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# Mobile Application Development – Class Activity

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**Program:** BSSE / BSCS

**Semester & Section:** 5 (A/B/C)

**Course Name:** Mobile Application Development

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## ◆ Project Title

**Study Notes & Quiz Tracker Android Application**

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## ◆ Project Overview

This Android application helps students to **create and manage study notes, track quiz progress, and preserve user state** across important Android OS events such as **screen rotation, configuration changes, background/foreground transitions, and low-memory process death**. The app ensures a smooth user experience by saving and restoring data properly.

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## Feature List (Minimum 10)

1. User Profile Setup
2. Create Study Notes
3. Edit Study Notes
4. Delete Study Notes
5. Offline Storage of Notes
6. View Notes in List (RecyclerView)
7. Quiz Module (MCQs)
8. Quiz Score Tracking
9. Progress Dashboard
10. Theme Switching (Light/Dark)

- 11. State Preservation on Rotation
- 12. Restore Data after App Restart

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## 2 Feasibility Study (Mapping Features to Tools)

Feature	Resources / APIs / Libraries
User Profile	SharedPreferences
Create/Edit Notes	SQLite Database
Offline Storage	SQLite
Notes Display	RecyclerView
Quiz Questions	Local JSON File
Quiz Score Tracking	SharedPreferences
Dashboard	TextView, ProgressBar
Theme Switching	AppCompat Themes
Rotation Handling	onSaveInstanceState()
Background Handling	ViewModel
App Restart Recovery	Persistent Storage

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## 3 Technical Developer Guide (3 Selected Features)

**Selected Framework:** Java & XML (Android Studio)

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### ◆ Feature 1: Create & Save Study Notes

#### Steps:

1. Design UI using `EditText` and `Button`.
2. Create a SQLite database helper class.
3. Insert note data into SQLite database.
4. Fetch saved notes and display using `RecyclerView`.
5. Show confirmation message after saving.

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## ◆ Feature 2: Quiz Progress Tracking

### Steps:

1. Create quiz questions using a local JSON file.
  2. Store quiz score using `SharedPreferences`.
  3. Update score after quiz submission.
  4. Retrieve stored score when app restarts.
  5. Display progress on dashboard screen.
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## ◆ Feature 3: State Preservation on Rotation

### Steps:

1. Override `onSaveInstanceState()` method.
  2. Save current UI data (text, score).
  3. Restore saved data inside `onCreate()` method.
  4. Ensure no re-fetching of data unnecessarily.
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# 4 Implementation Summary

The selected three features were implemented using **Java & XML** in Android Studio.

- **SQLite** is used for notes storage.
  - **SharedPreferences** is used for quiz progress.
  - **onSaveInstanceState()** and **ViewModel** are used for state management.
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## ◆ State Preservation Techniques Used

- Screen rotation handled using `onSaveInstanceState()`.
  - Background/foreground transitions handled using `ViewModel`.
  - Persistent storage ensures data recovery after low-memory process death.
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## Submission Details

- Complete Android Studio project pushed to GitHub
  - README.md file describing features and navigation
  - Screenshots included:
    - Android Studio code
    - Emulator output
    - GitHub repository
    - Feasibility study table
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