



Electrical and Computer Engineering Department  
ENCS5150 – Advanced Computer Systems Engineering Laboratory  
Android Project  
First Semester 2025/2026

**Submission Deadline:** January 9, 2026

**Discussion Date:** The week after the submission deadline

**Team Work:** Teams of two students

**Total Points:** 100; 40% out of the final grade

### **Project Description:**

We want to create an Android mobile application designed to help users manage their personal finances, including tracking income, expenses, budgets, and financial goals. The app will support multiple users, each having their own set of financial data, and will store all information locally on the device without the need for a backend server.

The application will allow users to log their daily income and expenses, view detailed reports, set budgets, and work towards their financial goals. The data will be stored in a local SQLite database.

### **The application should have the following functionalities:**

#### **1. Signup, Sign in, and Logout [25 points]**

This layout should have a “Sign in” and “Sign Up” buttons.

- a. In the main page (first page), the user can enter his or her e-mail and password that are registered in the database to sign in. This layout must have a check box called “remember me” which will save the email in shared preferences, so that next time the user does not need to re-type the email address.
- b. The “Sign Up” button redirects the user to a sign-up form which has the following required fields:
  - I. **Email address.** Must be in a correct email format. It is the primary key of the user.
  - II. **First name.** Minimum 3 characters and maximum 10 characters.
  - III. **Last name.** Minimum 3 characters and maximum 10 characters.
  - IV. **Password.** Minimum 6 characters and maximum 12 characters. It must contain at least one number, one lowercase letter, and one uppercase letter.
  - V. **Confirm password** field.

If all required fields in the sign-up form are filled with valid data, then and only then the user can be registered. Otherwise, an error message is displayed, and the missing or invalid fields are colored in red.

- c. The user should be able to logout from the application.

## 2. Main Features [60]

- d. The main design for your app should be a Navigation Drawer Activity with the following main options in the navigation bar (you can add more options depending on your design preferences):

- **Home:** Show a summary of total income and expenses over a specified period (day, week, month, custom period) and how they are distributed among different income/expenses categories.
- **Income:** Users can record income transactions, specifying the amount, date, category, and description. (see below for details)
- **Expenses:** Users can record expense transactions, specifying the amount, date, category, and description. (see below for details)
- **Budgets Goals:** Users can specify a limit for spending and set alerts to keep track of budgets goals. (see below for details)
- **Settings:** Users can specify the default period that is shown in the Home window, add categories for either income or expenses, change the app theme (dark/light). (see below for details)
- **Profile:** allows users to view and edit their profiles. For example, changing their first name, last name, or password

- e. Income and Expense Tracking: Users can record income and expense transactions, specifying the amount, date, category, and description. Users should be able to:

- Add new income and expense transactions.
- Each transaction includes: amount, date, category (e.g., groceries, rent, ...etc in case of expenses; or Salary, scholarship, ...etc in case of income), and description.
- Categorize transactions to enable detailed reporting (e.g., "Food", "Bills", "Entertainment").
- Option to view all transactions in a list, sorted by date.
- Delete/update a transaction.

- f. Budgets and Goals Management: Users can set and track their budgets for different categories and set financial goals. Users should be able to:

- Set monthly budgets for categories like food, entertainment, bills, etc.
- Track budget progress: Show how much of the budget has been spent and how much remains.
- Set alerts and track progress toward goal (e.g., half limit of the budget has been reached).

- g. Financial Summary and Reports: A dashboard that provides users with an overview of their financial situation, including summaries of income, expenses, and balances. Users should be able to:
  - Display a financial summary: total income, total expenses, balance.
  - Visualize financial data using charts and graphs (e.g., pie charts for income vs. expenses, bar charts for monthly expenses).
  - Generate detailed reports: Daily, weekly, monthly, or yearly income/expense summaries.
- h. In the settings window, users can set their preference for the app theme (dark/light), and set the default period for the summaries to be displayed in the home window (daily, weekly, monthly). Users' preferences should be saved and maintained using shared preferences.
- i. Income/Expenses Categorization: Allow users to add new categories for income or expenses in the setting window, or delete/update an existing category.

### 3. UI design [15]

We would like to leave the application UI design up to your preference. Nice UI design will be rewarded.

#### Notes:

- You can create any design as long as it is clear, arranged, and understandable.
- The name of the application must follow the convention **FirstStudentID\_SecondStudentID\_CourseProject**.
- We will use a Pixel 3a XL device with API Level 26 (or 28) (Graphic=Software). So, please match these requirements to avoid unexpected issues once we test your solution.
- You are allowed to use any internet resources to learn from, but auto-generated code using ChatGPT or any AI models is not allowed (it will lead to a 0 mark!).

#### What to submit?

1. Project.zip file (Size in KB)

From Android Studio: File → Export to zip file

2. APK file

From Android Studio: Build → Build Bundle(s) / APK(s) → Build APK(s)

#### Where to submit

Send all the APK file and ZIP file as a reply to this message

#### Discussion

A sheet will be sent to you as the deadline approaches. Both students (can be from any section) are required to attend the discussion. During this time, you may be asked to explain a part of the code, make changes, or add additional elements, so please be prepared and ensure you understand all parts of the code. Not attending the discussion will result in a grade of zero.