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Java

JPA Application Development & CRUD Operations

Objectives

- Data Management
  - Implement CRUD (Create, Read, Update, Delete) operations to manage data effectively.
  - Utilize JPA to map Java objects to database tables, simplifying data persistence and retrieval.
- User Interface Development
  - Design and develop a user-friendly interface using JavaFX, enabling seamless interaction with the application.
  - Implement features such as form input validation, error handling, and feedback mechanisms to enhance user experience.

Student Management System

Build Simple Student Management System

- Step 1. Create Project in IntelliJ
- Step 2. Setup Scene Builder
- Step 3. Build CRUD Application with Repository Pattern
- Step 4. Design GUI Application with JavaFX

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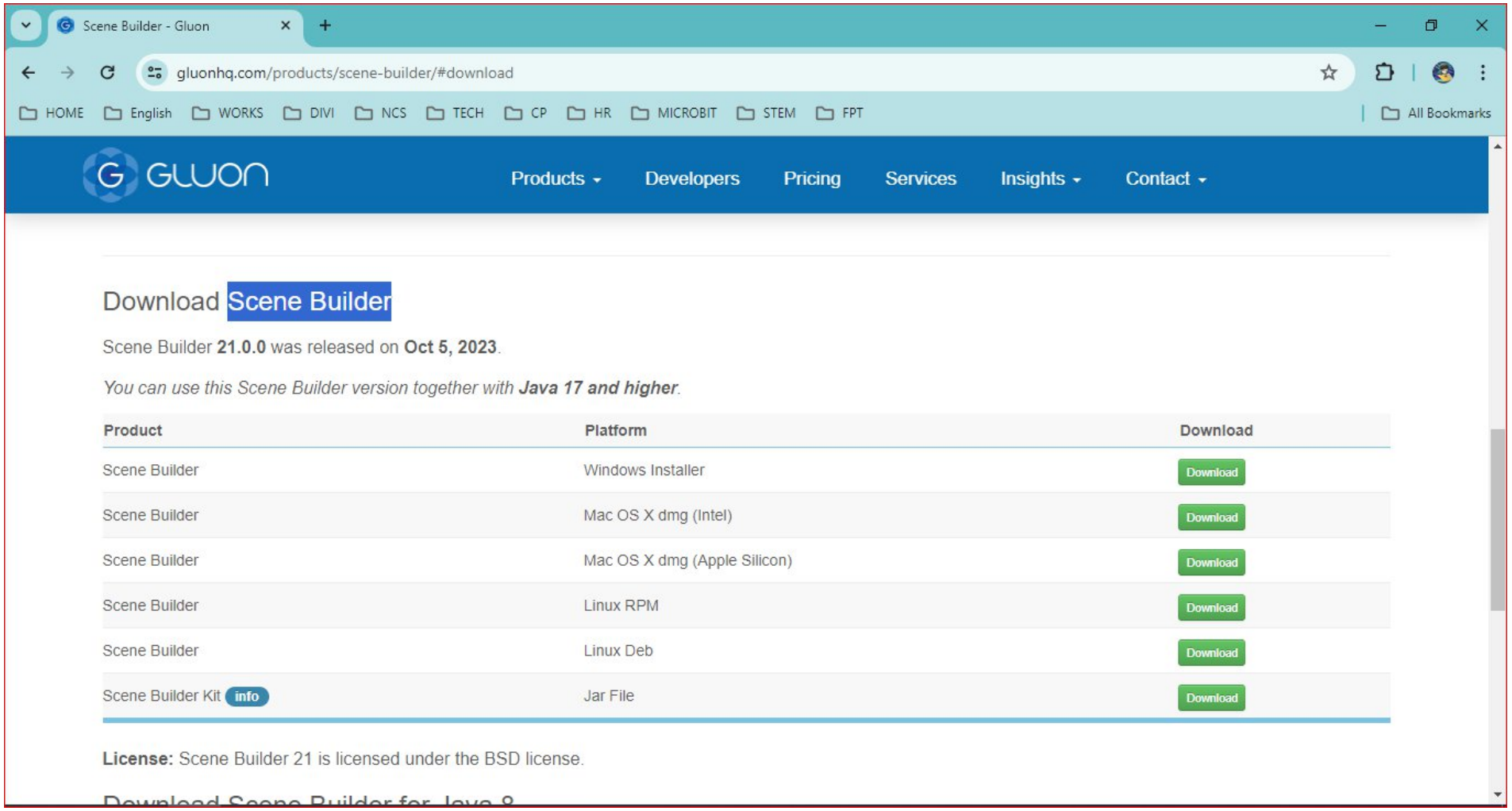
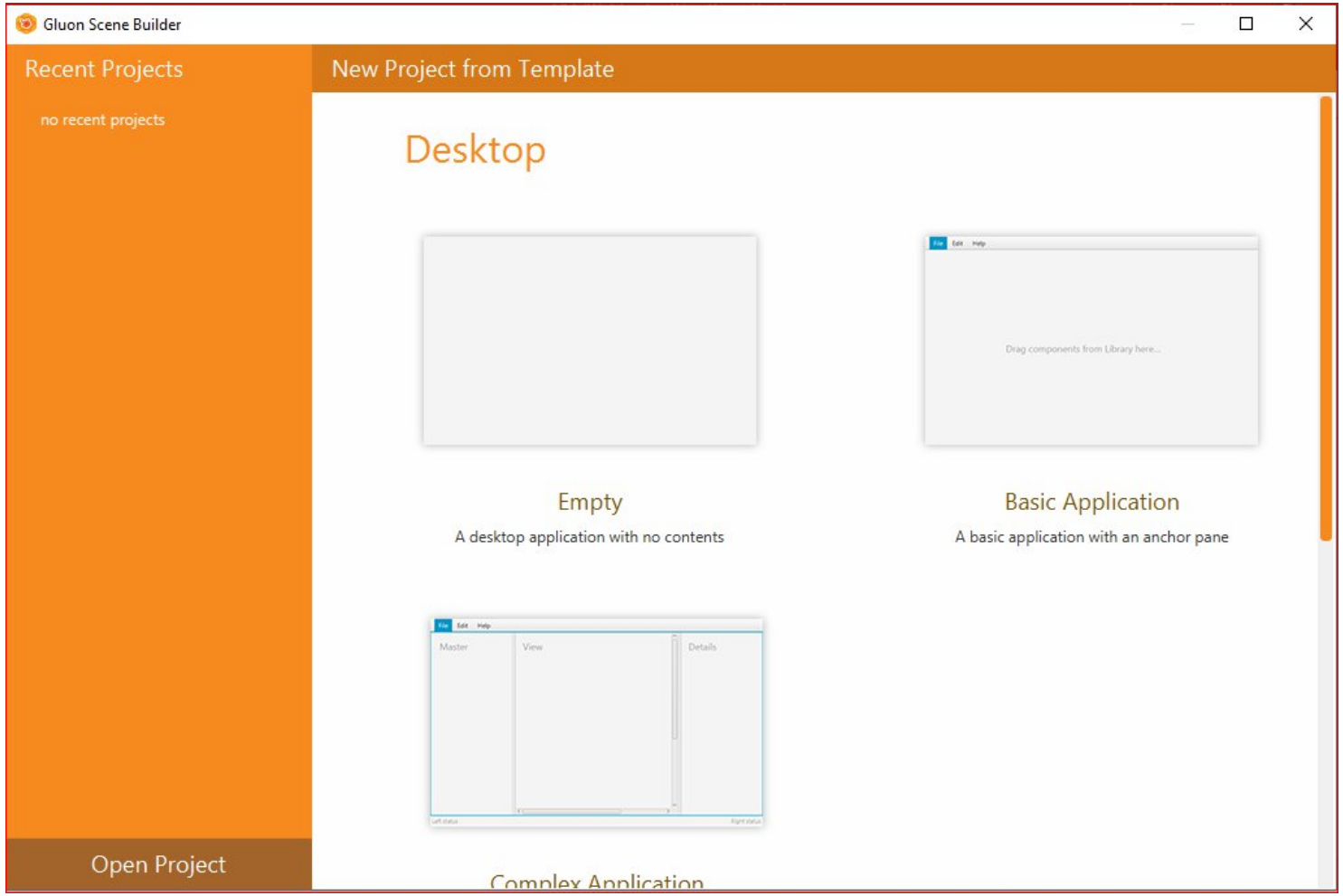
Java

Setup Scene Builder

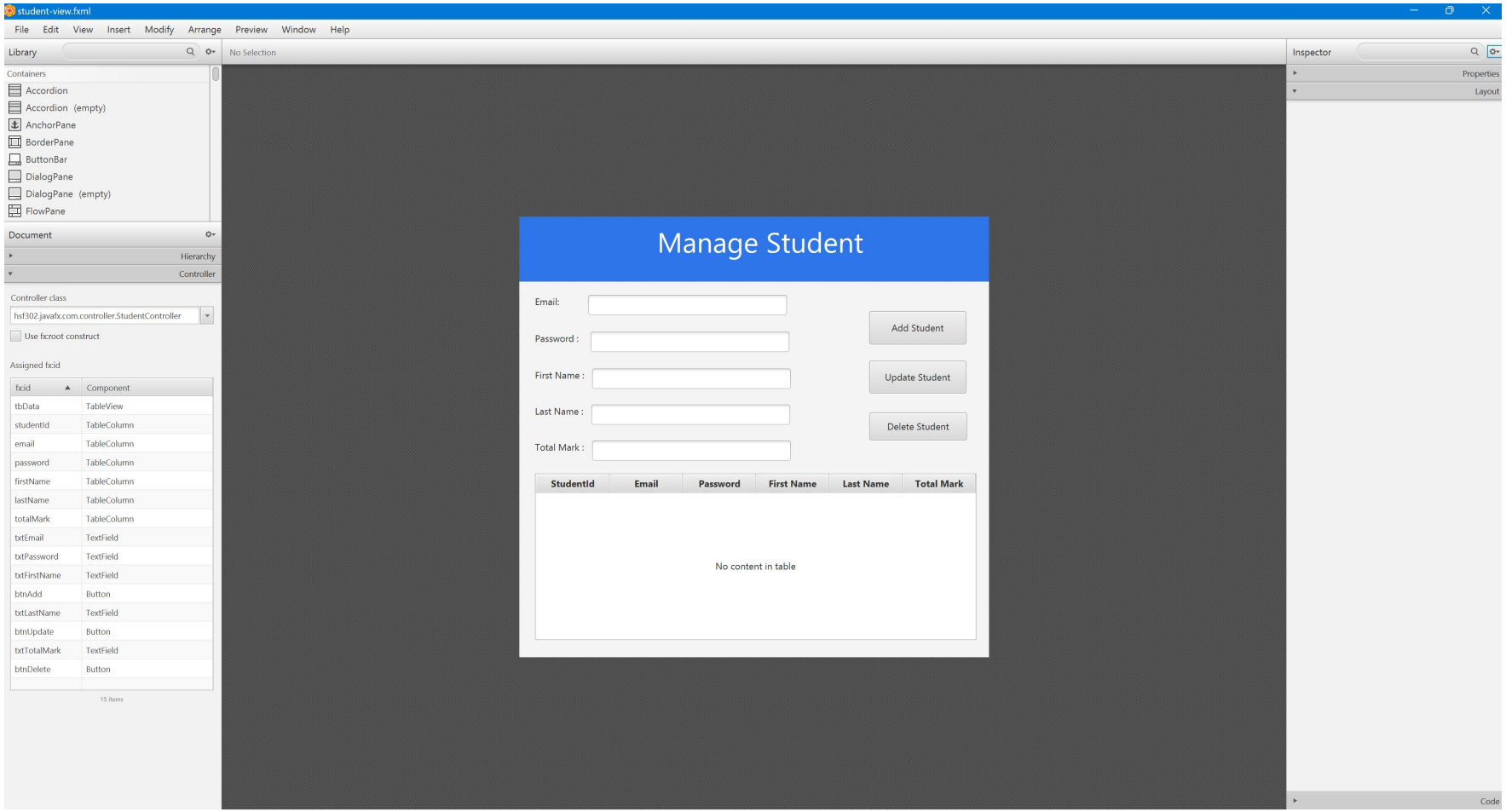
Go to website



2. Open Gluon Scene Builder



Open JavaFX File



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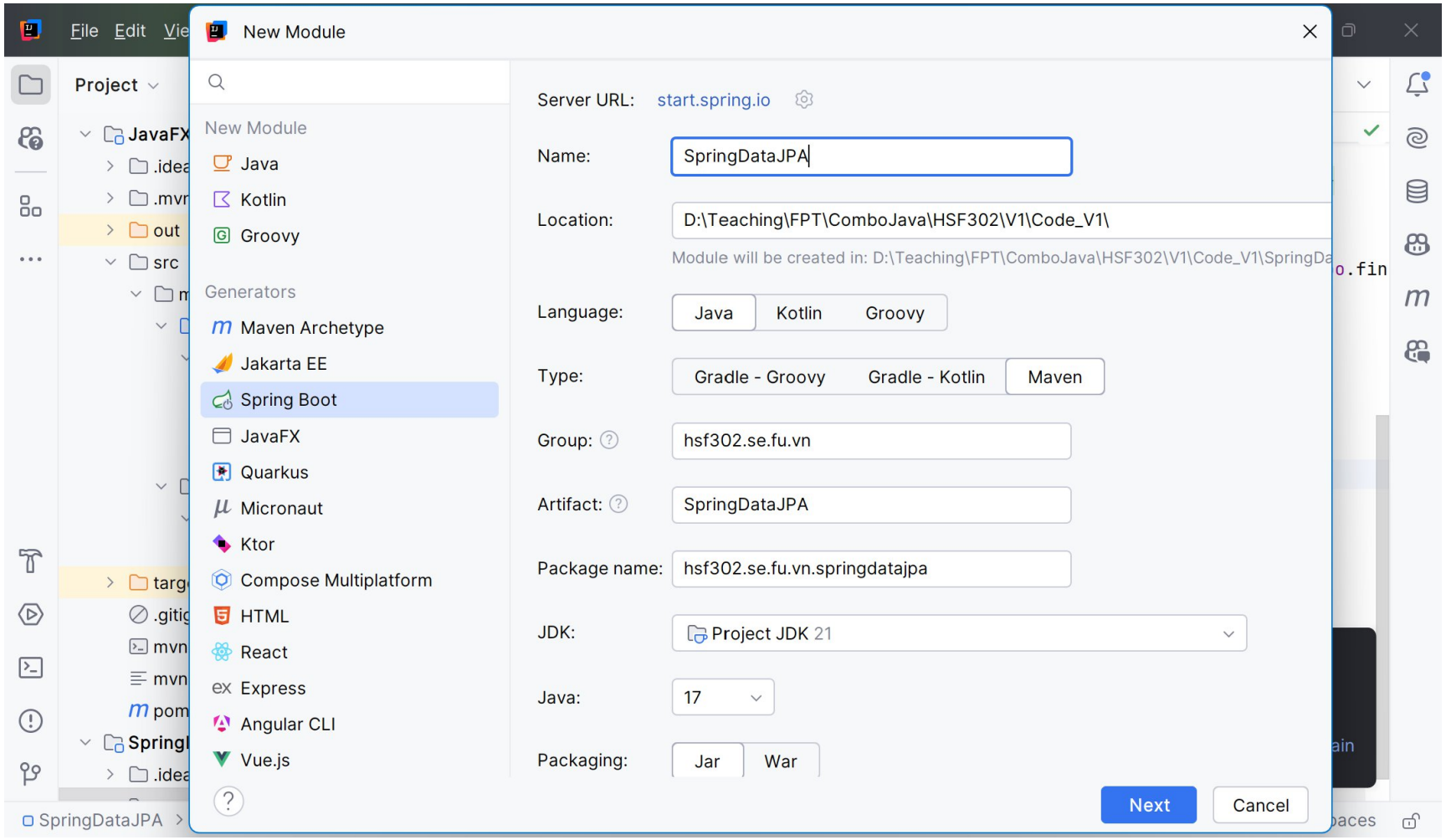
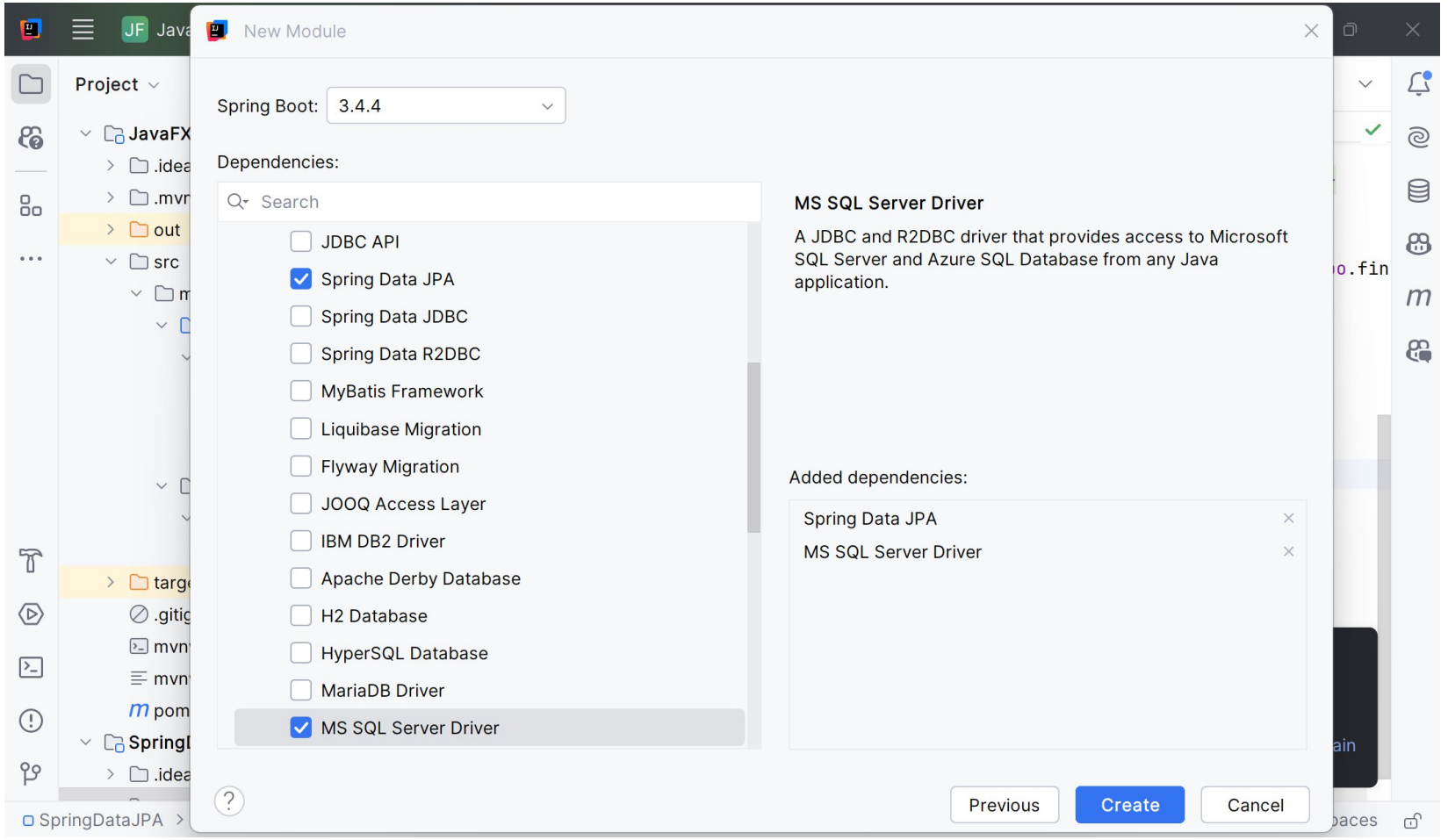
Java

Build CRUD Application with Repository Pattern

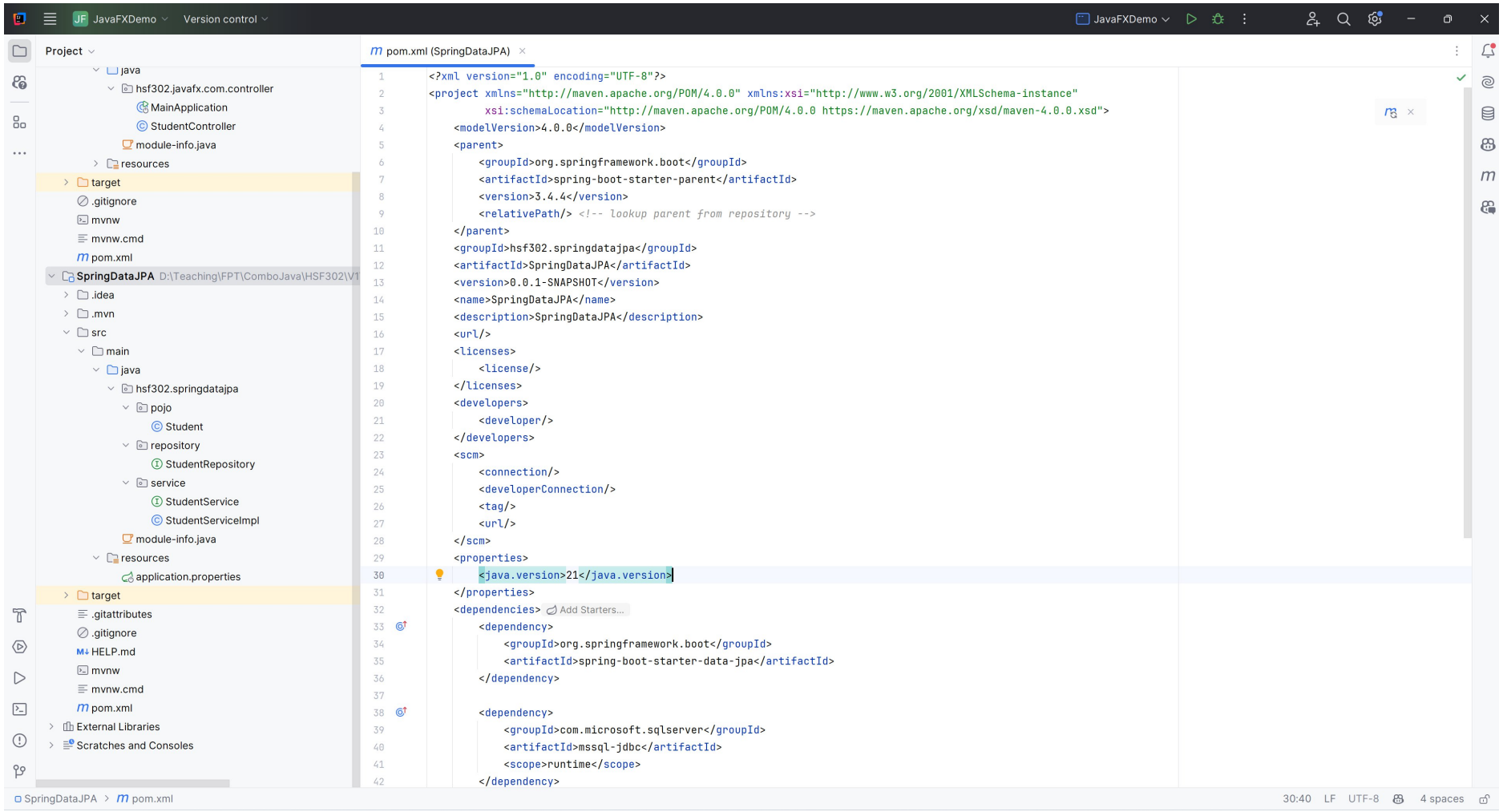
File -> New Module



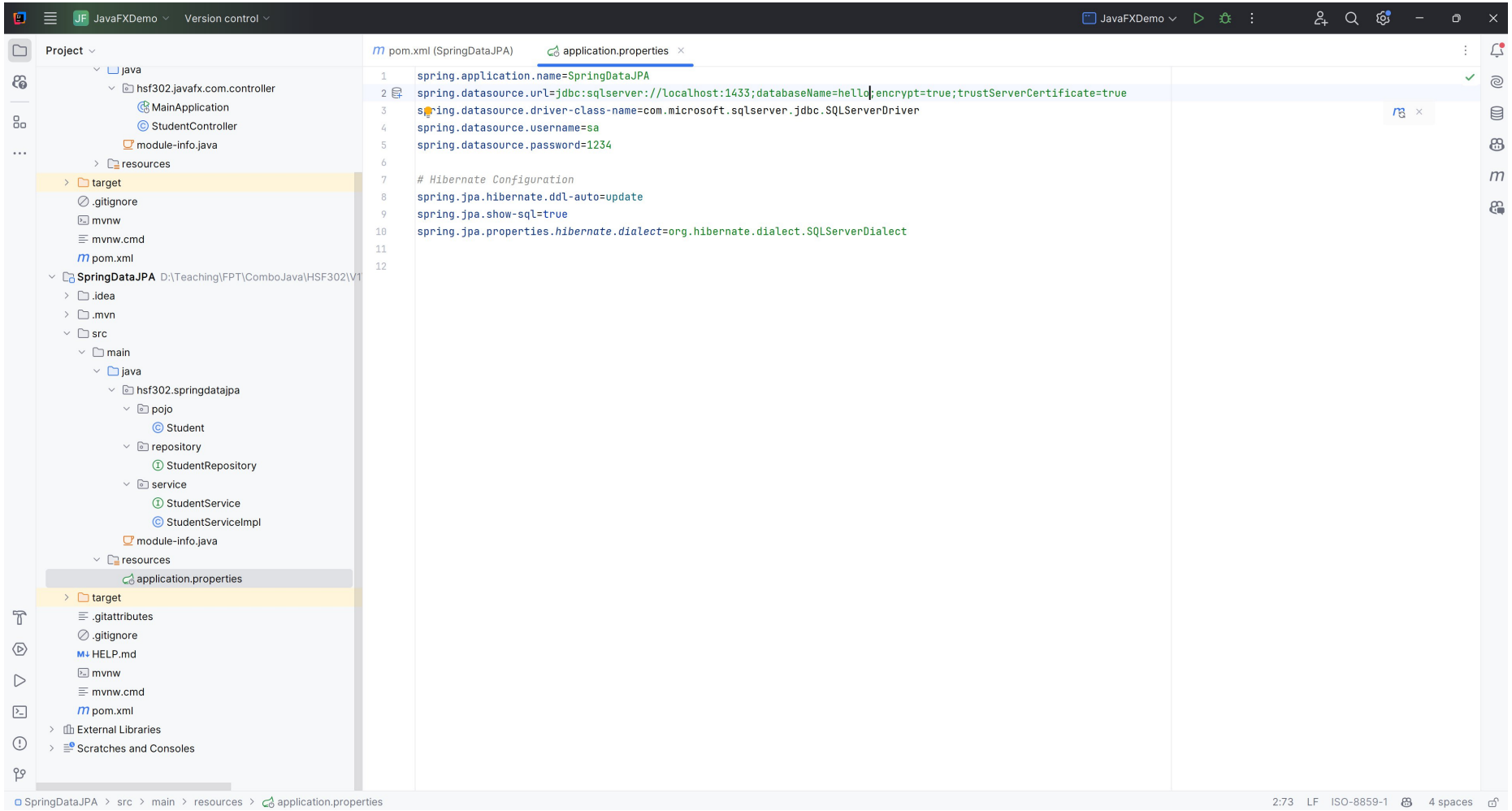
File -> New Module



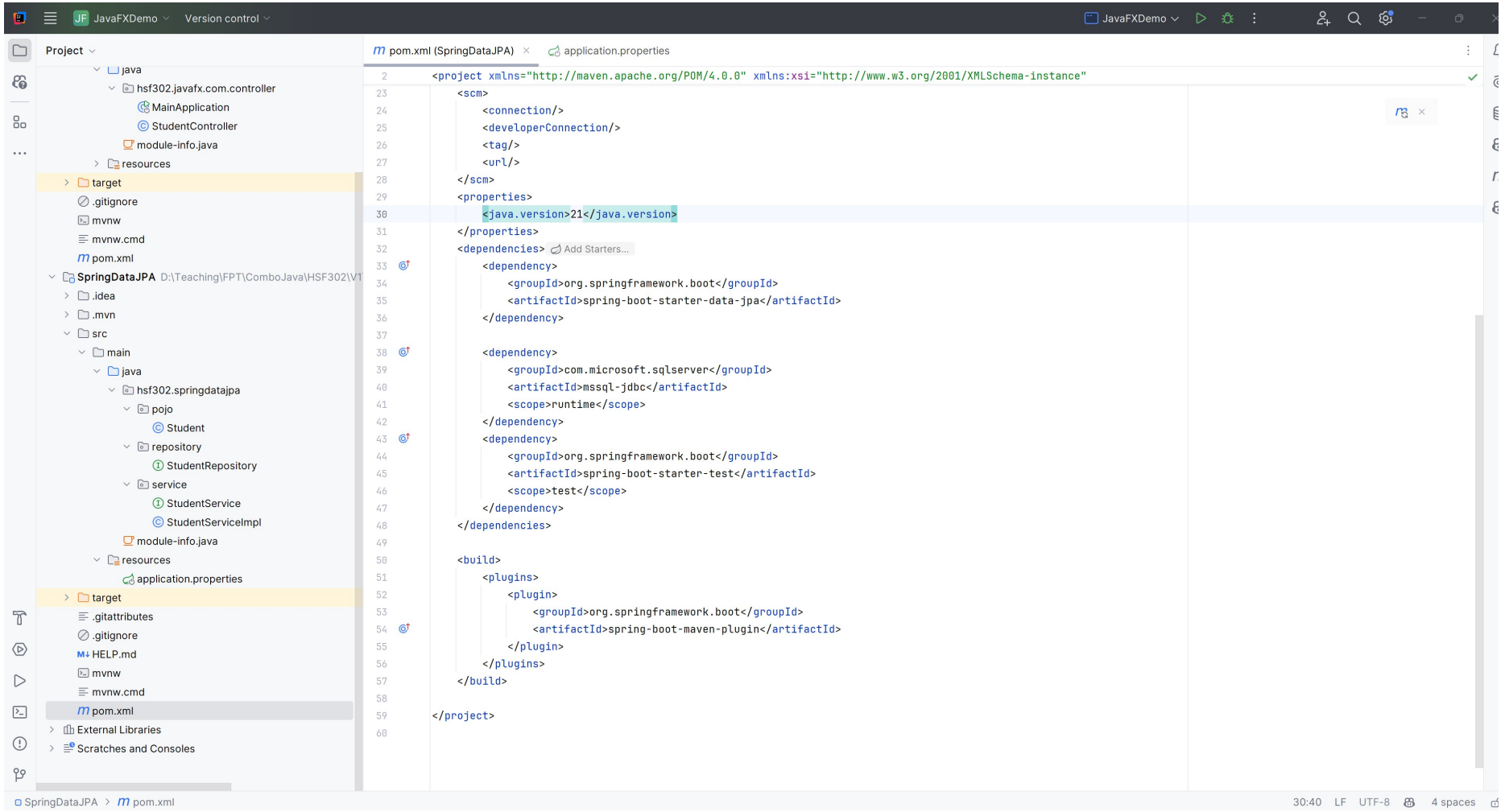
Create the Structure



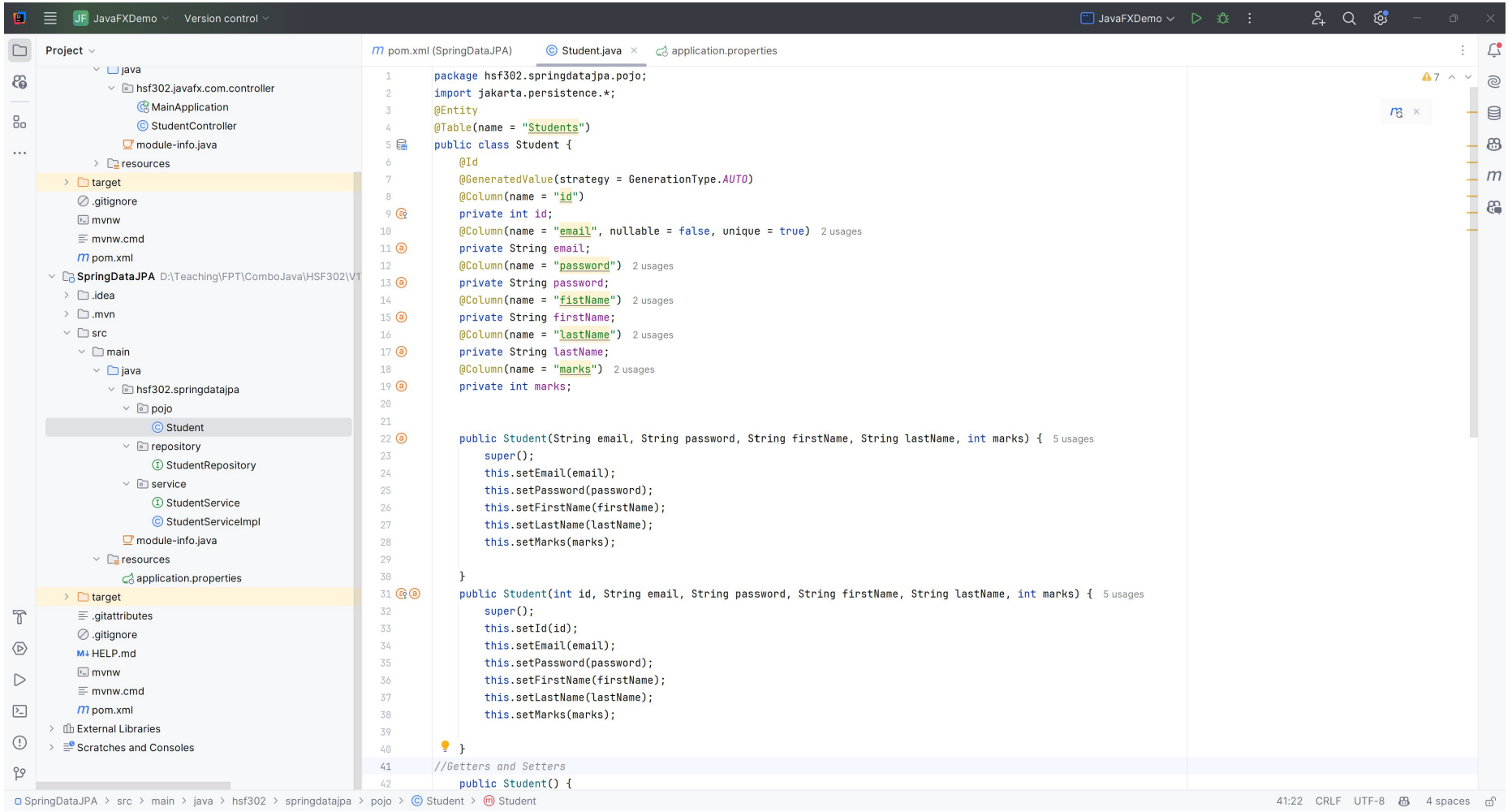
Update application.properties



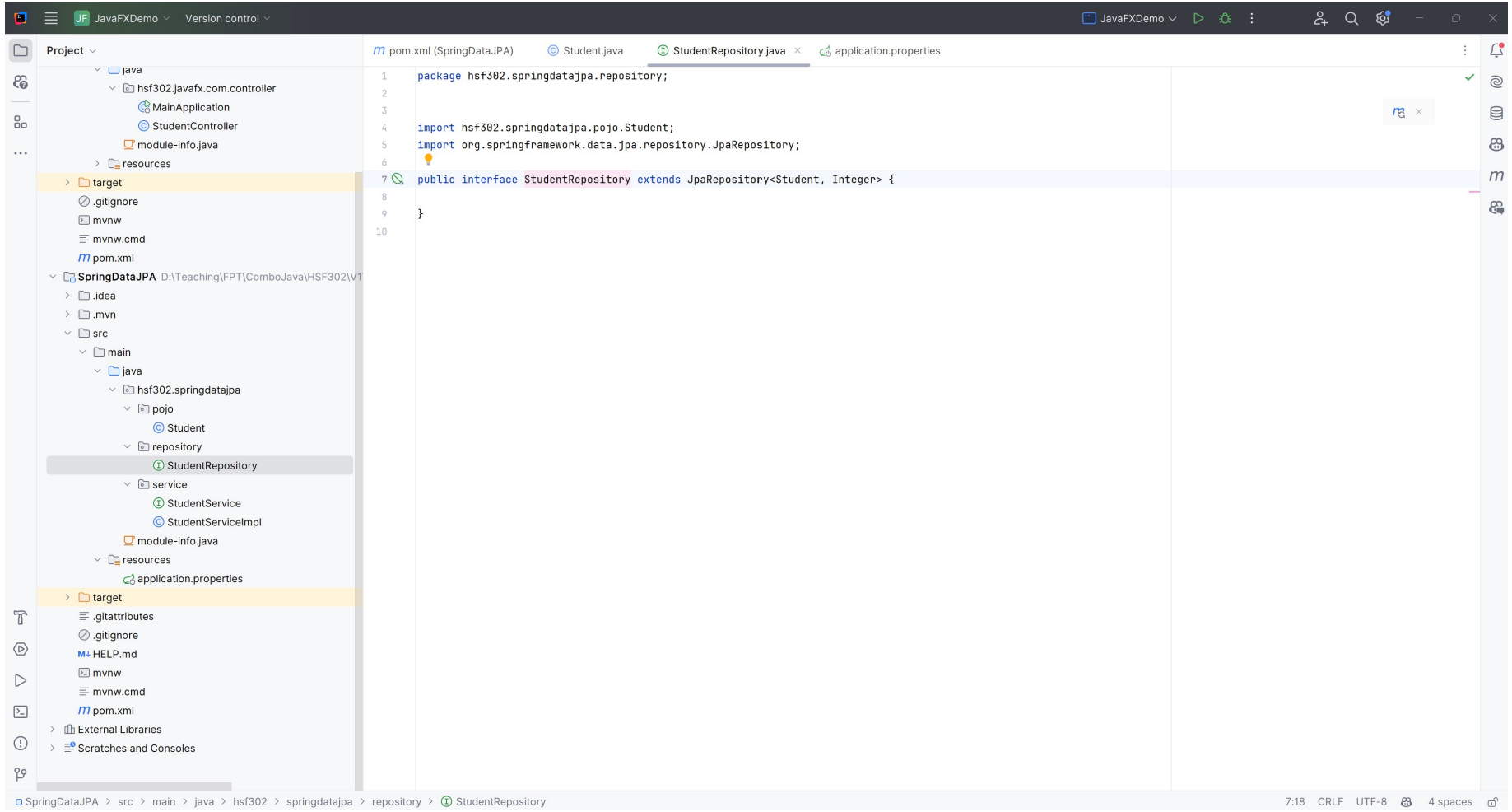
Update pom.xml



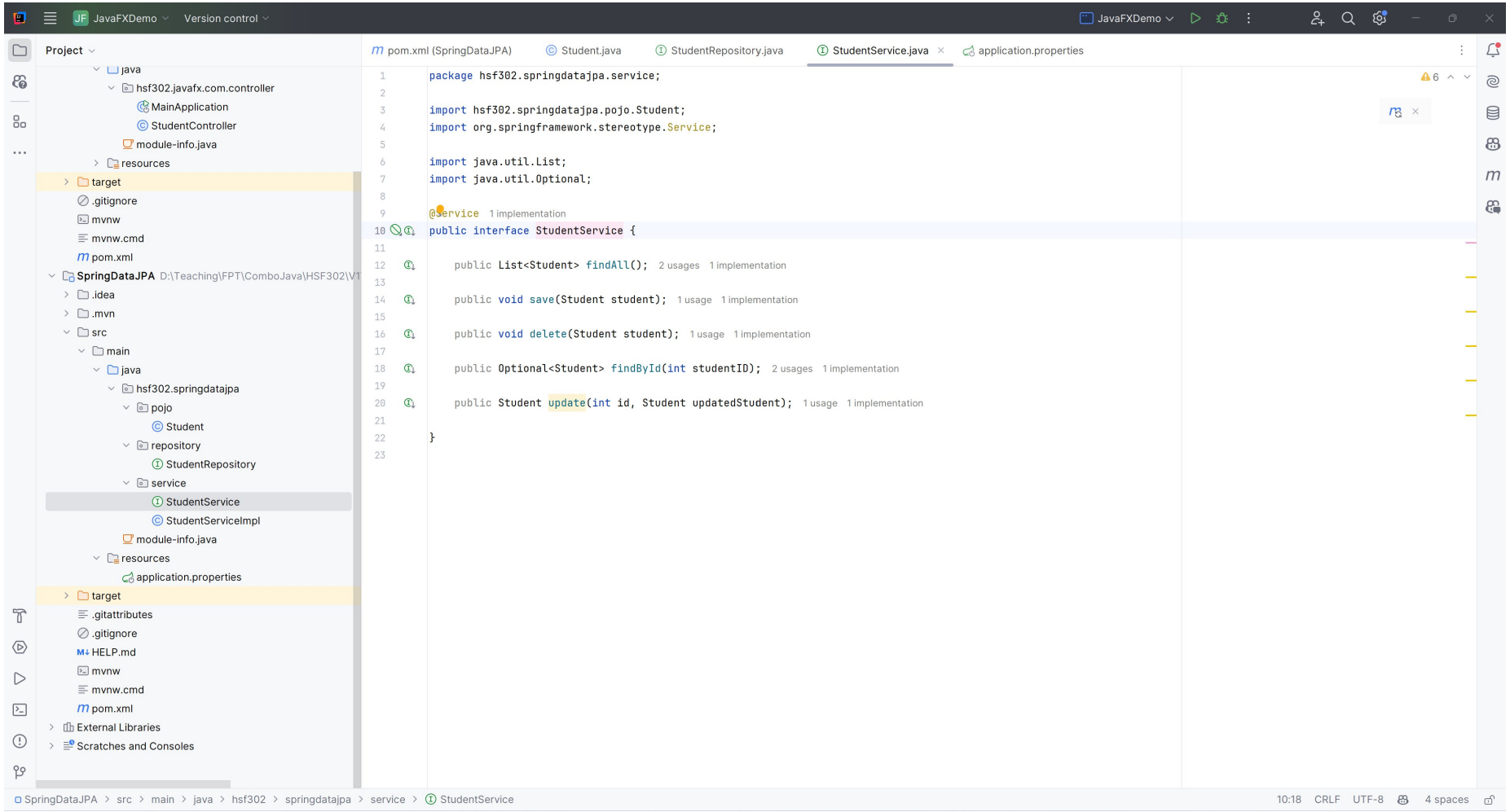
Create Student.java



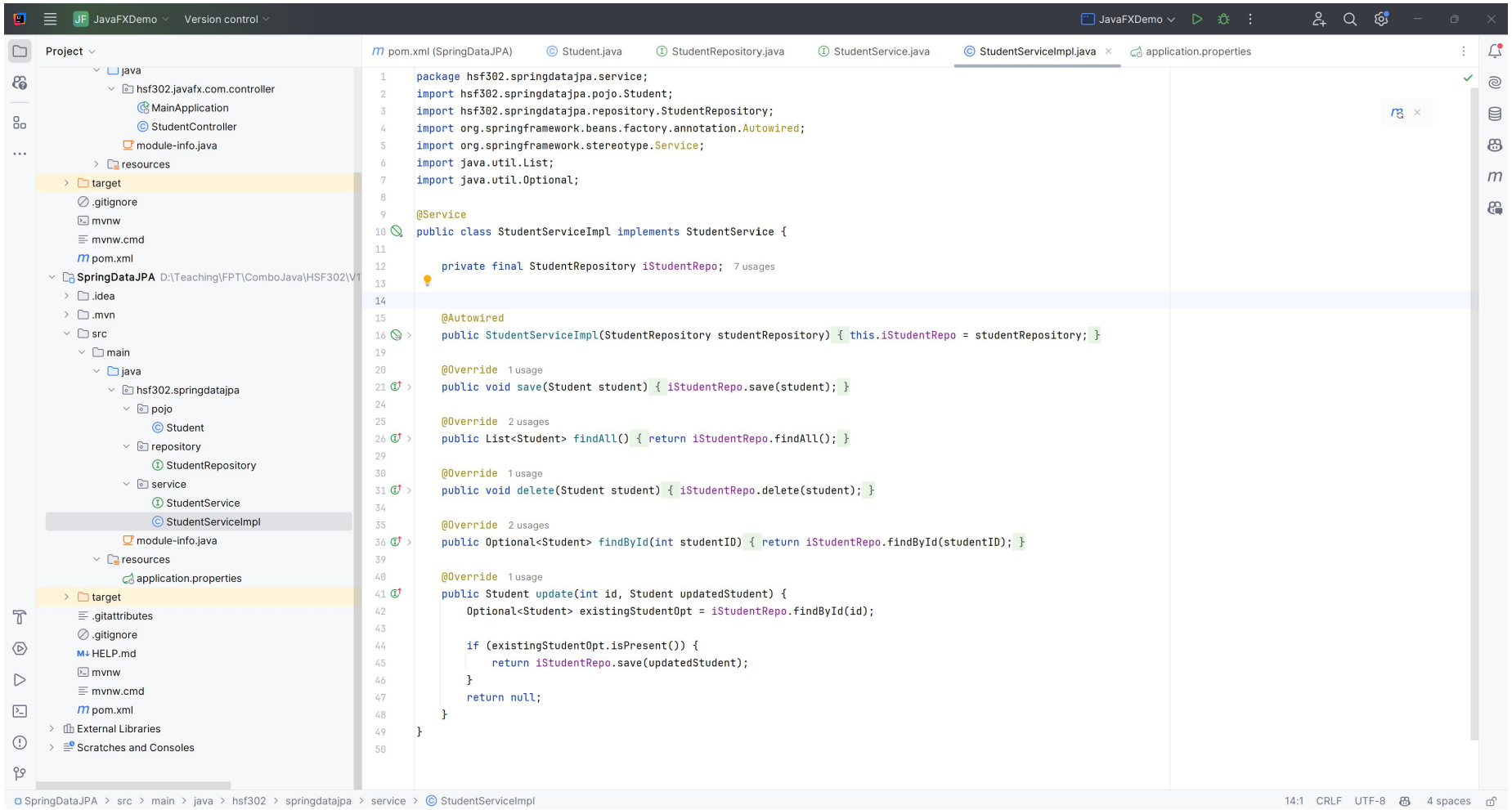
Create StudentRepository.java



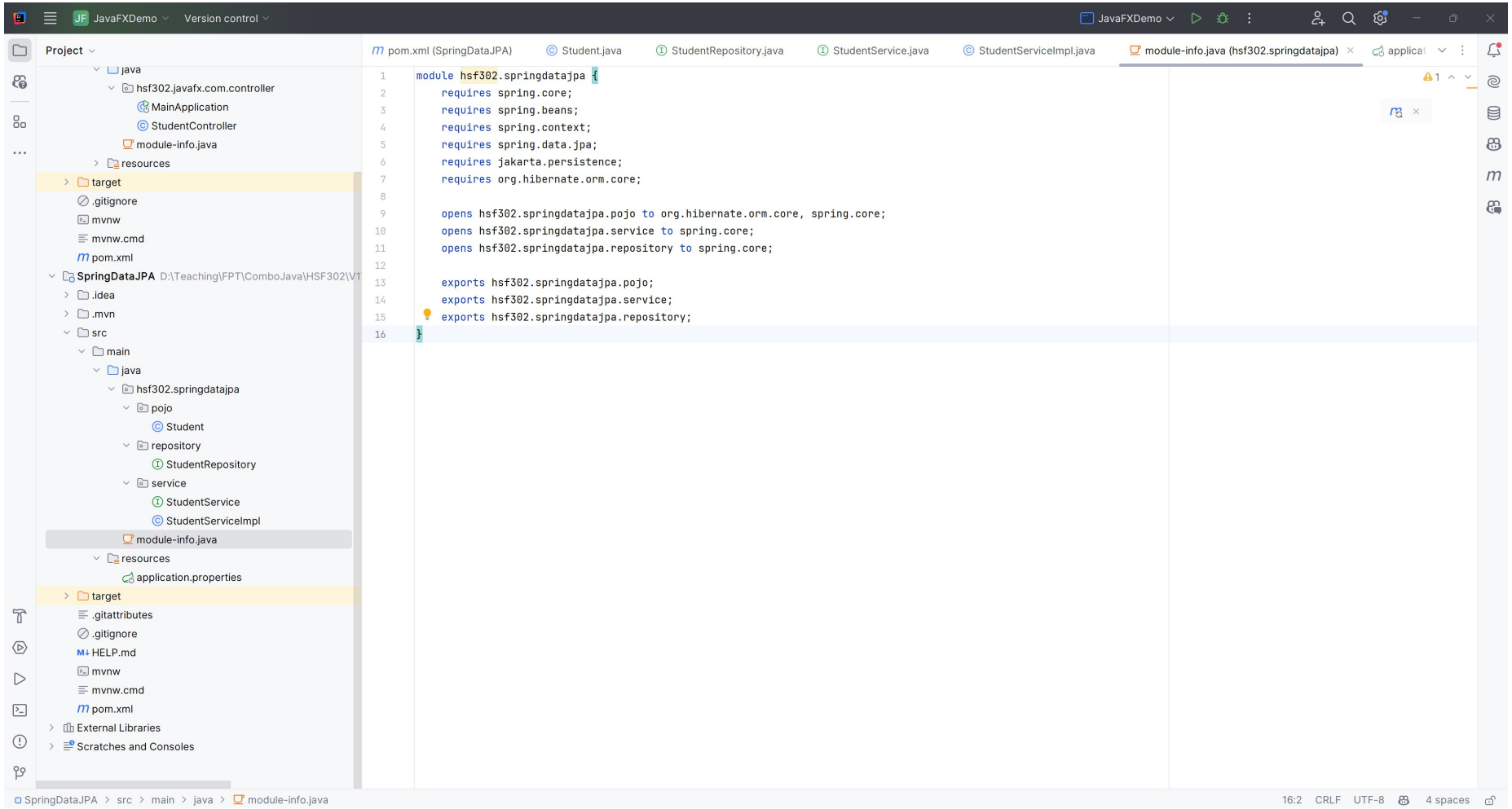
Create StudentService.java



Create StudentServiceImpl.java



Create module-info.java



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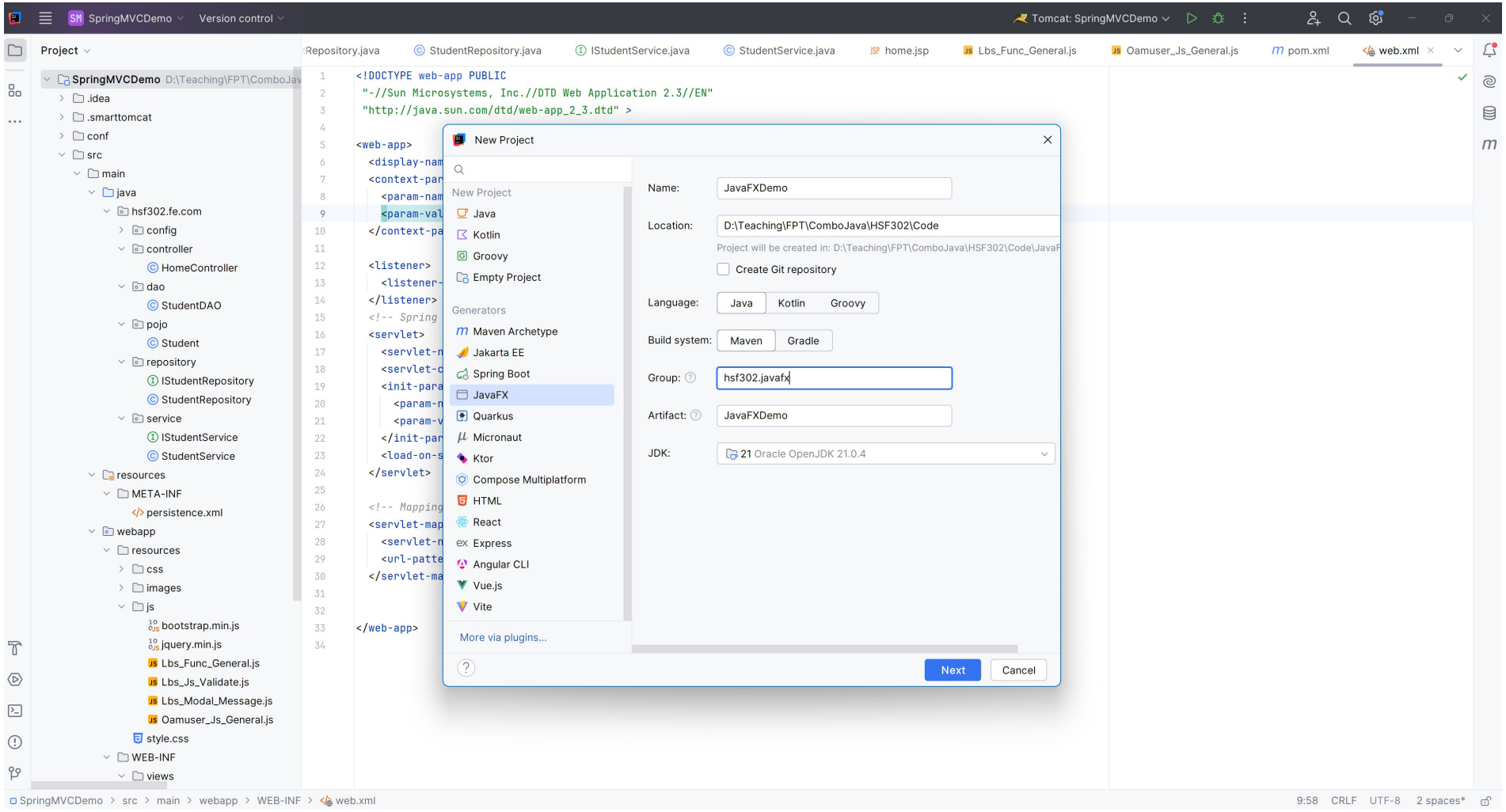
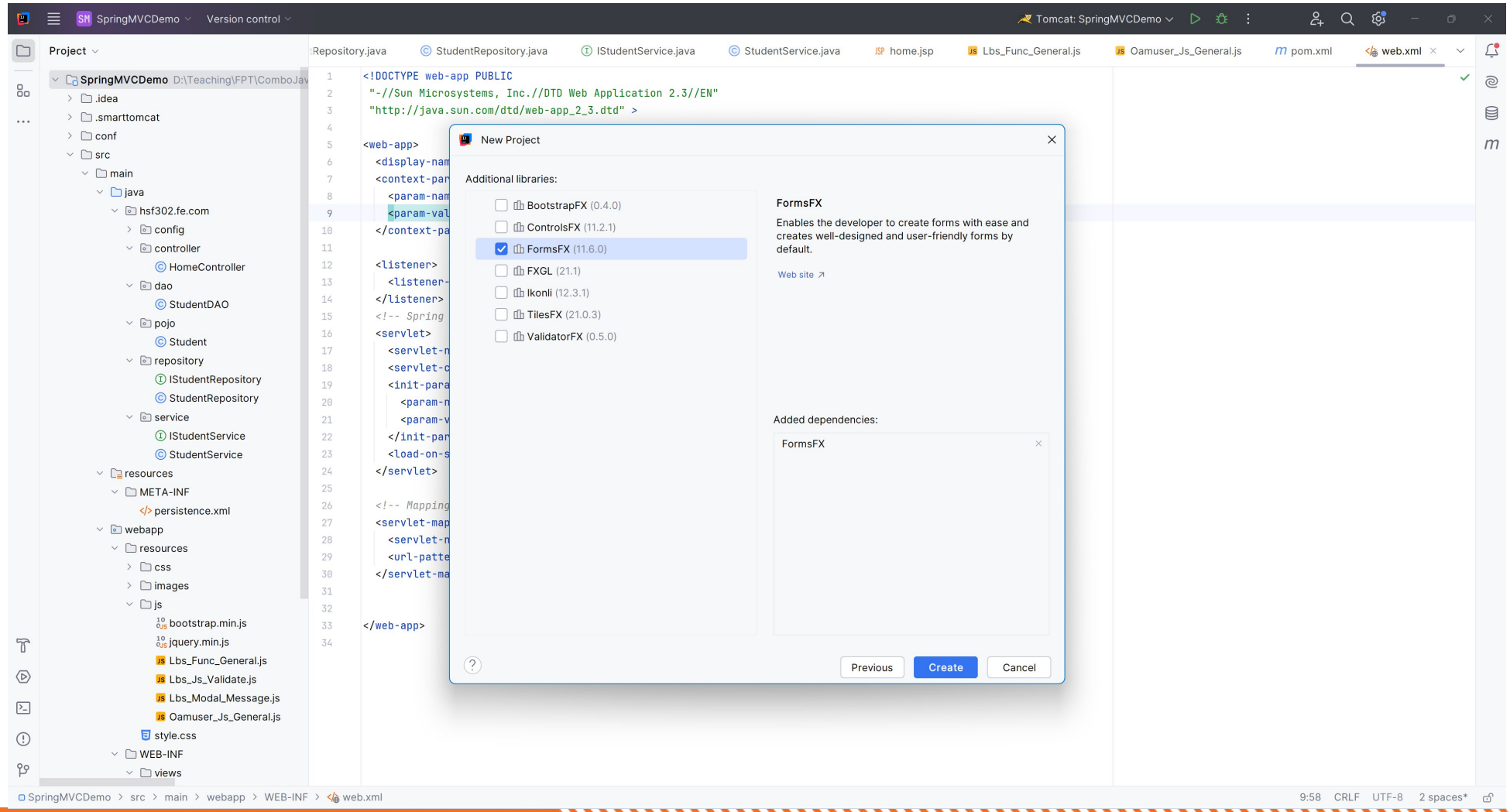
Java

Design GUI Application with JavaFX

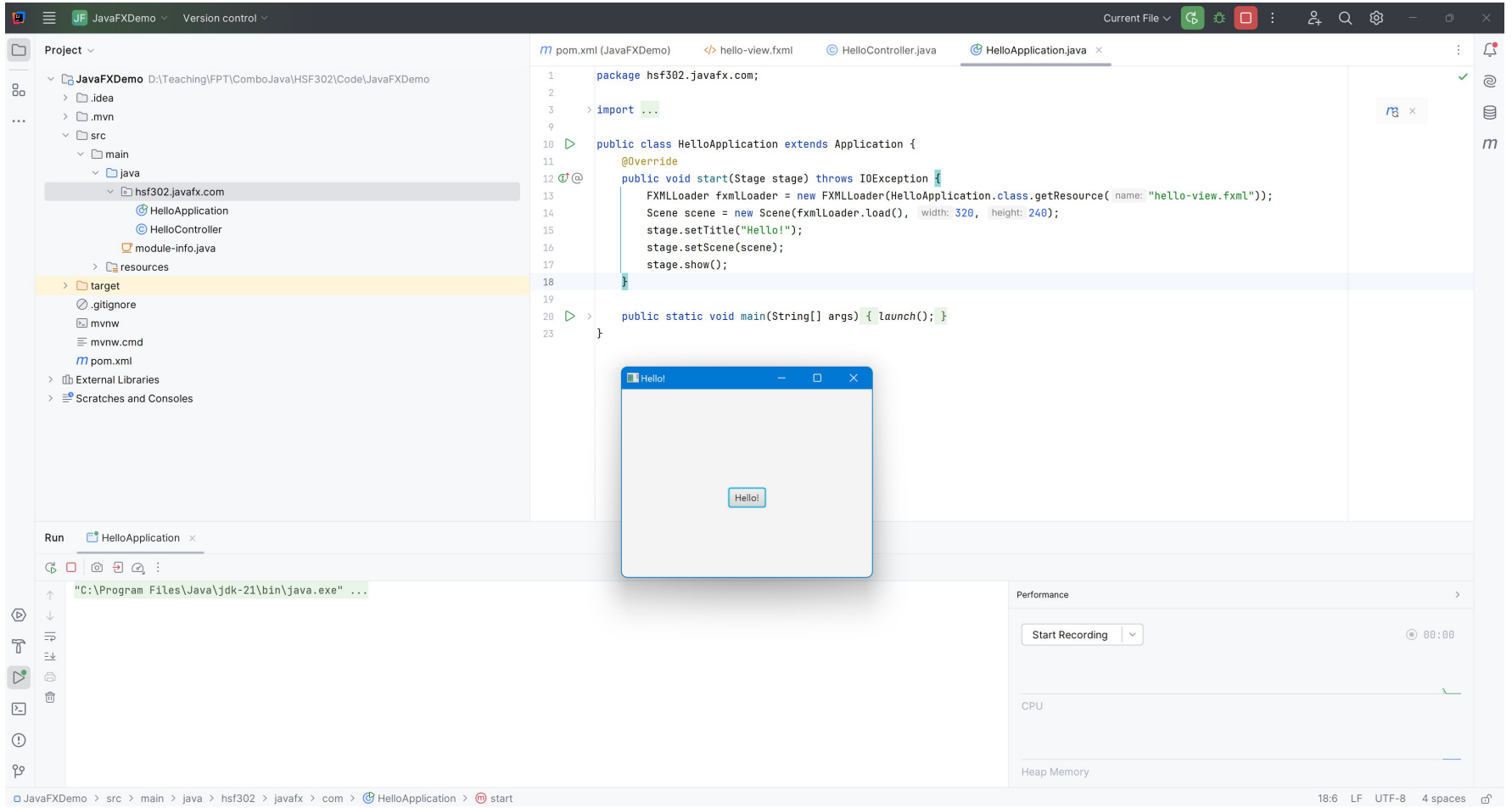
Open IntelliJ, File | New | Maven Project



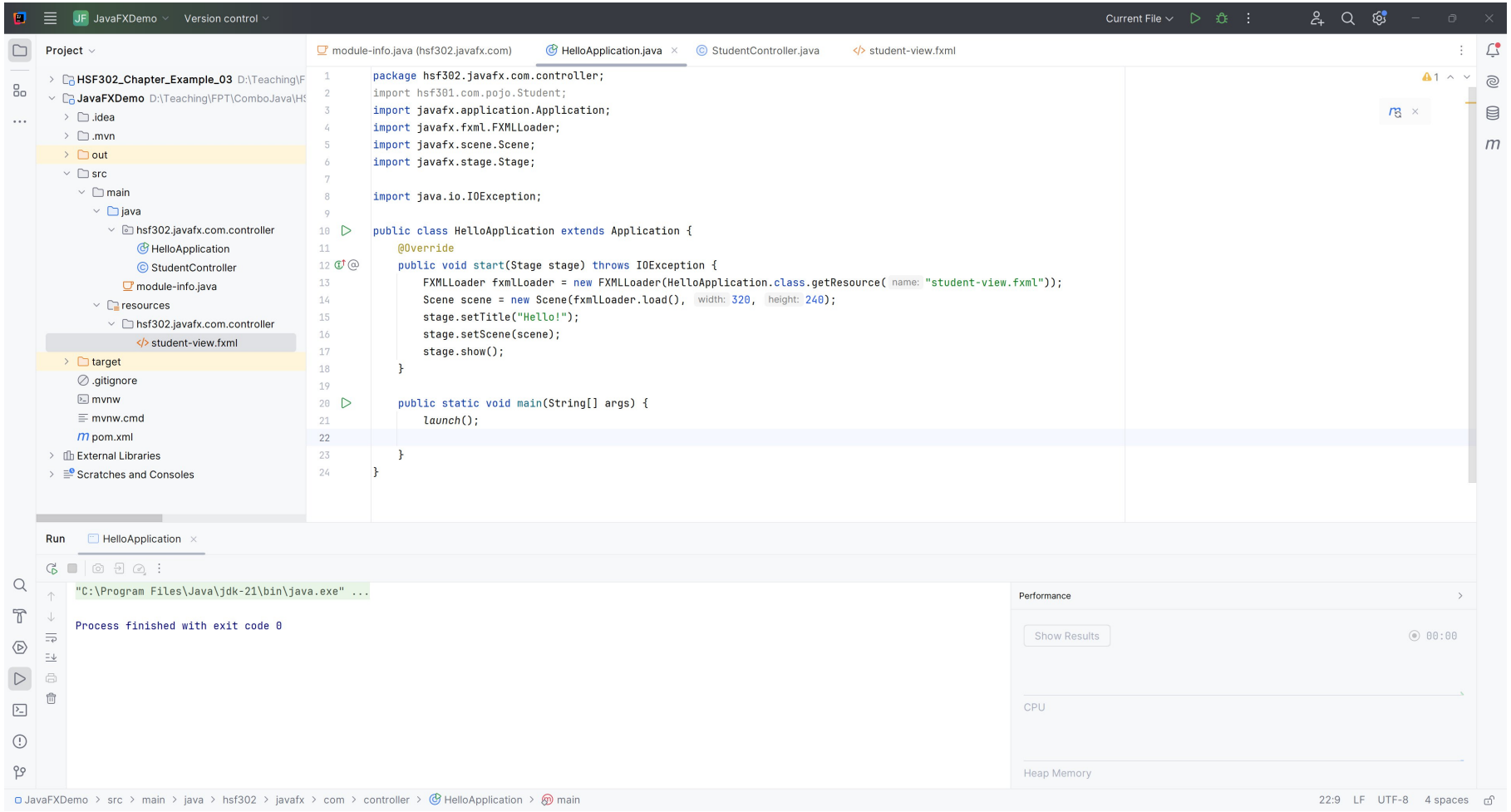
Check FormFX



Run Project


JavaFXDemo
Version control
Current File
Project
JavaFXDemo D:\Teaching\FPT\ComboJava\HSF302\Code\JavaFXDemo
.idea
.mvn
src
main
java
hsf302.javafx.com
HelloApplication
HelloController
module-info.java
resources
target
.gitignore
mvnw
mvnw.cmd
pom.xml
External Libraries
Scratches and Consoles
pom.xml (JavaFXDemo)
hello-view.fxml
HelloController.java
HelloApplication.java
package hsf302.javafx.com;
import ...
public class HelloApplication extends Application {
@Override
public void start(Stage stage) throws IOException {
FXMLLoader fxmlLoader = new FXMLLoader(HelloApplication.class.getResource(name: "hello-view.fxml"));
Scene scene = new Scene(fxmlLoader.load(), width: 320, height: 240);
stage.setTitle("Hello!");
stage.setScene(scene);
stage.show();
}
public static void main(String[] args) { launch(); }
}
Hello!
Hello!
Run
HelloApplication
"C:\Program Files\Java\jdk-21\bin\java.exe" ...
Performance
Start Recording
00:00
CPU
Heap Memory
JavaFXDemo > src > main > java > hsf302 > javafx > com > HelloApplication > start
18:6 LF UTF-8 4 spaces

Build the Architecture



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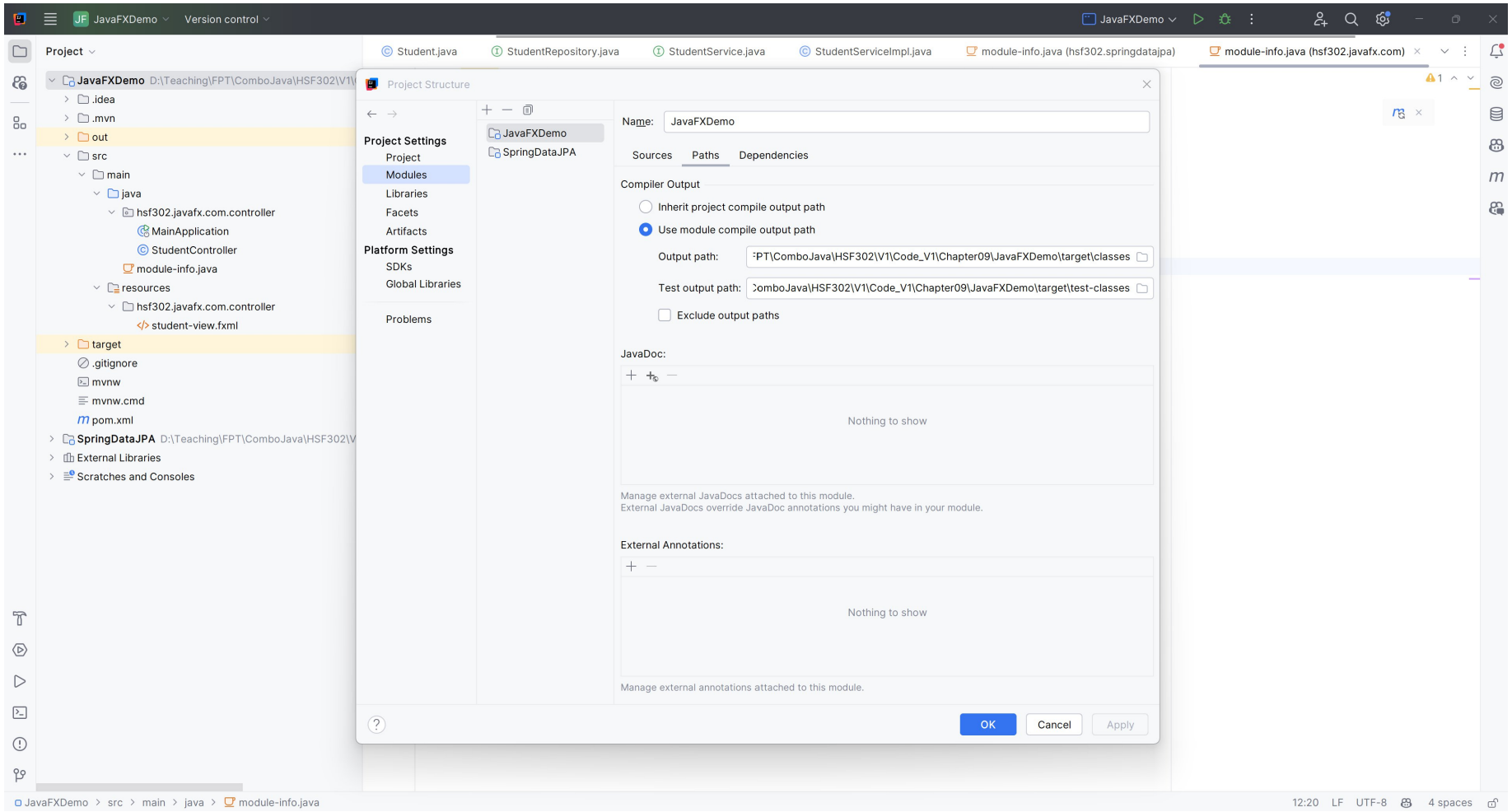
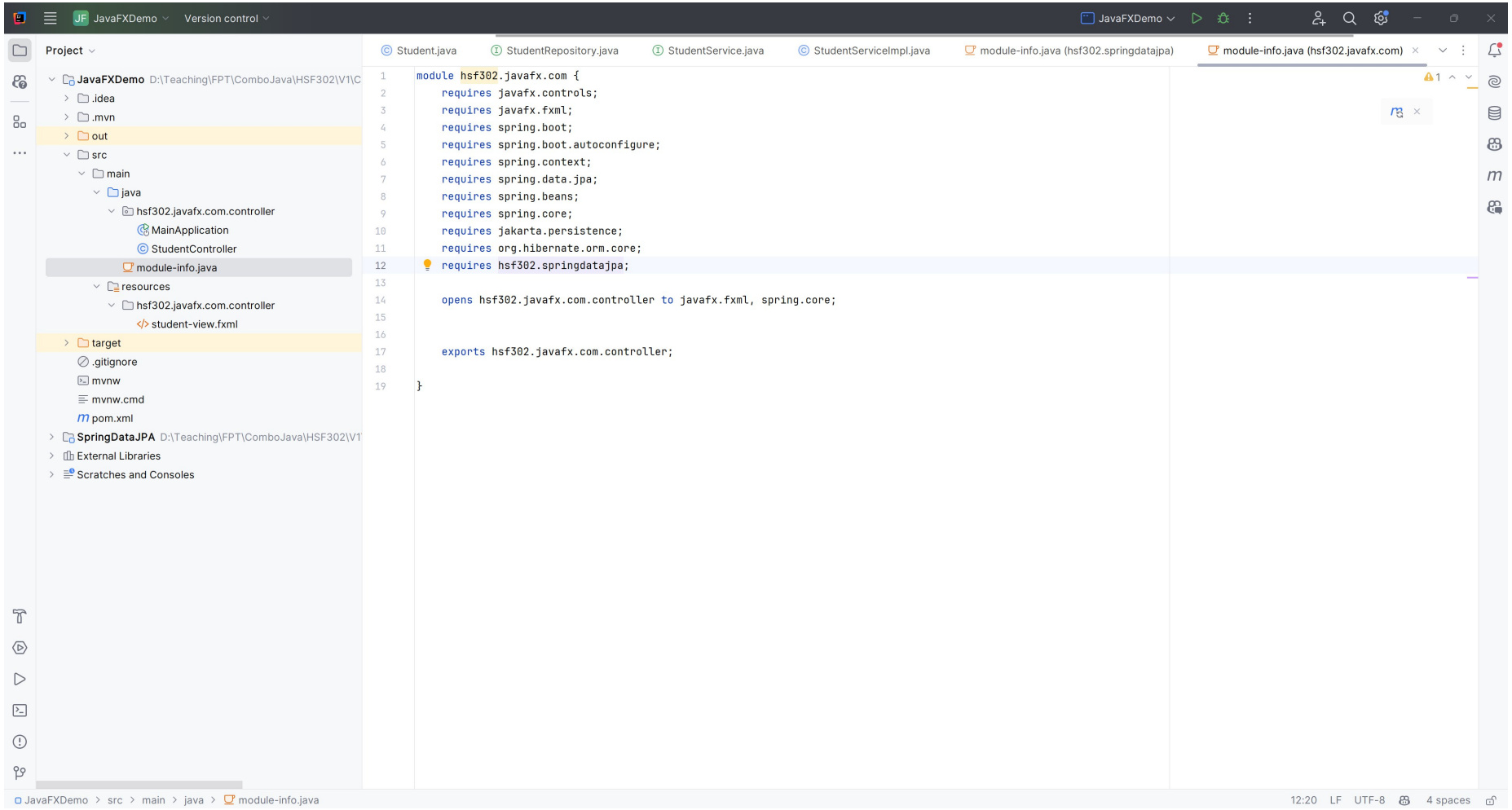
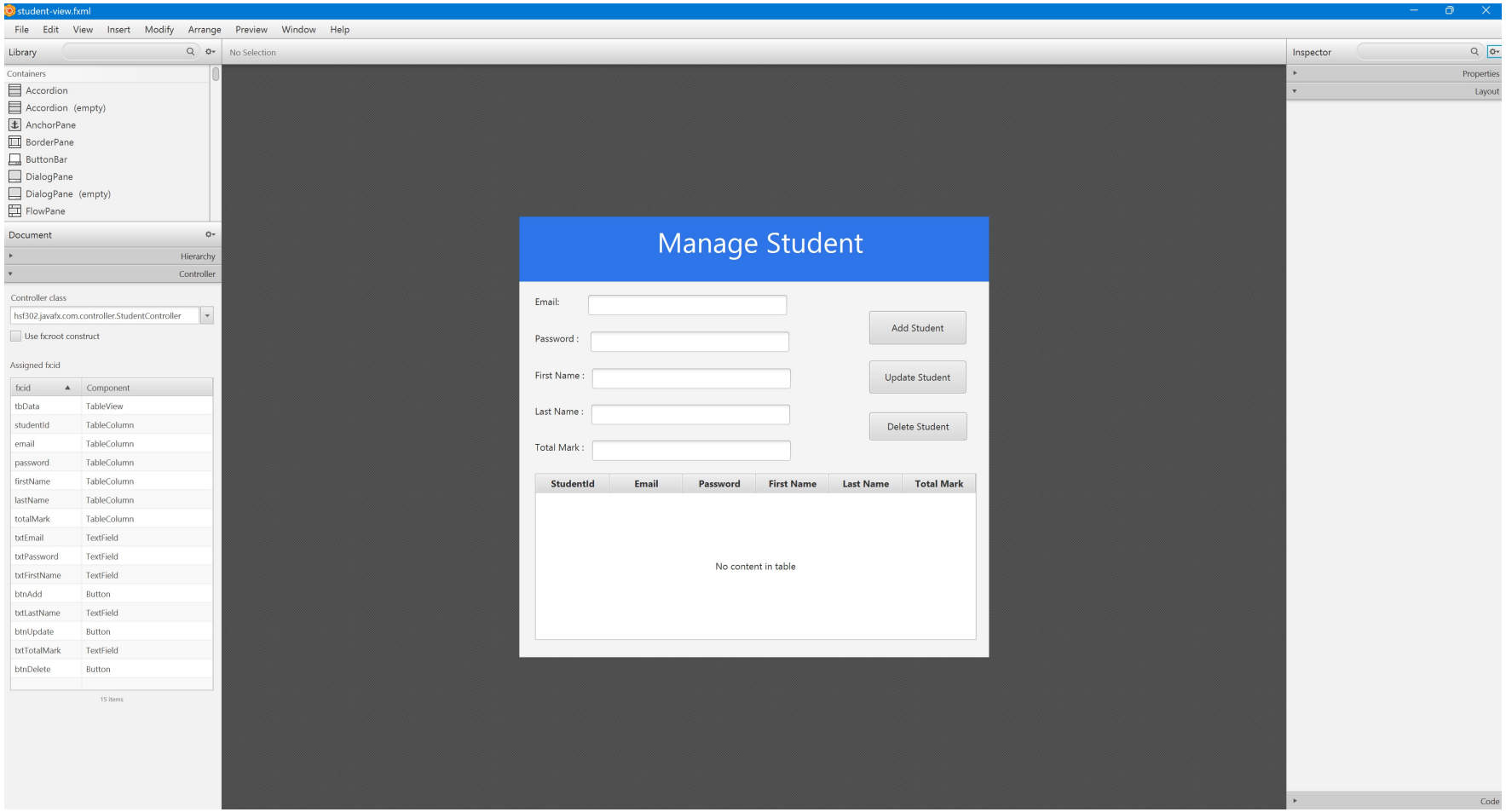
Add Reference Another Project



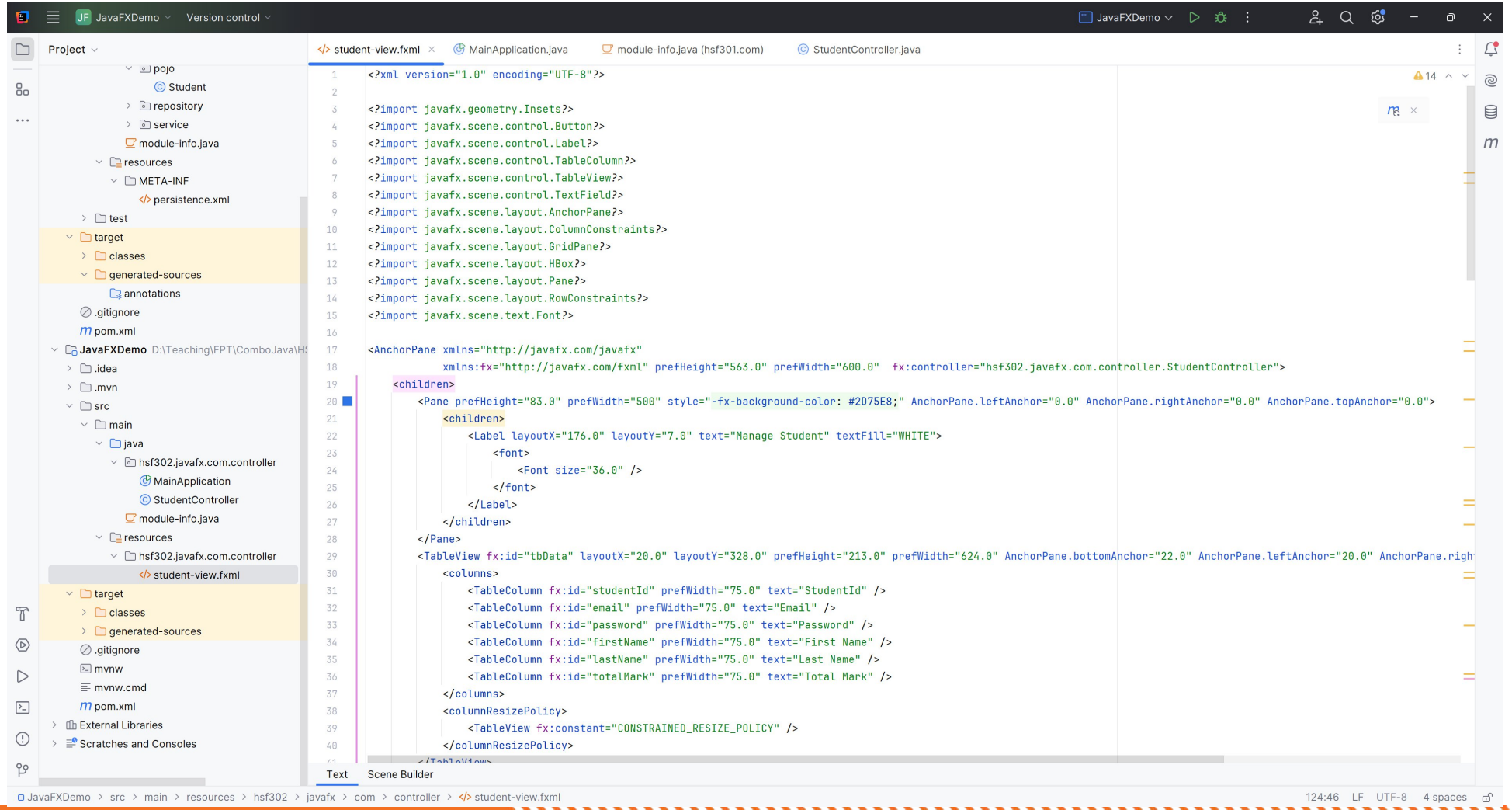
Edit module-info.java in JavaFXDemo



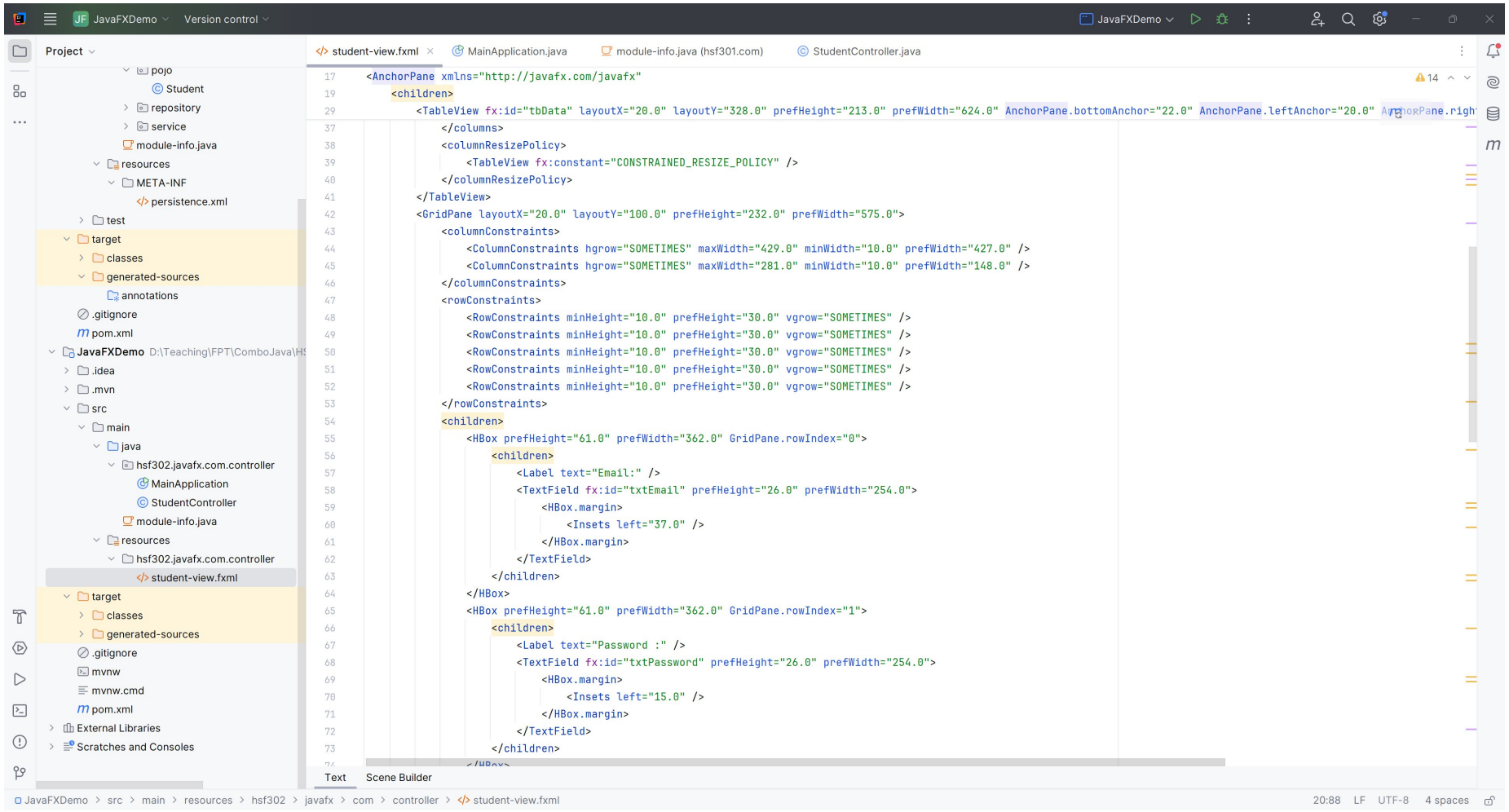
Open Student-view.fxml in SceneBuilder



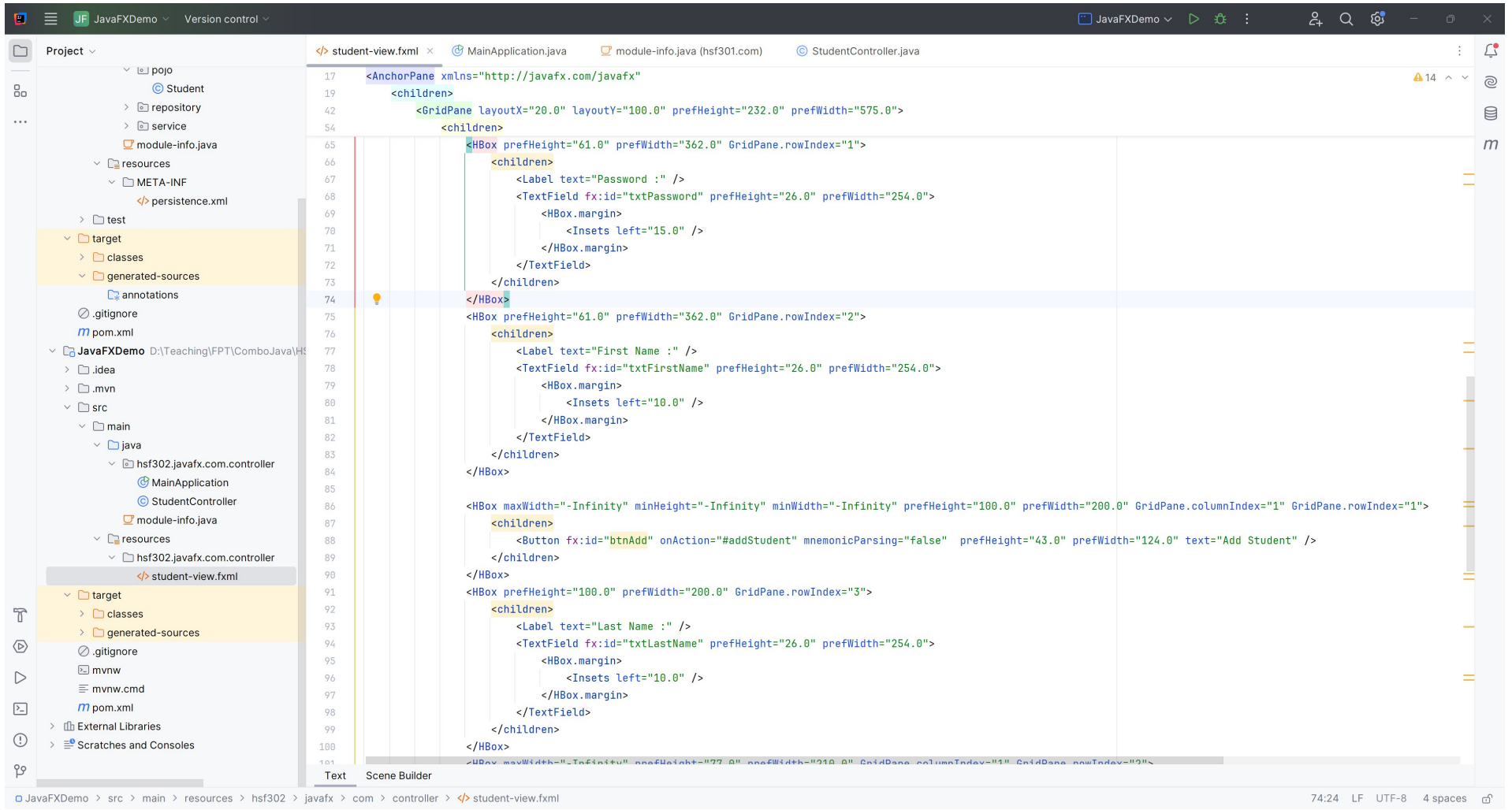
Edit student-view.fxml



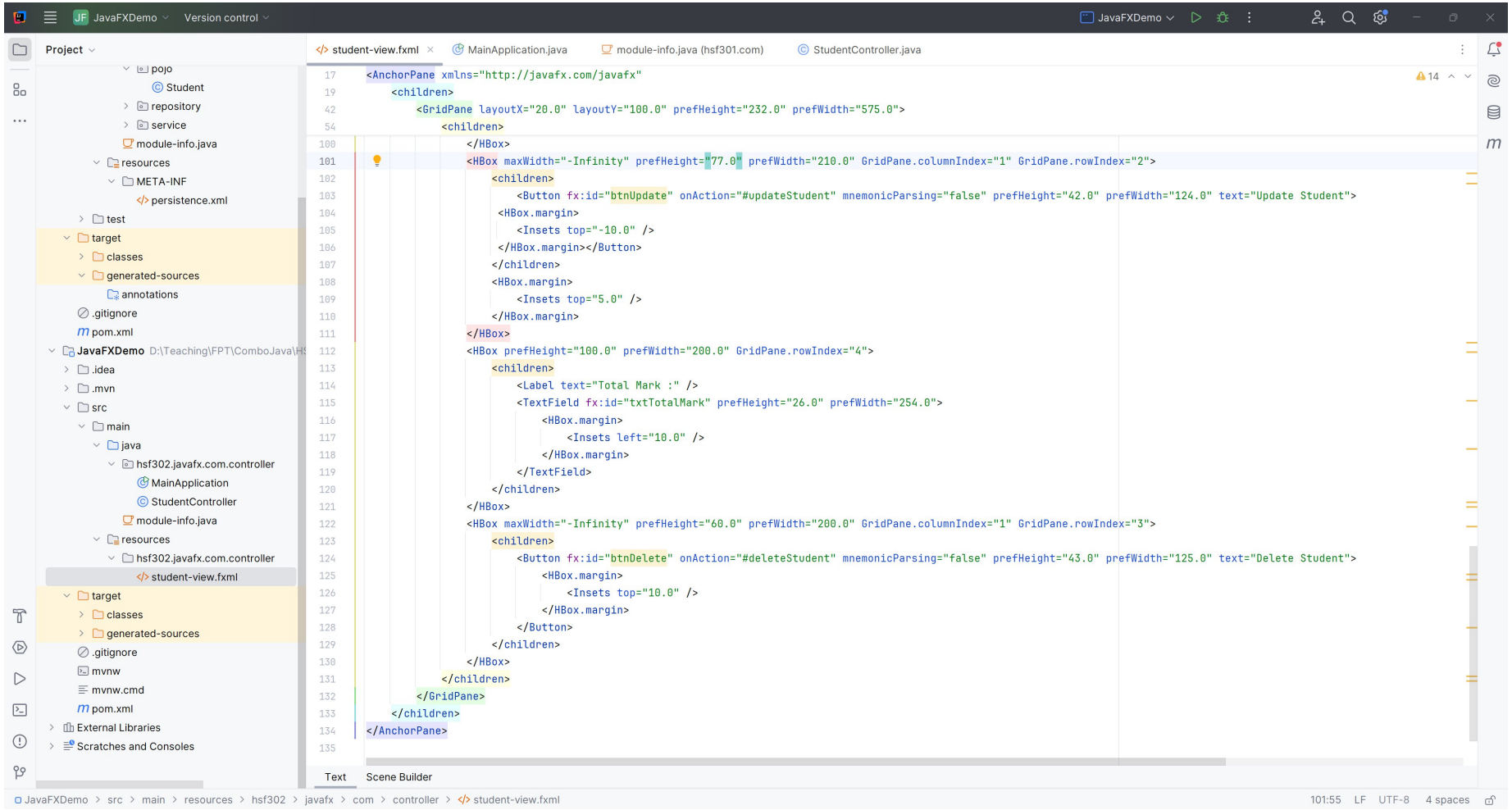
Edit student-view.fxml



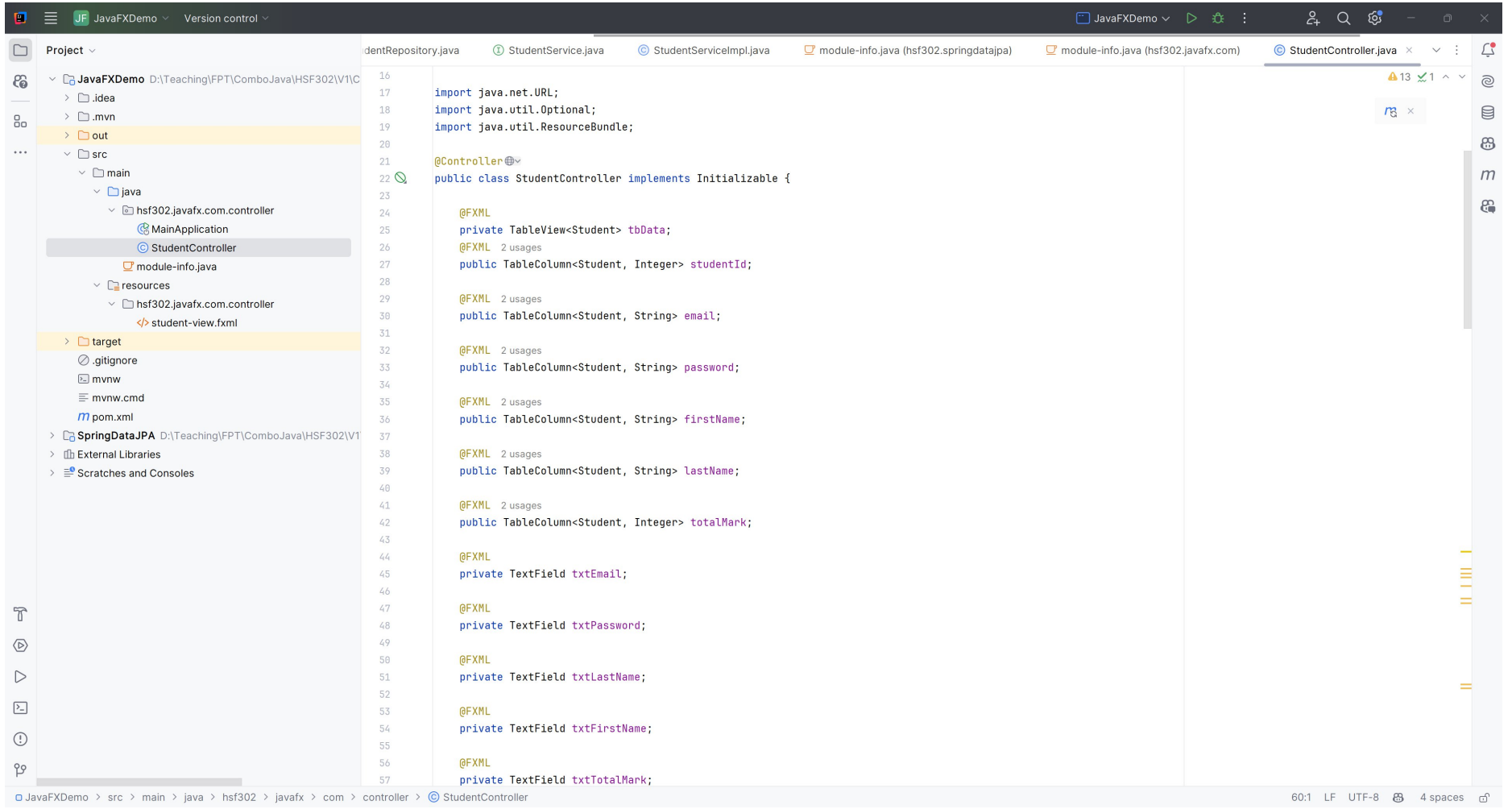
Edit student-view.fxml



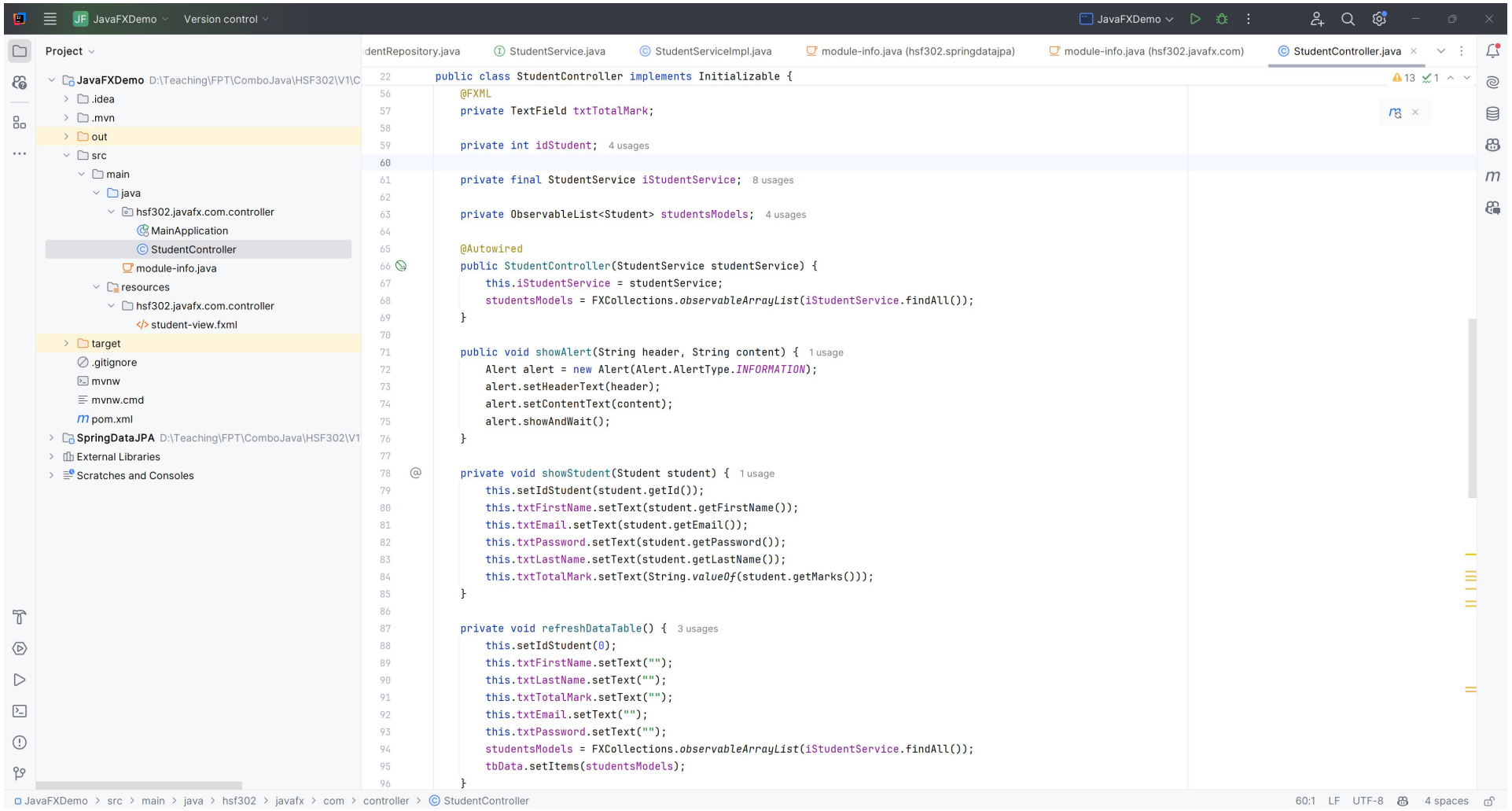
Edit student-view.fxml



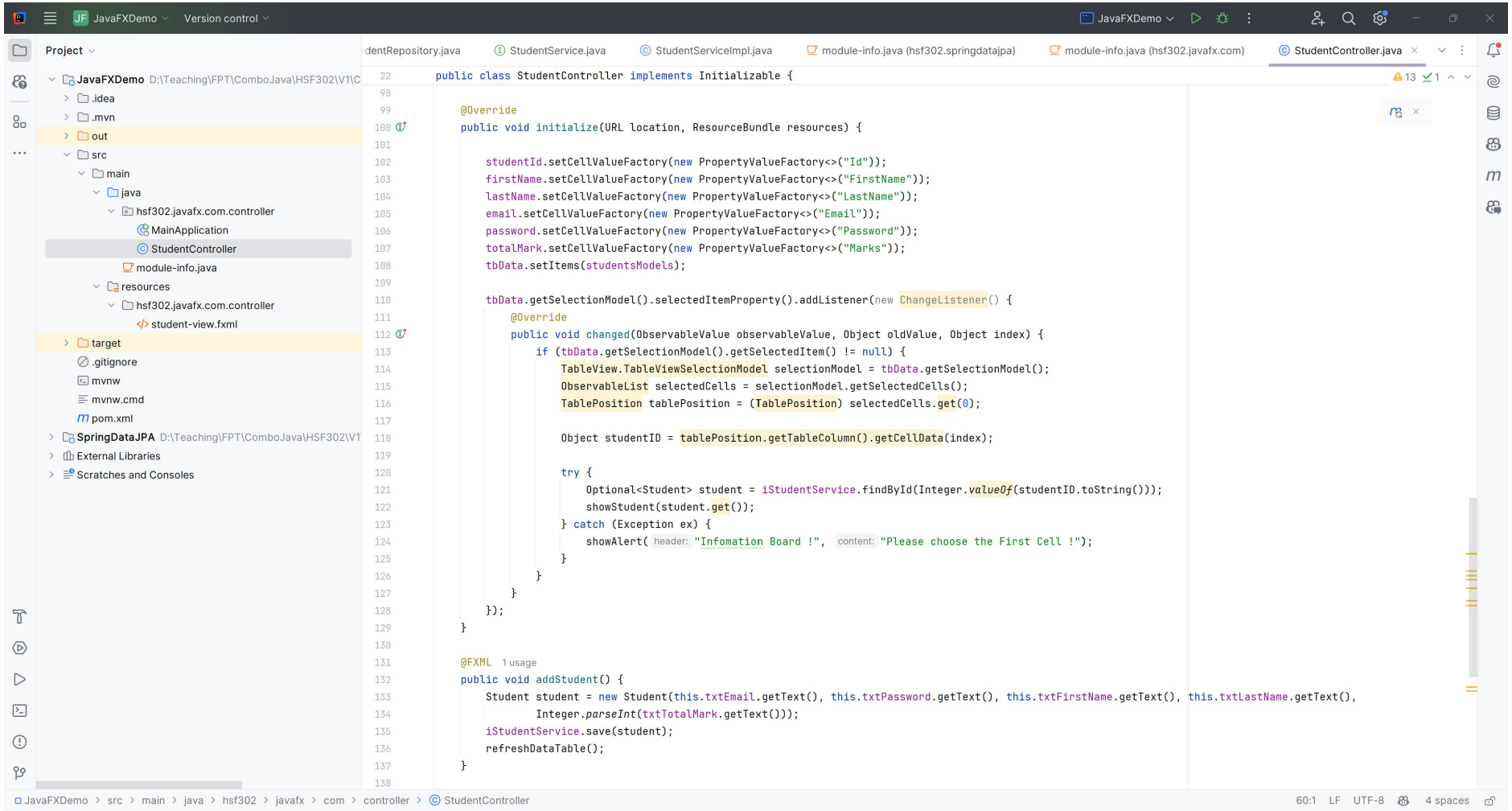
Edit the StudentController.java



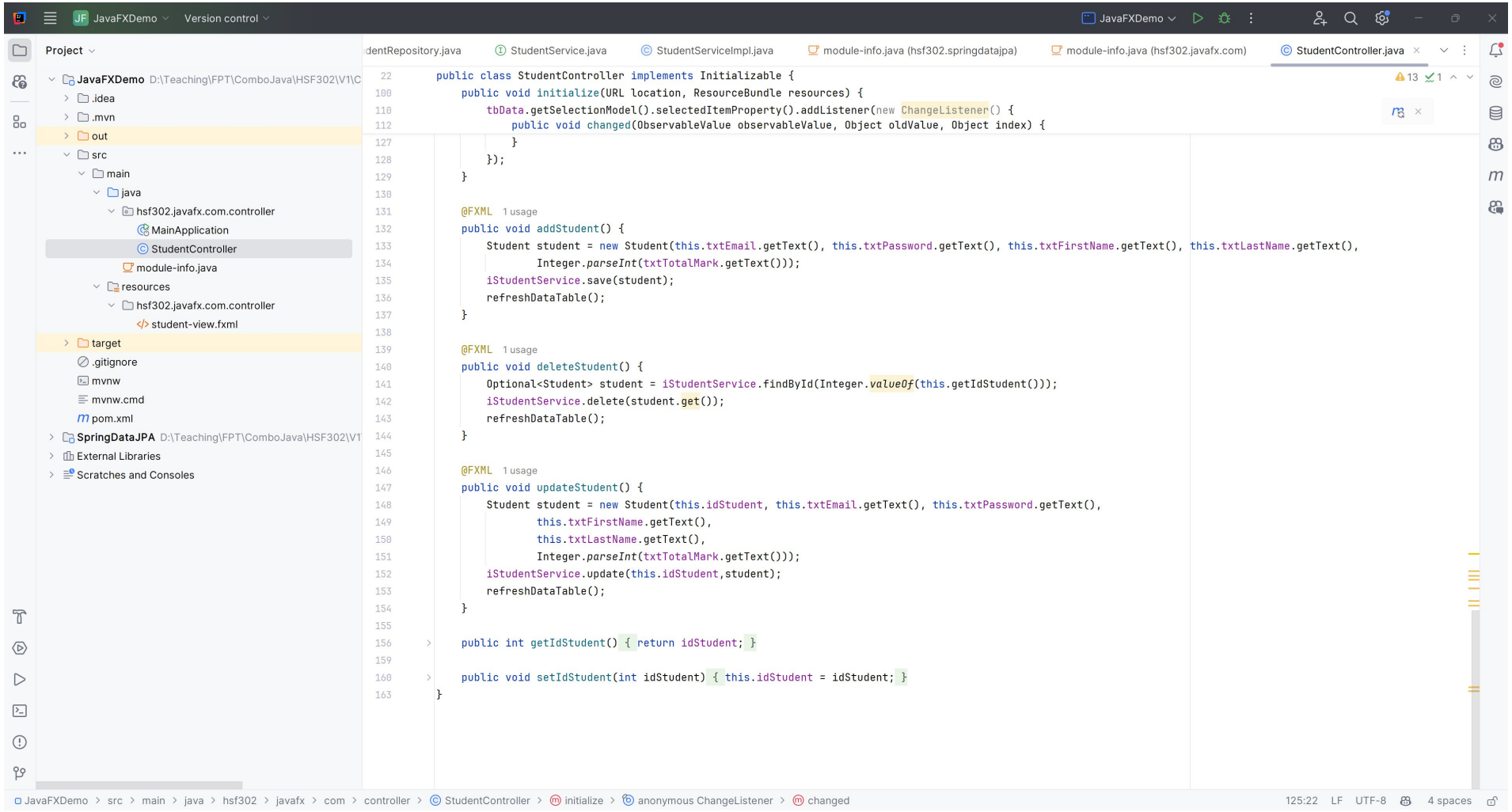
Edit the StudentController.java



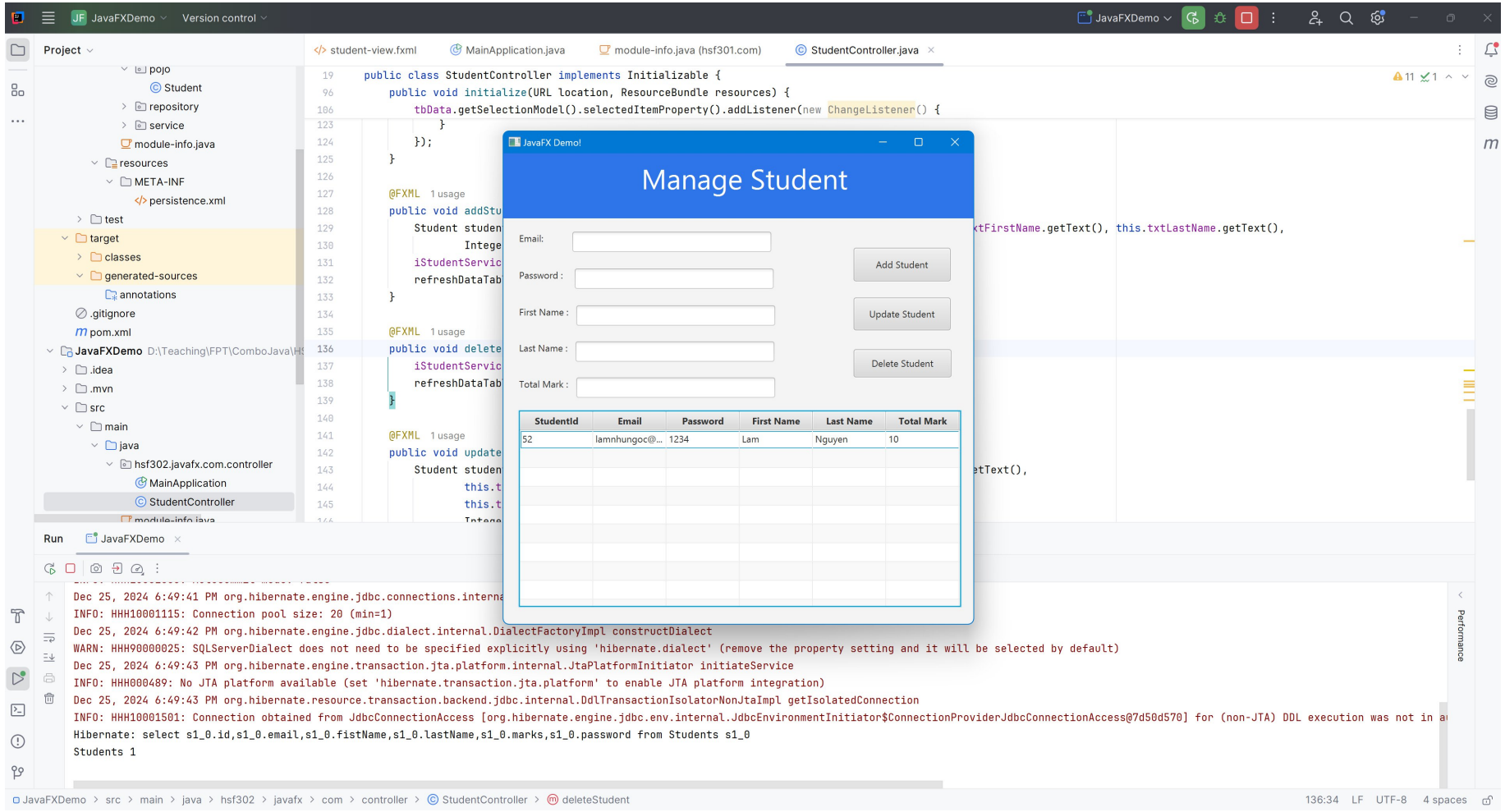
Edit the StudentController.java



Edit the StudentController.java



Run Project


JavaFXDemo
Version control
Project
student-view.fxml
MainApplication.java
module-info.java (hsf301.com)
StudentController.java
JavaFX Demo!
Manage Student
Email:
Password :
First Name :
Last Name :
Total Mark :
Add Student
Update Student
Delete Student
StudentId
Email
Password
First Name
Last Name
Total Mark
52
lamnhungoc@...
1234
Lam
Nguyen
10
Run
JavaFXDemo
Dec 25, 2024 6:49:41 PM org.hibernate.engine.jdbc.connections.internal
INFO: HHH10001115: Connection pool size: 20 (min=1)
Dec 25, 2024 6:49:42 PM org.hibernate.engine.jdbc.dialect.internal.DialectFactoryImpl constructDialect
WARN: HHH90000025: SQLServerDialect does not need to be specified explicitly using 'hibernate.dialect' (remove the property setting and it will be selected by default)
Dec 25, 2024 6:49:43 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService
INFO: HHH000489: No JTA platform available (set 'hibernate.transaction.jta.platform' to enable JTA platform integration)
Dec 25, 2024 6:49:43 PM org.hibernate.resource.transaction.backend.jdbc.internal.DdlTransactionIsolatorNonJtaImpl getIsolatedConnection
Hibernate: select s1_0.id,s1_0.email,s1_0.fistName,s1_0.lastName,s1_0.marks,s1_0.password from Students s1_0
Students 1
Performance
JavaFXDemo > src > main > java > hsf302 > javafx > com > controller > StudentController > deleteStudent
136:34 LF UTF-8 4 spaces

Summary

Concepts were introduced:

- Implement CRUD (Create, Read, Update, Delete) operations to manage data effectively.
- Utilize Hibernate to map Java objects to database tables, simplifying data persistence and retrieval.
- Design and develop a user-friendly interface using JavaFX, enabling seamless interaction with the application.
- Implement features such as form input validation, error handling, and feedback mechanisms to enhance user experience.