional dependency to pom.xml file and we will need to update our application properties file as well.

In pom.xml we need to add one dependency which can be found at the central Mavin repositories. And search for H2 database and the first result ‘H2 Database Engine’ and select that. The select the latest version…

<!-- https://mvnrepository.com/artifact/com.h2database/h2 -->

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<version>1.4.200</version>

<scope>runtime</scope>

</dependency>

Remove the version tag. Update scope tag from ‘test’ to ‘runtime’. Then save it.

The next step is to update our application properties file. Lets assume that you have created a couple of web service points but your REST API needs to support a few more where you need to develop a new feature for application and you need to test your application and you don’t want to create many new records in a standalone MySQL database server and populated with lots of data like test user 1, 2 and then deleting those test records, so what you can do you can start your Spring Boot project on a different port and to do that you can configure your spring boot project in application properties to use a different port instead of 8080, and you can do that with:

server.port = 8888

and this will enable us to startup your project completely independently and have it drawn in parallel with your other project on port 8080.

And now your application is running on a separate port you can make it work with the H2 in memory database so that the actual MySQL database server in your office is not being used and has not been filled with lots of test data. So to enable H2 database and to enable the database console that you can use to preview your database tables and run some queries, you need to enable Spring H2 console and you do that by:

spring.h2..console.enabled=true

//spring.h2.console.path=/h2-console

Although the last line is not a requirement because this instance of H2 databasesare running in memory on your computer and all the data that gets recorded into your database or gets modified in your im-memory database will be erased and lost once your application is shut down or restarted

Because our spring boot project is used in Spring security and the url so far, web service API needs user authentication for us to be able to access h2 database console via the browser, we need to make a couple of changes to our web security configuration, in main project under:

com.mycompanyname.app.ws.security package class WebSecurity

We have to update the code inside of ‘configure’ function.Just like signup url and verification email url we will need to made h2 console url path accessible and not require a user authentication using JSON web token that we generate.

And there is one more change that we need to do and this is to disable frame Options Http header:

http.headers().frameOptions().disable();

here we are disabling the frame options HTTP header which prevents the browser to load your page in HTML tags like iframe or frame for example and this is for security reasons.

To make the H2 database console to open up in browser window we will need to disable this option.

Since our project is REST API and there is not really a web site which we can load in the iframe, t is ok to have it although we are hiding it only for the purpose of using H2 database and console for testing purposes.

So Now we have added support for H2 in-memory database to our project, and we have commented out the connection details to MySQL database. So now if we run our application instead of connecting to MySQL it will connect to H2 in-memory database and that will run completely in memory, meaning that all the data that we put in there all the data we added there will be kept in memory and once our application is shut down or restarted that data will be lost.

We will start up our Spring project, application started, now go open browser window and in the browsr window we will start with:

<http://localhost:8888/mobile-app-ws/h2-console>

When we hit the enter we should have the sign in page and we can sign in to H2 console. Make sure our JDBC URL is set to:

jdbc:h2:memLtestdb

for the sa user and the password field is empty.

If we don’t want to use the sa, we can uncomment the

spring.datasource.username=root

spring.datasource.password=Majeedsh100!

And re-run the app and use the above user name and password.