Object Oriented Architectures and Secure Development
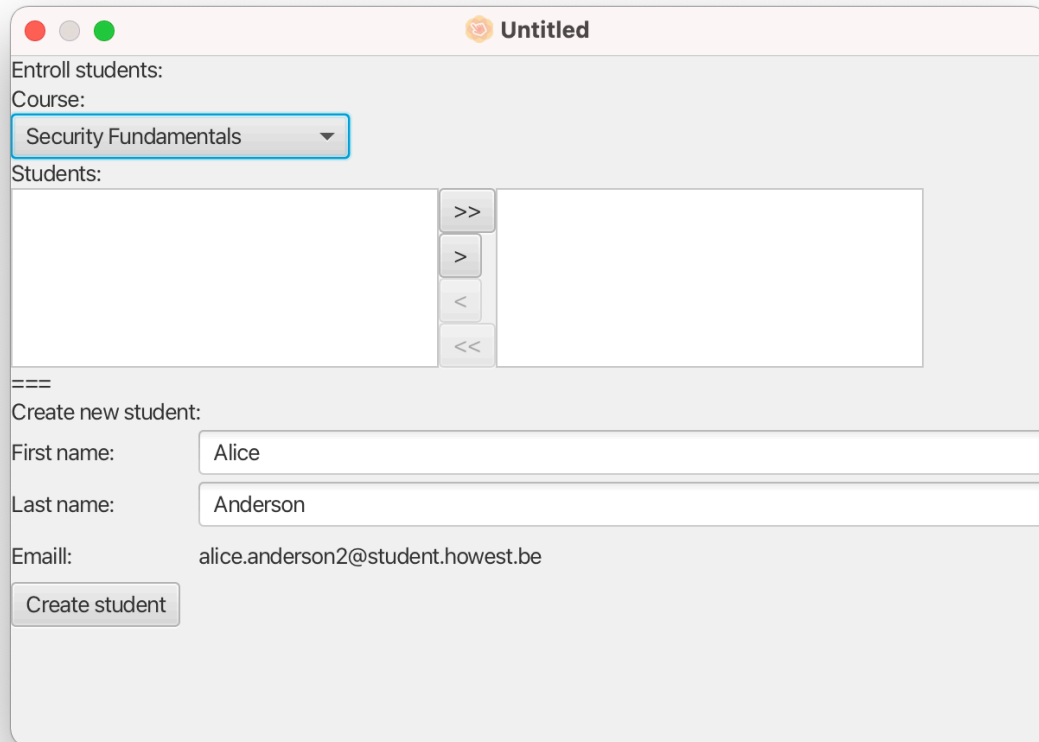
JavaFX - Lab

1. Warming up exercise

- Reproduce the **Hello World** application from the class demo step by step.

- This way, you are sure your JavaFX configuration is up and running; and you are ready for the main exercise.

2. Main exercise

- Make sure your exercise of last session has at least the following functionality:
    - create students
    - create courses
    - enroll a student in a course
    - check if a student is enrolled *or* get all enrolled students of a course.

- If you finished the StreamAPI exercise, use that data. Otherwise: create 5 'random' students and 3 'random' courses, the data does not have to be real but make it realistic. More is good as well.
    - **good:** Harry Potter, Ron Weasley, and Hermione Granger taking the courses Charms, Transfiguration, Potions, or History of Magic.
    - **bad:** Course 1, Course 2, Student 1, Student 2
    - **bad:** aaaaa, bbbbb, cccc, as students and eee, ffff, gggg as courses ...

- Design a JavaFX UI in scene builder where it is possible to select a course, and to see which students are enrolled and which students are not enrolled in the selected course. Further, the UI should allow for students to be added to the selected course (enroll). Our suggestion is to mimic the screenshot (see below), but if you have a better idea or if you want to experiment, please do so. Suggestion:
    - a combobox for the courses,
    - a first listview for the **NOT ENROLLED** students,

- a second listview for the **ENROLLED** student, and
- between both list views a button (>) that enrolls the selected student.

Make the JavaFX application interactive:

- Add a controller to this UI (fxml) and populate all controls with data,
- Make sure the UI reacts to the selection of a new course and displays all students as either enrolled or not enrolled.
- Make sure the UI actually enrolls the students if the > -button is clicked.

Separation of concerns:

- Verify that the controller only contains UI-code and evacuate all logic to a `Service` - class.
- Augment your FXML with *a form* to create a new student: name and lastname of the student should be entered in a text field, the email however should be generated by your application in order to ensure uniqueness. A button at the bottom will be responsible for actually creating the student. This new student should be added in the left listview for every course since a new student is not yet enrolled in any course.

2.4. Tips

- Apply the various techniques studied during the classes.
- There isn't one "single solution". Make sure you can motivate your choices.
- It is your software, take ownership.