



## Faculty of Science

<b>Course:</b>	CSCI 4100U: Mobile Devices
<b>Lab Assignment:</b>	#7
<b>Topic:</b>	Database Access

## Overview

In this lab, you will develop an application that saves its data to a database (SQLite). You will need to create a new Android application. You can use Android Studio's wizard, using a Blank Activity to start.

## Detailed Instructions

### ShowGrades Activity

For this application, your main activity (ShowGrades) will maintain a list of Grades. For this purpose, create a simple class (Grade), with the following fields:

- studentId (integer)
- courseComponent (string)
- mark (floating point)

This activity is similar to the activity for the last lab. To save yourself time, you can begin with a copy of that class. The ShowGrades activity should create a layout that displays a ListView and two buttons: Add and Delete. The ListView will display the Grades of your application in the format (studentId, courseComponent, mark). When the Add button is clicked, you will display the AddGrade activity, as a sub-activity. The data entered by the user when this activity is active will be used to add a new element to the list of grades (using the database helper class). When the Delete button is clicked, the DeleteGrade activity will be displayed, as a sub-activity. The data entered by the user while this activity is active will be used to delete a Grade from the list (using the database helper class).

The ShowGrades activity will ensure that this application keeps its state from one execution to the next. It will do so by storing the grade data into an *SQLite database* in the onStop() lifecycle method, and retrieve those grades again from the *database* in onStart(). The data will be stored using the following database table:

```
CREATE TABLE Grades(  
    studentId int primary key,  
    courseComponent varchar(100) not null,  
    mark decimal not null);
```

Test that the data is saved and loaded by exiting the application, and restarting.

### GradesDBHelper

The GradesDBHelper class is a SQLiteOpenHelper subclass that will handle all of the database interaction for our app. This class will primarily handle four main tasks:

1. Creating the database (you can ignore database upgrades/downgrades for this lab assignment)
2. Getting a list of all grades (an ArrayList of Grade objects) from the database
3. Adding a new grade to the database
4. Deleting a grade from the database, using its ID

**AddGrade Activity**

The AddGrade activity displays a form containing one text field (and a label) for each field in the Grade class, as well as an 'Add' button. When clicked, this button collects this data, *uses the GradesDBHelper class to save the new Grade data*, and finishes the activity.

**DeleteGrade Activity**

The DeleteGrade activity displays a spinner containing all Grades, and a button 'Delete'. When clicked, this button determines which Grade was selected from the spinner (by ID), *deletes the corresponding Grade using the GradesDBHelper class*, then finishes the activity.