

BINUS University

Academic Career: <i>Undergraduate / Master / Doctoral / International / BASE / BINUS Online*)</i>		Class Program: <i>Regular / Global Class*)</i>	
<input type="checkbox"/> Mid Exam <input type="checkbox"/> Compact Term Exam <input checked="" type="checkbox"/> Final Exam <input type="checkbox"/> Others Exam : _____		Term : Odd / Even / Compact *) Period (Only for BINUS Online): 1 / 2 *)	
<input checked="" type="checkbox"/> Kemanggisan <input type="checkbox"/> Senayan <input type="checkbox"/> Semarang <input type="checkbox"/> Alam Sutera <input type="checkbox"/> Bandung <input type="checkbox"/> Bekasi <input type="checkbox"/> Malang		Academic Year : 2024/2025	
Exam Type* : Onsite / Online		Faculty / Dept. : Engineering / Computer Engineering	
Day / Date** : Thursday / 23 January 2025		Code - Course : CPEN6222010 - Mobile Application Development for Engineering	
Time** : 13:00		Code - Lecturer : D5855 - Johannes, S.Kom., M.T.	
Exam Specification*** : <input type="checkbox"/> Open Book <input type="checkbox"/> Open Notes <input type="checkbox"/> Close Book <input type="checkbox"/> Submit Project <input type="checkbox"/> Open E-Book <input type="checkbox"/> Oral Test		BULC (Only for : BINUS Online)	
Equipment*** : <input type="checkbox"/> Exam Booklet <input type="checkbox"/> Laptop <input type="checkbox"/> Drawing Paper – A3 <input type="checkbox"/> Calculator <input type="checkbox"/> Tablet <input type="checkbox"/> Drawing Paper – A2 <input type="checkbox"/> Dictionary <input type="checkbox"/> Smartphone <input type="checkbox"/> Notes		Class : LA40 & LB40	
		Student ID *** :	
		Name *** :	
		Signature *** :	
*) <i>Strikethrough the unnecessary items</i> **) <i>For Online Exam, this is the due date</i> ***) <i>Only for Onsite Exam</i>			
<p><i>Please insert the test paper into the exam booklet and submit both papers after the test.</i></p> <p><i>The penalty for CHEATING is DROP OUT!</i></p>			

Learning Outcome for

☐ Mid Exam ☒ Final Exam

LO 2 : Solve problems related to software design and mobile application development

LO 4 : Build various practical mobile applications

I. Essay (20%)

1. [LO 2 – 20 Points]

A company requests a mobile application that allows users to register for an event. The registration form must include the following fields: name, email address, phone number, and preferred event date.

- **Name:** Ensure it is not empty and has a minimum length of 3 characters.
- **Email:** Validate the format to ensure it is a valid email address (ex. detect “@”).
- **Phone Number:** Restrict the input to numeric values, with a length between 9 and 12 digits.
- **Preferred Event Date:** Allow users to select a valid date using a date picker.

Describe how you would design and validate this form using Flutter. Your explanation should include:

1. What would you consider to use between TextField and TextFormField to build the app?
2. How you would implement validation logic for each field using Flutter's built-in features.
3. How the form would handle user input and provide feedback when the form is submitted.

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II. Project (80%)
2. [LO 4 – 70 Points]

You are tasked with developing a simple note-taking application using Flutter. The app should include the following features:

- a. **Authentication:**
 - Users must be able to sign in (Fig. 1) and register (Fig. 2) using Firebase Authentication.
 - Upon successful sign-in, users are directed to the home page of the app.
- b. **Home Page:**
 - (Database Read Operation) The home page displays a collection of notes stored in Firebase Firestore.
 - If no notes are available (see Fig. 3), the screen should display a message: *"No data found."*
 - The app bar must include a logout icon to allow users to sign out.
 - A floating action button (FAB) must be provided for users to navigate to the "Add New Note" screen.
 - (Database Delete Operation) Users must be able to delete notes by swiping in a specific direction. Deleted notes should also be removed from Firebase Firestore.
 - Notes displayed on the home page should show only the first three lines of the content if it is too long (see Fig. 4).
- c. **Add New Note Screen:**
 - The screen contains two text fields for entering a note title and its content (see Fig. 5).
 - Two buttons must be available:
 - **Clear:** To reset the fields.
 - **Save:** (Database Create Operation) To save the note to Firebase Firestore.
 - After saving, the user is redirected to the home page, and the new note is displayed.

Project Structure Requirements

- main.dart
- screens
 - auth_screen.dart
 - home_screen.dart
 - login_or_register_screen.dart
 - login_screen.dart
 - new_note_screen.dart
 - register_screen.dart
- widgets
 - list_item.dart

Project Requirements

- [LO4 – 10 Points] Follow the same layout as attached below.
- [LO4 – 10 Points] Firebase Authentication.
- [LO4 – 10 Points] Firebase Firestore Create Operation.
- [LO4 – 10 Points] Firebase Firestore Read Operation.
- [LO4 – 10 Points] Firebase Firestore Delete Operation.
- [LO4 – 10 Points] Display sorted notes based on created date.
- [LO4 – 10 Points] Follow the project structure requirements.

Important Notes

- Create a short demonstration video (max. 5 minutes) showcasing all the app's functionalities.
- Ensure that the video includes demonstrations of all variations outlined above, including Firebase Firestore database Panel View (see Fig. 6).
- Make sure to submit demonstration video along with your answer sheet to the submission system. For additional backup, in case the submitted video quality is not clear, you may also provide the link to the video repository in your exam answer sheet for scoring purposes.
- Make sure any external link provided can be accessed.
- Submit only the source code (not the entire project) as a compressed zip file.

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3. [LO 4 – 10 Points]

Identify and explain the features that are missing from this app to make it more user-friendly and fully functional. Additionally, propose potential improvements or enhancements that could be added to the app.

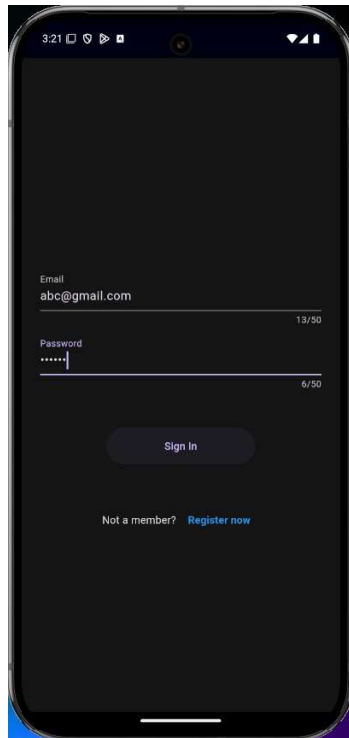


Figure 1. Login Screen

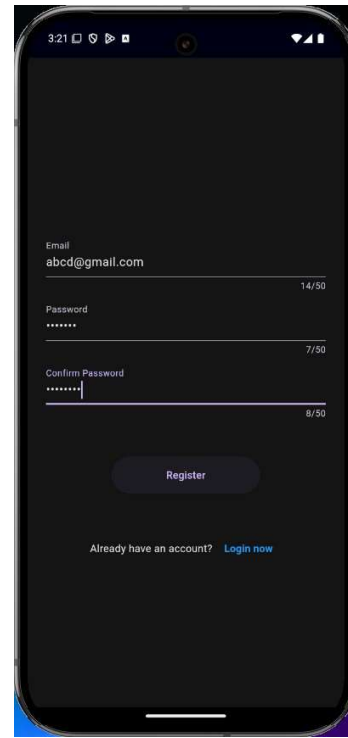


Figure 2. Register Screen



Figure 3. Home Screen Without Content

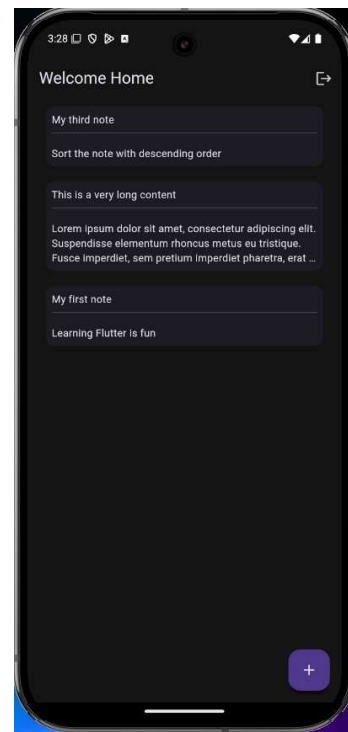


Figure 4. Home Screen With Content Sorted

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Figure 5. Add New Note Screen

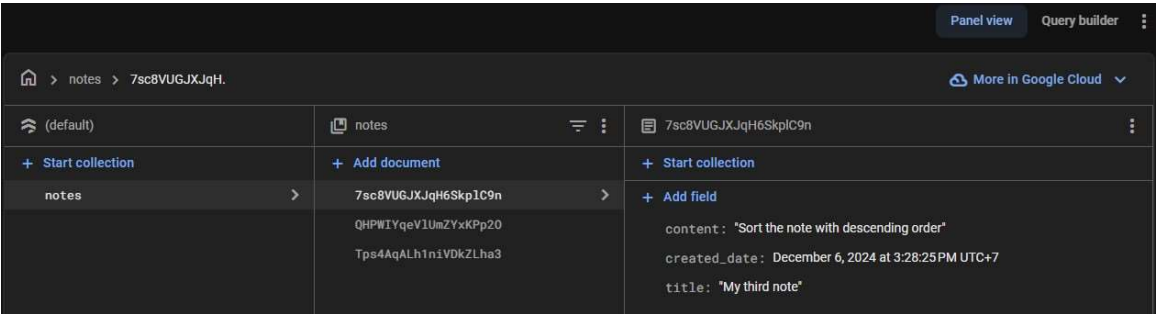


Figure 6. Example Preview of Firestore Database Panel View

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