

To-Do Date: Nov 19 at 11:59pm

Module 11: Introduction to Spring

Topic Preparation

Here is a list of materials you will need to read in preparation for the next lab period. Read everything carefully to make sure you understand the concepts presented here. There will be a reading quiz on this material.



Reading

Access *Spring in Action, 4th Edition* by Craig Walls through the [BYU Library](https://lib.byu.edu/) [\(https://lib.byu.edu/\)](https://lib.byu.edu/):

- Copy and paste the exact book title into the library search bar: *Spring in Action, 4th Edition*
- It should be the first option in the search results. Be sure it's the 4th edition.
- Click "oreilly.com, Safari Books Online" under the title of the book.
- On the O'Reilly site at 'Select Your Institution', select "Not listed? Click Here."
- Enter your BYU email address.

Read the following sections:

- 1.0 - 1.2 (you can skim section 1.1.3)
- 2.0-2.2.1 and 2.4

Import a Maven Spring Project

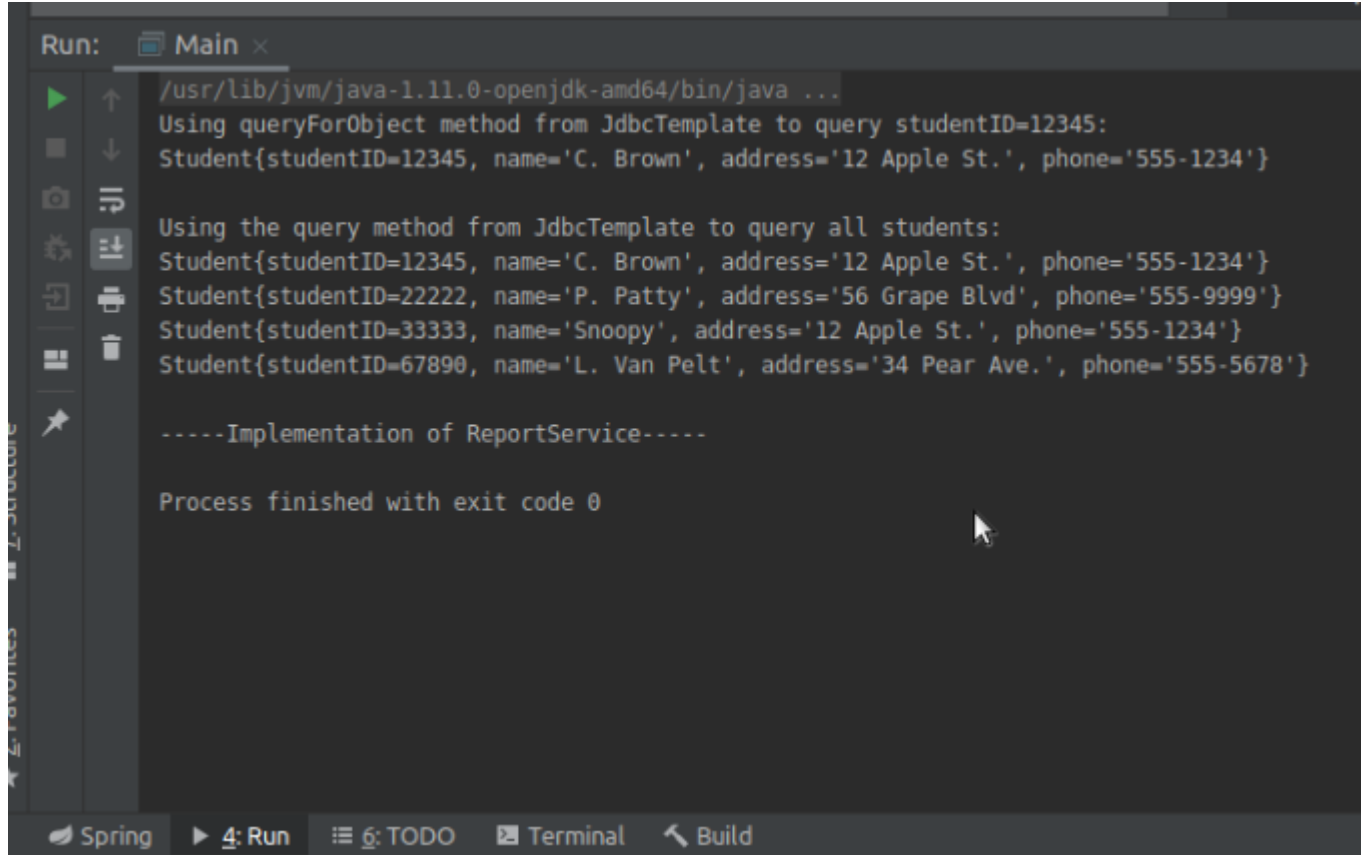
1. Download the [SpringProjectTutorial.zip](https://drive.google.com/file/d/1Ft9pJSMBUfb1jcnsHMrqCHV-f7a9JGSI/view?usp=sharing) [\(https://drive.google.com/file/d/1Ft9pJSMBUfb1jcnsHMrqCHV-f7a9JGSI/view?usp=sharing\)](https://drive.google.com/file/d/1Ft9pJSMBUfb1jcnsHMrqCHV-f7a9JGSI/view?usp=sharing) project files and unzip them to a working directory.
2. Open IntelliJ and select the option to import a project from existing sources (If you see a welcome screen, just click on "Import Project"). A pop up window to select what project to import will show. Navigate to the folder where you unzipped the project files and select the pom.xml file.
3. All the files in the project should be imported. The program will not run yet since you need to include the required dependencies in the Maven pom.xml file. We will be using Spring 5 for this tutorial. Add the dependencies for the latest production version of **spring-context**, **spring-jdbc**, **spring-test**, **sqlite-jdbc**, **mockito-core**, and **junit-jupiter-api** to the Maven pom.xml file.

Refer to the dependency management tools tutorial if you need help with this step. Look at the website here for the latest versions of these tools:

1. [Group: SpringFramework](https://mvnrepository.com/artifact/org.springframework/) [\(https://mvnrepository.com/artifact/org.springframework/\)](https://mvnrepository.com/artifact/org.springframework/)

(spring-context, spring-jdbc, and spring-test are found here)

2. [Spring Context](https://mvnrepository.com/artifact/org.springframework/spring-context) [_ \(https://mvnrepository.com/artifact/org.springframework/spring-context\)](https://mvnrepository.com/artifact/org.springframework/spring-context)
 3. [Spring TestContext Framework](https://mvnrepository.com/artifact/org.springframework/spring-test) [_ \(https://mvnrepository.com/artifact/org.springframework/spring-test\)](https://mvnrepository.com/artifact/org.springframework/spring-test)
 4. [Spring JDBC](https://mvnrepository.com/artifact/org.springframework/spring-jdbc) [_ \(https://mvnrepository.com/artifact/org.springframework/spring-jdbc\)](https://mvnrepository.com/artifact/org.springframework/spring-jdbc)
 5. [SQLite JDBC](https://mvnrepository.com/artifact/org.xerial/sqlite-jdbc) [_ \(https://mvnrepository.com/artifact/org.xerial/sqlite-jdbc\)](https://mvnrepository.com/artifact/org.xerial/sqlite-jdbc)
 6. [Mockito Core](https://mvnrepository.com/artifact/org.mockito/mockito-core) [_ \(https://mvnrepository.com/artifact/org.mockito/mockito-core\)](https://mvnrepository.com/artifact/org.mockito/mockito-core)
 7. [JUnit Jupiter API](https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api) [_ \(https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api\)](https://mvnrepository.com/artifact/org.junit.jupiter/junit-jupiter-api)
4. Remember to enable Auto-Import of Maven dependencies. After all the dependencies are imported, you should not be getting any errors.
 5. Open the src/test/java folder to find the ReportServiceTest.java file. Run the ReportServiceTest. **All the tests should run, but fail.**
 6. Open the src/main/java folder to find the Main.java file. Run the main method. It should be able to output a query of a student and query of all students in the database. You should see this as the output:



```
Run: Main x
/usr/lib/jvm/java-1.11.0-openjdk-amd64/bin/java ...
Using queryForObject method from JdbcTemplate to query studentID=12345:
Student{studentID=12345, name='C. Brown', address='12 Apple St.', phone='555-1234'}

Using the query method from JdbcTemplate to query all students:
Student{studentID=12345, name='C. Brown', address='12 Apple St.', phone='555-1234'}
Student{studentID=22222, name='P. Patty', address='56 Grape Blvd', phone='555-9999'}
Student{studentID=33333, name='Snoopy', address='12 Apple St.', phone='555-1234'}
Student{studentID=67890, name='L. Van Pelt', address='34 Pear Ave.', phone='555-5678'}

-----Implementation of ReportService-----

Process finished with exit code 0
```


















Install DB Browser for SQLite

1. If not yet installed, install [DB Browser for SQLite](https://sqlitebrowser.org/) [_ \(https://sqlitebrowser.org/\)](https://sqlitebrowser.org/).
2. To do the tutorial, you must be able to look at what is in the database provided in the project's root folder. The database is named data.sqlite. Open DB Browser and click on "Open Database". A window will pop up. Navigate to the project's root folder and select data.sqlite.

Open it up and click on the “Browse Data” tab to view the contents of the database

What to Learn

- How Spring can simplify Java Development
- Dependency Injection: Use cases and benefits
- Elimination of boilerplate code with Spring
- How beans are wired by Spring using XML

 	  (https://byu.instructure.com/courses/11344/modules/items/1023179)
  	(https://byu.instructure.com/courses/11344/modules/items/1023180)
 	(https://byu.instructure.com/courses/11344/modules/items/1060506)
 	(https://byu.instructure.com/courses/11344/modules/items/1023182)
 	(https://byu.instructure.com/courses/11344/modules/items/1060505)
 	(https://byu.instructure.com/courses/11344/modules/items/1023184)
 	(https://byu.instructure.com/courses/11344/modules/items/1060523)