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Part #3: JPA Hibernate Spring Maven Eclipse Tutorial – testing data access with HSQLDB

Posted on [May 28, 2015](#) by [Arulkumaran Kumaraswamipillai](#)

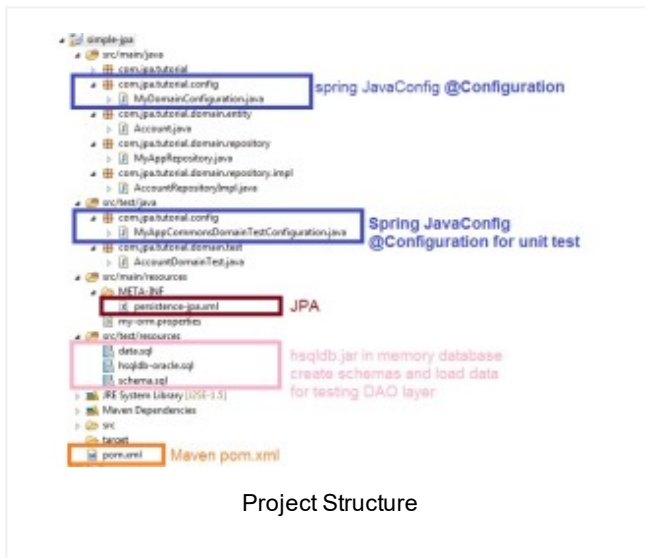
This tutorial focuses on testing data access logic with spring-test and hsqldb. This extends [Part #2: JPA Hibernate Spring Maven Eclipse Tutorial – JPA configs and repository](#)

Testing the mapping of entities managed by hibernate and wiring up of JPA, Hibernate, etc via Spring. Schema and mock data similar to real data are created and tested for Create, Read, Update, and Delete (aka **CRUD**) operations.

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It is not easy to test data access layer. The problem with using a 'real' database for unit testing is the setup, take down, and isolation of the tests. This has been covered in a beginner like tutorial [Unit Testing Data Access Logic in Java](#).

Step 9: For unit testing we need 3 dependencies in the **pom.xml** file. The complete pom.xml file is shown in Part #1.

```

1 <dependency>
2     <groupId>junit</groupId>
3     <artifactId>junit</artifactId>
4     <version>4.11</version>
5     <scope>test</scope>
6 </dependency>
7
8 <dependency>
9     <groupId>org.springframework</groupId>
10    <artifactId>spring-test</artifactId>
11    <version> 3.2.13.RELEASE</version>
12 </dependency>
13
14 <dependency>
15     <groupId> org.hsqldb</groupId>
16     <artifactId>hsqldb</artifactId>
17     <version>2.3.2</version>
18 </dependency>

```

Step 10: create data set up files that are executed when the in memory hsqldb starts up. You need to set up the schema and data. Folder: **src/test/resources**

schema.sql.

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```

1  -----
2  -- Drop the current schema
3  -----
4  DROP TABLE IF EXISTS account;
5
6  -----
7  -- Create new schema
8  -----
9  CREATE TABLE account(
10     account_id          NUMERIC(10,0)    NOT NUL
11     account_code        VARCHAR(32)      NOT NULL,
12     CONSTRAINT account_pk PRIMARY KEY (account_id)
13 );
14

```

data.sql.

```

1  -----
2  -- Truncate Tables
3  -----
4  TRUNCATE TABLE account;
5
6  -----
7  -- Populate Schema
8  -----
9  INSERT INTO account
10     (account_id, account_code)
11     VALUES
12     (1, '456');
13
14 COMMIT;

```

hsqldb-oracle.sql

```

1  SET DATABASE SQL SYNTAX ORA TRUE

```

Step 11: The JavaConfig to use HSQLDB by overriding datasource set up in **MyDomainConfiguration** (shown in Part #2), which connects to the actual database via JNDI lookup. Folder: **src/test/java**.

```

1  package com.jpa.tutorial.config;
2
3  import javax.sql.DataSource;
4
5  import org.springframework.context.annotation.Bean;
6  import org.springframework.context.annotation.Configuration;
7  import org.springframework.context.annotation.Import;
8  import org.springframework.jdbc.datasource.embedded.EmbeddedDatabase;
9  import org.springframework.jdbc.datasource.embedded.EmbeddedDatabaseBuilder;
10
11 @Configuration
12 @Import(MyDomainConfiguration.class)
13 public class MyAppCommonsDomainTestConfiguration

```

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```

14
15     @Bean
16     public DataSource dataSource() {
17         final EmbeddedDatabaseBuilder builder =
18             builder.setType(EmbeddedDatabaseType.HSQ
19             builder.addScript("classpath:hsqldb-orac
20             builder.addDefaultScripts();//adds schem
21             return builder.build();
22     }
23
24 }
25

```

[Written Test JEE \(1\)](#)

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Step 12: Finally, the unit test class itself. Folder:

src/test/java.

```

1  package com.jpa.tutorial.domain.test;
2
3  import java.util.List;
4  import javax.inject.Inject;
5
6  import org.junit.Assert;
7  import org.junit.Test;
8  import org.junit.runner.RunWith;
9  import org.springframework.test.context.ContextC
10 import org.springframework.test.context.junit4.S
11 import org.springframework.transaction.annotatio
12
13 import com.jpa.tutorial.config.MyAppCommonsDomai
14 import com.jpa.tutorial.domain.entity.Account;
15 import com.jpa.tutorial.domain.repository.MyAppR
16
17
18 @Transactional(readOnly = false)
19 @ContextConfiguration(classes = MyAppCommonsDoma
20 @RunWith(SpringJUnit4ClassRunner.class)
21 public class AccountDomainTest {
22
23     @Inject
24     private MyAppRepository<Account> accountRepo
25
26     private Account account;
27
28
29     @Test
30     public void testCreate() throws Exception {
31         account = new Account();
32         account.setAccountCode("123");
33         accountRepository.create(account);
34         accountRepository.flush();
35
36         List<Account> findAll = accountRepository
37         //account_id=123 was added above & accou
38         Assert.assertEquals(2, findAll.size());
39     }
40
41
42
43     @Test
44     public void testFind() throws Exception {
45         //this account was created via data.sql
46         Account find = accountRepository.find(1)

```

```
47     Assert.assertEquals("456", find.getAccou  
48     }  
49  
50 }  
51
```

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