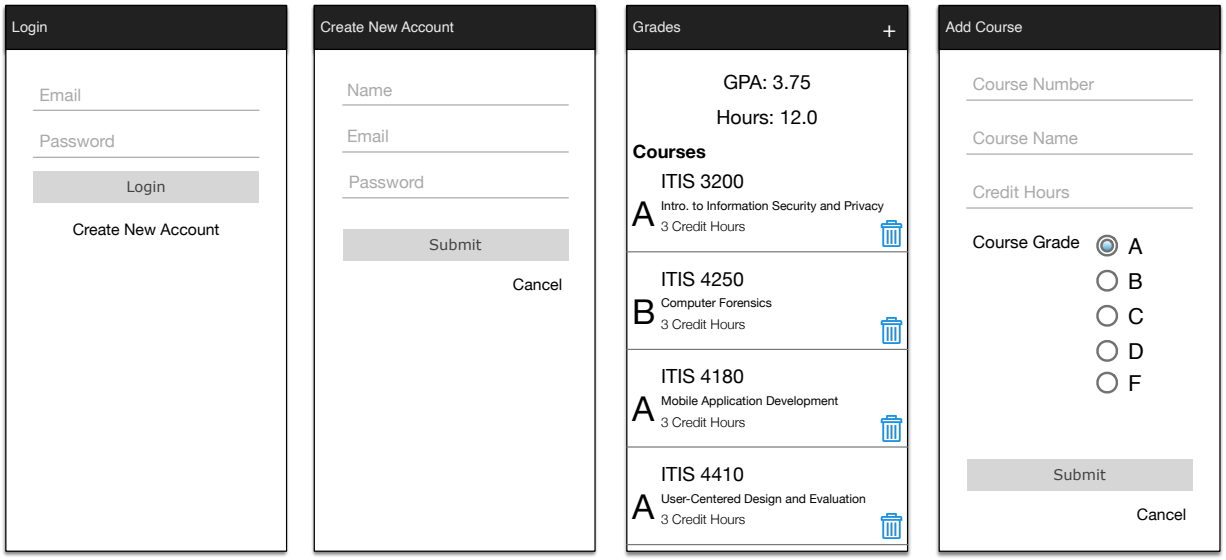
In Class 08 (100 Points)

In this assignment you will implement a grade tracking application. This app uses Firebase for Authentication and Data storage.



(a) Login Screen (b) Register Screen (c) Grades Screen (d) Add Course Screen

Figure 1, Application Wireframe

Part 1: Login Fragment (0 Points)

The interface should be created to match the UI presented in Figure 1(a). The requirements are as follows:

1. Clicking the “Create New Account” button should replace this fragment with the Create New Account Fragment.
2. Clicking the “Login” button, the app should check if email and password fields are entered and display an alert dialog if any of the entries is missing indicating that the missing field is required.
   a. Use the Firebase Auth to login the user. If the login is successful then replace the current fragment with the Grades Fragment.
   b. If the login is not successful then display an alert dialog indicating the reason returned by Firebase Auth.

Part 2: Create New Account Fragment (0 Points)

The interface should be created to match the UI presented in Figure 1(b). The requirements are as follows:

1. This screens allows the user to register a new user account using email/password.
2. Clicking the “Cancel” button should close this Screen and show the Login Fragment.
3. Clicking the “Submit” button, the app should check if email and password fields are entered and display an alert dialog if any of the entries is missing indicating that the missing field is required.
   a. Use the Firebase Auth to register a new user. If the registration is successful then replace the current screen with the Grades Fragment.
   b. If the registration is not successful then display an alert dialog to show reason.

Part 3 : Grades Fragment (70 Points)

The interface should be created to match the UI presented in Figure 1(c). The requirements are as follows:

1. This screen should retrieve the list of grades for the currently logged in user from Firestore.
    a. You should create a Grade class to store the grade information.
    b. Setup a snapshot listener to listen to realtime updates for the grades collection for only the logged in user and to update the grades RecyclerView when the grades are updated.
    c. Each course should show the course letter graded, course number, course name, and number of course credit hours.
2. The overall GPA and number of course hours should be displayed as shown Fig 1(c).
    a. The next section describes how to to compute the GPA.
    b. If the number total number of hours taken is 0 then set the GPA to 4.0
3. Upon clicking the delete icon the following operations should be performed:
    a. The selected course should be deleted from the firebase.
    b. The courses list should be reloaded from firebase, and the GPA and the Hours should be updated. Note, this is handled through the snapshot listener.
4. Clicking the “+” button should transition to the “Add Course” fragment.

Part 4 : Add Course Screen (30 Points)

The interface should be created to match the UI presented in Figure 1(d). The requirements are as follows:

1. This screen should enable the user to enter and add a new course to the user’s course record.
    a. If the user enters all the course fields and clicks submit, the app should save the newly created course to firebase firestore and associate it with the currently logged in user.
        i. Make sure the number of hours is a valid positive number.
    b. Pop the back stack which should go back to the Grades screen. The grades list should be refreshed to show the newly added course and update the GPA and hours listed on the page.

How to compute the GPA?

The grade point average (GPA) is calculated by dividing the total amount of grade points earned by the total amount of credit hours attempted. Your grade point average may range from 0.0 to a 4.0. Each letter grade is assigned a grade point as shown below:
A = 4.0 grade points
B = 3.0 grade points
C = 2.0 grade points
D = 1.0 grade points
F = 0.0 grade points

Example Student Grades			
Course	**Credit Hours**	**Grade**	**Grade Points**
Biology	3	A	12
Biology Lab	1	B	3
English 101	3	C	6
Maths 101	3	A	12
10 Total Credit Hours Completed		**33 Total Grade Points**	
GPA = 33/10 = 3.3			

$$GPA = \frac{Total\ Grade\ Points}{Total\ Credit\ Hours}$$