

# **EXCEL-BASED QUIZ APP WITH INSTANT FEEDBACK**

**A MINI PROJECT REPORT**

*Submitted by*

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*in partial fulfillment for the course*

**CS19611 – MOBILE APPLICATION DEVELOPMENT LABORATORY**

*of the degree of*

**BACHELOR OF ENGINEERING**

**in**

**COMPUTER SCIENCE AND ENGINEERING**



**RAJALAKSHMI ENGINEERING COLLEGE**

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**MAY 2025**

## **BONAFIDE CERTIFICATE**

Certified that this Project titled **“EXCEL-BASED QUIZ APP WITH INSTANT FEEDBACK”** is the bonafide work of **“RISHIKESH T (2116220701226)**, who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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## ***ACKNOWLEDGMENT***

Initially we thank the Almighty for being with us through every walk of our life and showering his blessings through the endeavor to put forth this report. Our sincere thanks to our Chairman Mr. S. MEGANATHAN, B.E, F.I.E., our Vice Chairman Mr. ABHAY SHANKAR MEGANATHAN, B.E., M.S., and our respected Chairperson Dr. (Mrs.) THANGAM MEGANATHAN, Ph.D., for providing us with the requisite infrastructure and sincere endeavoring in educating us in their premier institution. Our sincere thanks to Dr. S.N. MURUGESAN, M.E., Ph.D., our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to Dr. P. KUMAR, M.E., Ph.D., Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our internal guide, Mr. Saravana Gokul G, M.E., Assistant Professor (SG), Department of Computer Science and Engineering. Rajalakshmi Engineering College for his valuable guidance throughout the course of the project. We are very glad to thank our Project Coordinator, Mr. Saravana Gokul G, M.E., Assistant Professor (SG), Department of Computer Science and Engineering for his useful tips during our review to build our project.

**RISHIKESH T (220701226)**

## **ABSTRACT**

**This project presents the development of an Android-based quiz application that utilizes Excel files for dynamic question and answer management. The primary objective of this application is to offer a lightweight, flexible, and easily customizable platform for conducting quizzes or assessments without the need for a dedicated backend or database. Users can load quiz questions and corresponding answers directly from .xlsx files placed in the application's assets folder.**

**Built using Kotlin and the Apache POI library, the app reads structured data from Excel spreadsheets, allowing educators or examiners to prepare quizzes in a familiar format. Upon launching the app, questions are presented one by one, and users input their answers, which are then validated against the correct answers from the Excel sheet. After completion, the app calculates the user's score and provides instant feedback based on performance, such as "Excellent", "Good Job", or "Needs Improvement".**

**This project demonstrates the effective integration of file-based data handling in mobile applications, providing a reusable and offline-capable solution for educational and self-assessment purposes. The application is suitable for students, teachers, and organizations seeking a simple, portable, and efficient.**

## **LIST OF FIGURES**

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# **CHAPTER 1**

## **INTRODUCTION**

In today's digital learning era, mobile applications have emerged as powerful tools for delivering education in an interactive, flexible, and accessible manner. Among the various educational tools, quiz applications play a significant role in evaluating a learner's knowledge and promoting active engagement. This project, titled "Excel-Based Quiz App with Instant Feedback", introduces a simple yet effective Android application that conducts quizzes based on data retrieved from Excel files, allowing easy content management and offline accessibility.

The primary goal of this project is to create a mobile quiz system that reads questions and answers from pre-formatted Excel sheets and allows users to input answers, receive immediate scoring, and get performance feedback. This approach eliminates the need for complex database systems or internet connectivity, making the application lightweight, user-friendly, and ideal for use in academic or self-study environments.

The application is developed using Kotlin and utilizes the Apache POI library to handle Excel file operations. The user interface is designed for ease of use, showing one question at a time, accepting user responses, and displaying feedback based on their performance. The Excel-based data structure makes it convenient for teachers, trainers, or administrators to prepare and modify quiz content without needing programming expertise.

By combining mobile accessibility, flexible content input, and real-time assessment, this project serves as a practical solution for conducting quizzes, enhancing learning, and supporting personalized evaluation without requiring online infrastructure.

## **CHAPTER 2**

### **LITERATURE SURVEY**

#### **2.1 GENERAL**

The use of mobile applications for educational purposes has become increasingly prevalent, and the integration of external data sources like Excel files into these applications is an area of growing interest. This literature survey reviews relevant research and works that align with key aspects of the project, focusing on mobile quiz apps, the use of Excel files in Android development, and feedback-based learning systems.

##### **1. Mobile Quiz Applications**

Mobile-based quiz applications have become a vital tool in education, training, and self-assessment. Many studies have shown that these apps provide users with an interactive platform for learning and knowledge testing. For example, research by Ali et al. (2019) explored the effectiveness of mobile apps for enhancing learning outcomes, particularly in the context of quizzes and knowledge assessments. These apps have proven to be engaging, motivating, and efficient in delivering personalized educational content.

Similarly, Chen et al. (2020) discussed the potential of mobile quiz apps in promoting continuous learning and skill improvement. Their study emphasized how quiz-based apps can drive learner engagement and help track learning progress through continuous testing and feedback.

##### **2. Use of Excel in Mobile App Development**

Integrating Excel files into mobile apps for storing, retrieving, and processing data is a widely recognized practice. The Apache POI library (used in this project) allows developers to read, write, and manipulate Microsoft Excel files directly in Java and Kotlin-based applications. This library is critical for mobile apps like



quiz applications that require the flexibility of external data sources without the overhead of a database.

Several studies, such as Johnson (2018), examined the use of Excel in educational mobile applications. The research demonstrated how Excel files provide an easy-to-use format for educators to design and manage content. It is particularly useful in scenarios where non-developers need to prepare data, such as quizzes, by simply editing spreadsheet files without additional programming knowledge. In Chen and Wang's (2017) work on dynamic learning systems, they highlighted the use of Excel for managing large datasets, such as questions and answers, which can be easily manipulated without requiring complex backend infrastructure. This aligns well with the approach used in this project, where quiz content is stored in Excel files and then read into the mobile app.

### 3. Feedback Mechanisms in Educational Apps

Effective feedback mechanisms are critical in educational settings to help learners improve their knowledge and performance. Studies such as Hattie & Timperley (2007) emphasize the importance of feedback in promoting student achievement, asserting that timely and constructive feedback significantly enhances learning outcomes. In the context of mobile apps, feedback can be instant, which makes it more effective for reinforcing concepts.

The project employs a feedback system based on user performance, providing motivational messages such as "Excellent", "Good Job", and "Needs Improvement" based on the user's score. This feedback system is an application of formative assessment strategies discussed by Black & Wiliam (1998), which are aimed at improving student learning through regular, interactive assessments.

### 4. User Interface Design for Educational Apps

The design of user interfaces (UI) in educational mobile applications significantly impacts user engagement and usability. Research by Rizzo & Nguyen (2016) suggests that clear, simple, and visually appealing UIs are essential for mobile

learning apps, ensuring that users can focus on the educational content rather than navigating a complex interface. The design of the quiz app in this project follows these principles by providing a simple yet functional UI, ensuring that users can easily interact with the app.

Furthermore, Cheng and Tsai (2018) discussed how user-centered design principles should be applied in mobile apps, particularly in educational contexts. Their work suggests that quizzes should be presented in a user-friendly way, providing a clear progression and straightforward navigation, which is reflected in this project's implementation.

## 5. Offline and Lightweight Quiz Applications

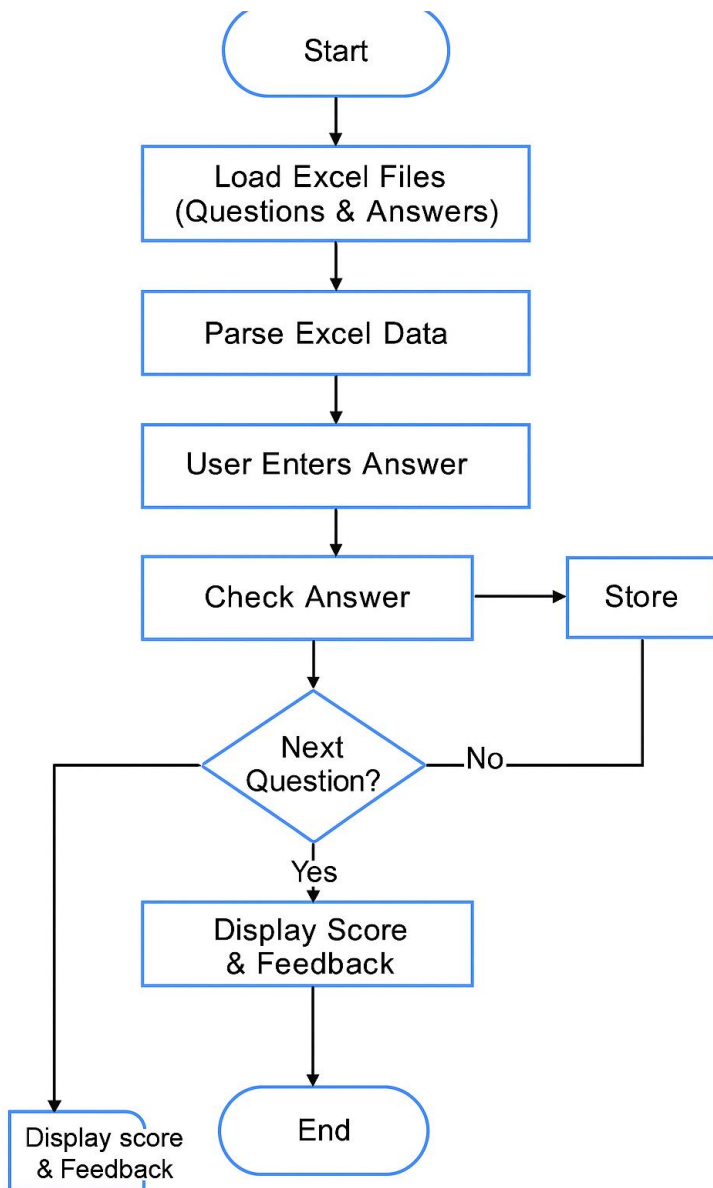
One of the key features of this project is the offline functionality of the quiz app, which does not require internet connectivity once installed. Gai & Yu (2020) analyzed mobile applications in regions with limited internet access, emphasizing the importance of offline capabilities in educational tools. This feature is particularly beneficial for students and users in areas with unreliable internet connections, as it ensures accessibility to learning tools at all times.

Similarly, Patel et al. (2019) discussed the need for lightweight applications, especially in developing countries where smartphones may have lower processing power and storage. By using Excel files for question storage and avoiding a complex database setup, this project remains a lightweight and resource-efficient solution.

## CHAPTER 3

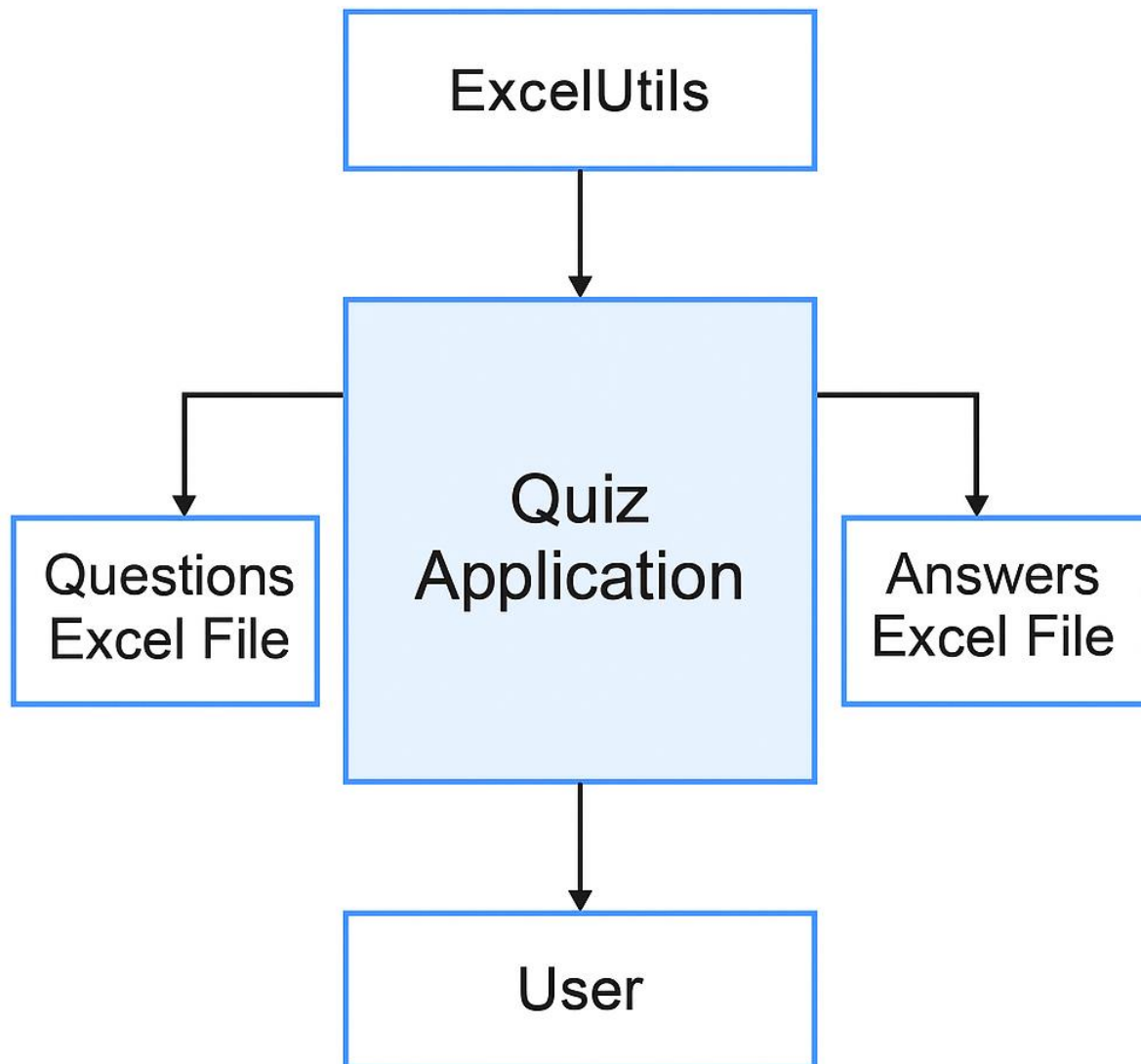
### SYSTEM DESIGN

#### 3.1.1 SYSTEM FLOW DIAGRAM



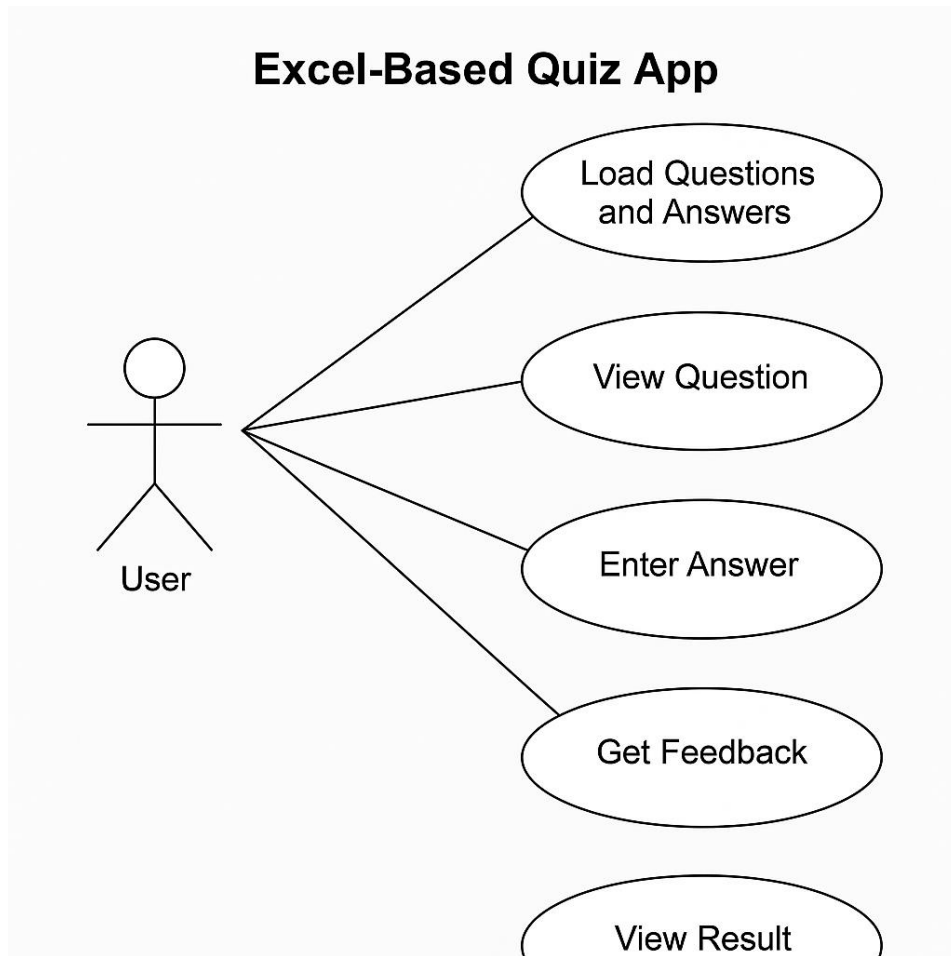
**Fig 3.1 System Flow Diagram**

### 3.1.2 ARCHITECTURE DIAGRAM



**Fig 3.2 Architecture Diagram**

### 3.1.3 USECASE DIAGRAM



**Fig 3.3 USECASE DIAGRAM**

## **CHAPTER 4**

### **PROJECT DESCRIPTION**

#### **4.1 METHODOLOGIES**

The methodology adopted for this project follows a structured and modular approach to ensure efficient development, smooth execution, and maintainability of the application. The development process is divided into five main phases: requirement analysis, system design, implementation, testing, and deployment.

In the initial phase, the requirements were gathered by identifying the need for a simple, offline-compatible Android quiz application that could load and evaluate questions and answers from Excel files. The core functionalities were defined to include reading Excel data, displaying one question at a time, accepting user answers, comparing them with correct answers, calculating the score, and providing feedback based on performance.

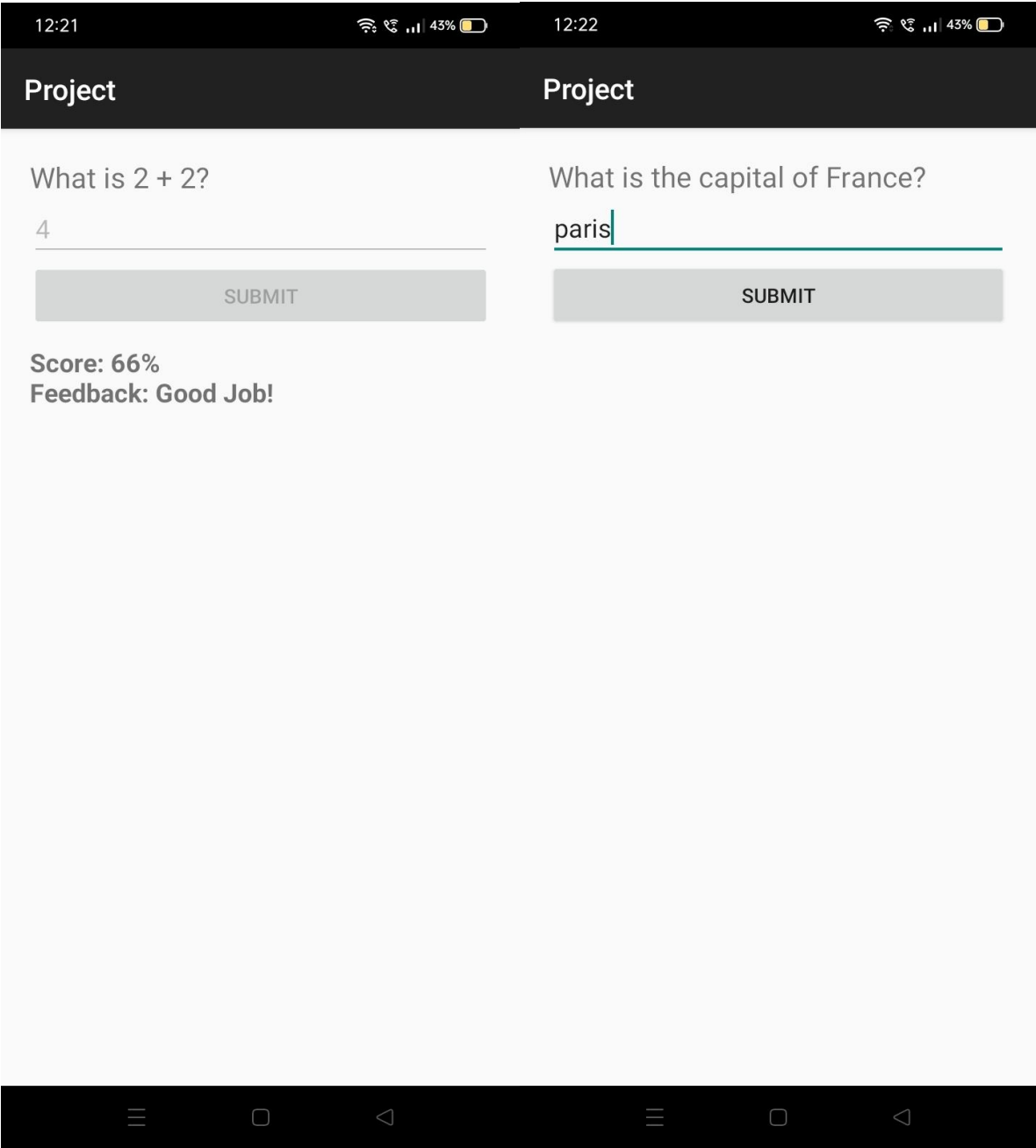
In the system design phase, the architecture of the application was planned using the Model-View-Controller (MVC) pattern. The user interface (View) was designed using Android XML layouts, comprising elements like TextView, EditText, and Button. The controller, primarily the MainActivity, manages user interaction and application logic. The model layer includes QuestionReader and ExcelUtils classes that are responsible for reading and processing Excel files from the assets folder. These files contain question IDs and their corresponding text in a structured two-column format.

The implementation phase involved coding the application's functionalities in Kotlin using Android Studio. The Apache POI library was integrated to read .xlsx files directly from the app's assets folder. The data extracted was stored in maps for efficient retrieval. The app logic was designed to loop through the questions, accept user inputs, evaluate correctness, and track the user's score. Upon completion, it calculates the percentage and provides feedback based on performance (e.g., "Excellent", "Good Job", or "Needs Improvement").

During the testing phase, both functional and user interface testing were conducted to ensure the app worked as expected across different Android devices. Edge cases such as missing data, blank inputs, or unexpected file formats were handled to prevent app crashes. UI responsiveness and performance were also evaluated.

Finally, the application was built and packaged for deployment. It was successfully installed and tested on real Android devices to confirm that it functioned independently of internet connectivity. The design also ensures easy maintenance and scalability for future enhancements, such as support for multiple-choice questions, integration with cloud storage, or real-time analytics.

## 4.2 PROJECT OUTPUT SCREENS



## **CHAPTER 5**

### **CONCLUSION**

The development of the Excel-Based Quiz App with Instant Feedback demonstrates an efficient and practical approach to conducting quizzes on Android devices using Excel files as the primary data source. By eliminating the need for a complex database or internet connectivity, the application provides a lightweight, accessible, and user-friendly solution for educational assessments.

The integration of the Apache POI library allowed seamless reading of .xlsx files within the app, making it easy for educators and administrators to update quiz content without modifying the source code. The real-time evaluation of user answers, automatic score calculation, and feedback generation enhances the learning experience and supports self-assessment.

Throughout the project, modular design principles and structured coding practices were applied to ensure maintainability and future scalability. The application can be extended with features such as multiple-choice support, timers, and performance analytics to further enrich its functionality.

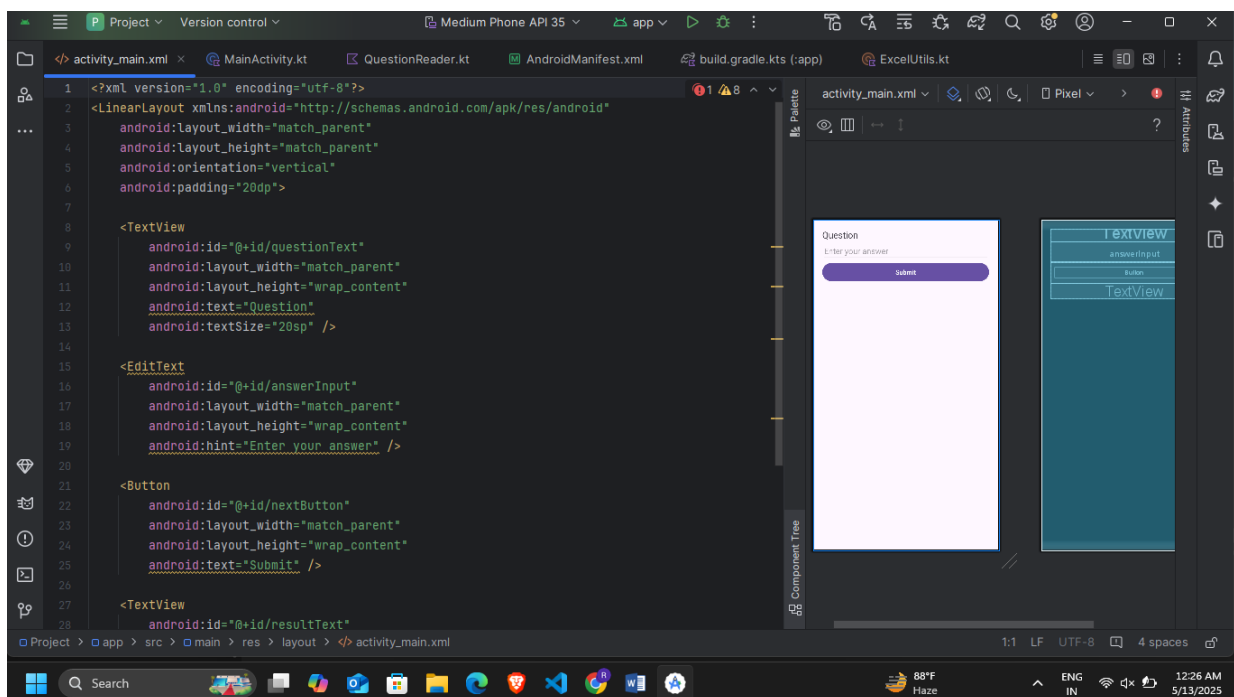
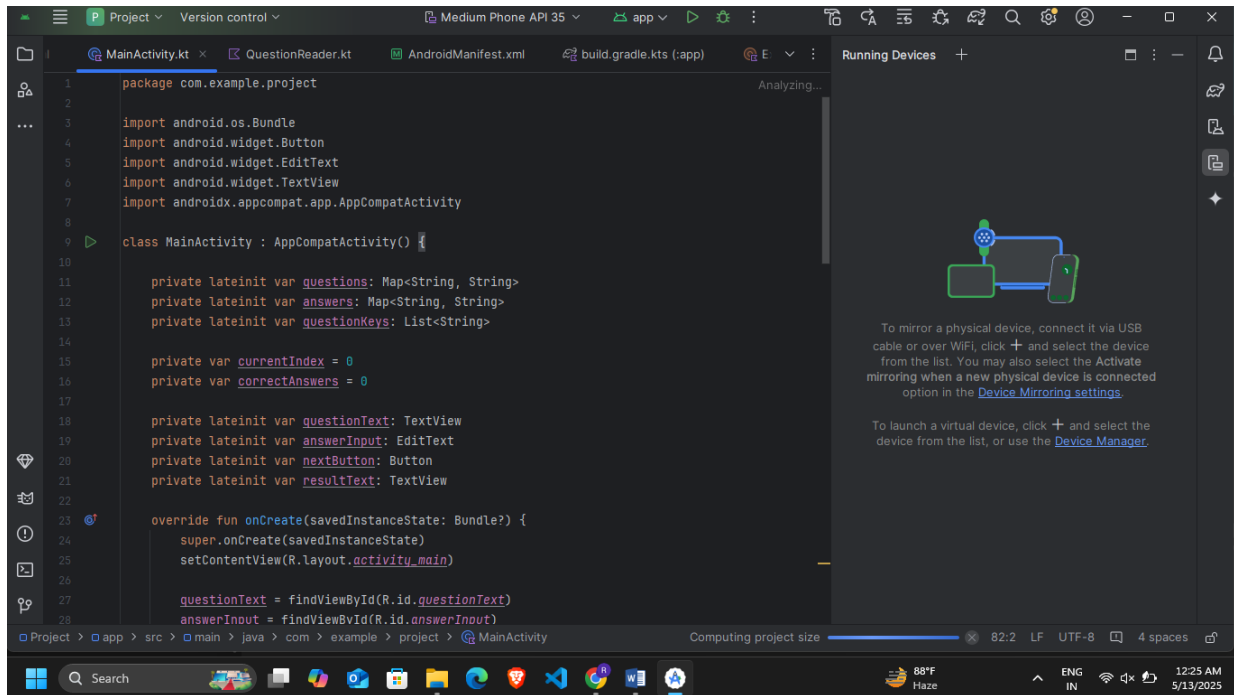
Overall, the project successfully meets its objectives of creating an interactive, offline-capable quiz application that leverages existing tools like Excel for flexible content management. It serves as a valuable educational aid for both learners and educators in various environments.



# APPENDIX

## SOURCE CODE

### Mainactivity.kt



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