

PRACTICE PAL

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1.0 Abstract

Practice Pal is an intelligent educational mobile platform that aims to improve students' academic preparation and self-assessment in a variety of subject areas. Based on user-defined data, the platform uses developments in artificial intelligence to dynamically create tests and personalised course content. It offers a simplified and flexible method of learning by incorporating elements like automatic grading, immediate feedback, and test revision possibilities. Practice Pal offers a flexible and customised assessment environment that is appropriate for students of all ages, catering to a wide range of users from elementary school pupils to college students. Providing a personalized, learner-centred educational experience is Practice Pal's main goal. Users receive a structured course outline with pertinent content that is suited to their academic level after entering a subject. The platform makes it possible to create practice tests that closely match with the designated content based on this outline. Test results are assessed in real time, and students receive immediate feedback to help them pinpoint their areas of strength and growth. Additionally, users can review past attempts, assess their mistakes, and repeat tests as necessary. Through reflection and repetition, this iterative process encourages deeper learning and retention, which is consistent with modern pedagogical models that prioritize student autonomy and adaptable learning.

2.0. Introduction

Today's learners desire more personalised and adaptable learning experiences, which traditional teaching and evaluation approaches often fail to provide. By offering an AI-powered environment where students can independently create structured course materials and participate in self-assessment, Practice Pal fills this gap. Practice Pal sets itself apart with its clever, user-focused design as the need for digital and mobile-based learning solutions keeps growing. The platform promotes academic confidence and autonomy by improving accessibility, encouraging self-paced learning, and giving students the tools they need to take charge of their education.

3.0. Problem definition

In the majority of classes—particularly in countries like Zimbabwe—students face tremendous challenges in accessing personalized learning materials and true self-assessment tools. Typical classroom instruction, in fact, does not cater to the unique learning needs of individual students due to enormous class sizes, inefficient teaching time, and a shortage of tailored practice material. Moreover, existing online learning platforms such as Quizlet or Khan Academy either offer static content not customized to the specific subject of a student or require constant internet availability and coordinated curriculum, which may not be appropriate for all learners. There is a growing need for a smart, adaptive, and locally relevant technology that allows students to author their own study materials, practice tests, and receive immediate feedback without requiring a lot of infrastructure or institutional effort. Also, the solutions available do not offer tools which allow the learner to revise, re-attempt tests, and track his/her learning progress longitudinally through trends in performance.

These limitations negatively affect self-directed learning and individualized academic improvement.

The Practice Pal project makes this gap up with a mobile application that employs AI to enable users to design customized course content and quizzes, get instant grading, and access progress tracking feature. The platform is designed mobile-first in an effort to ensure accessibility in low-resource environments, with a focus on the user from primary through tertiary levels of education. With test automation and AI-driven feedback as well as offline-readiness, Practice Pal seeks to empower students to take charge of learning in a scalable, inclusive, and responsive manner.

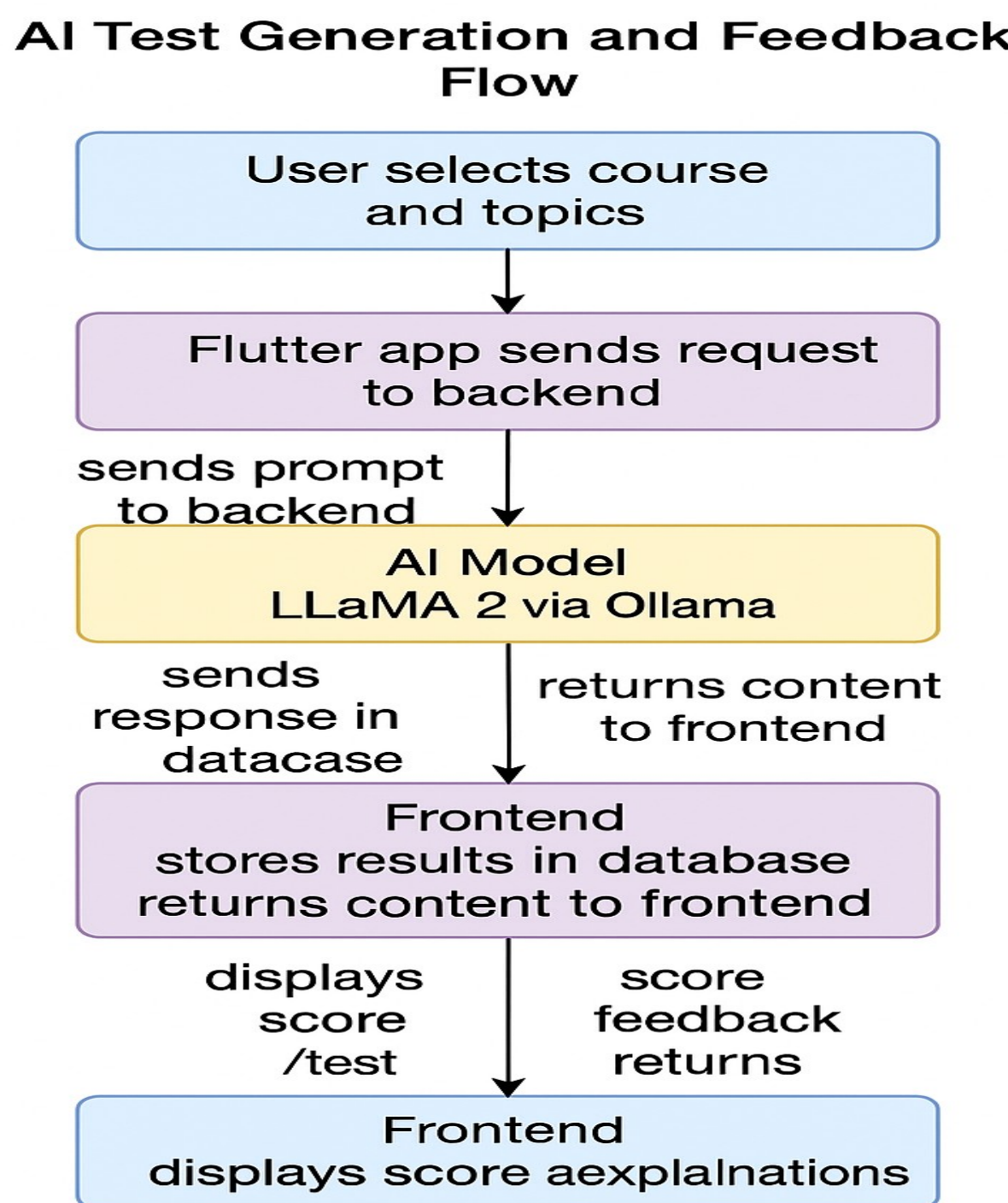
4.0. Overview of the developed application

Practice Pal is a practice test-making educational app that uses artificial intelligence to help students create personalized practice tests. The app offers the ability to type in a topic or subject, select the difficulty level, and have multiple-choice questions automatically generated from what one has typed based on that. The app uses Flutter as its frontend and Spring Boot as its backend and uses the LLaMA 2 7B AI model (through Ollama) to help generate course and questions. Among Practice Pal's most important features are automatic test marking, personalized feedback, performance tracking, and reviewing and re-sitting past tests. It is aimed at students from primary to undergraduate level and offers an inclusive, flexible, and intelligent self-assessment service, particularly for low-resource learning environments.

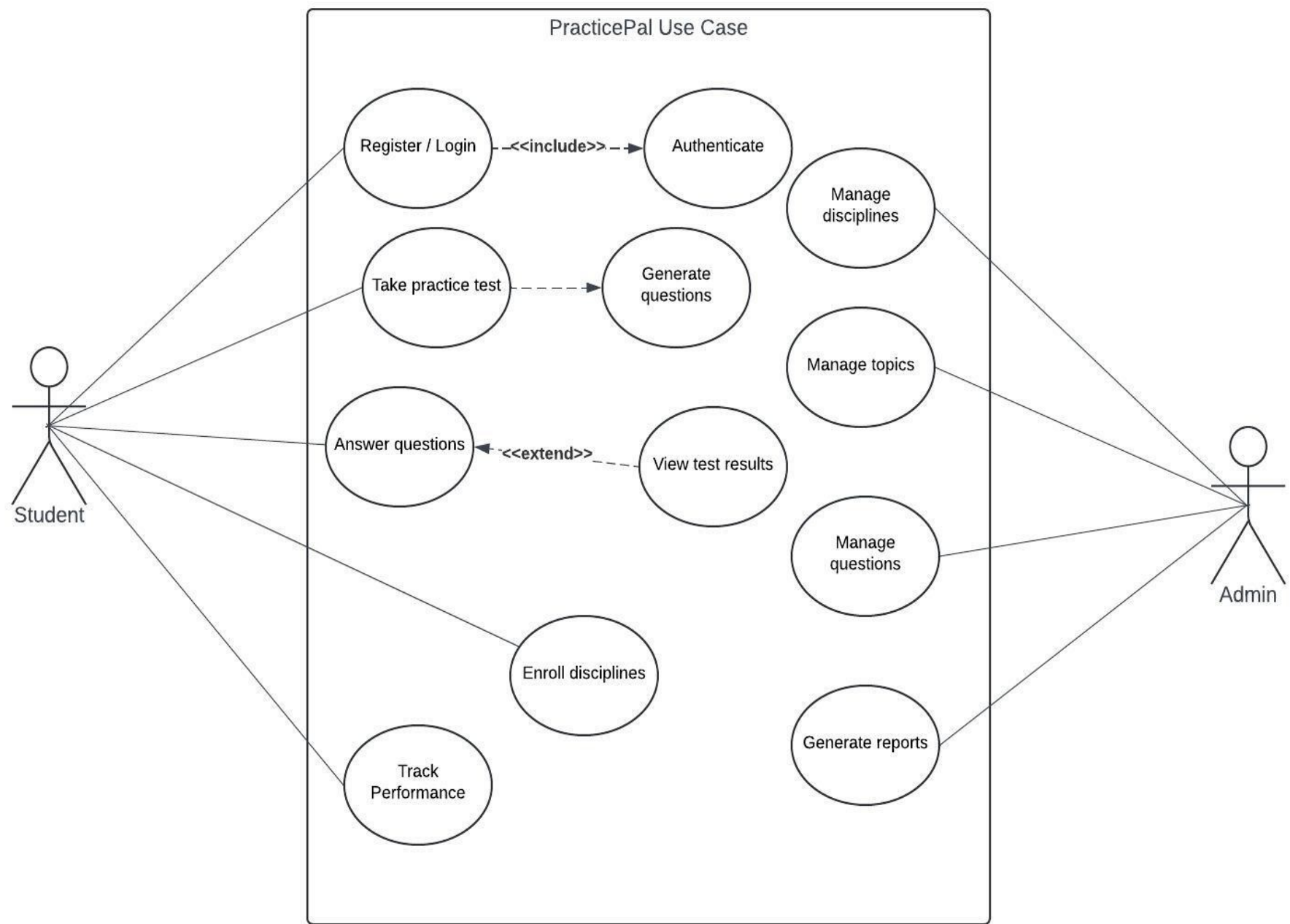
5.0. Objectives

To generate test questions based on user-specified subjects and topics using AI.
To automate the marking process and provide instant feedback upon test submission.
To enable students to track their performance and learning progress over time.
To allow users to revise and retake previous tests for continuous improvement.

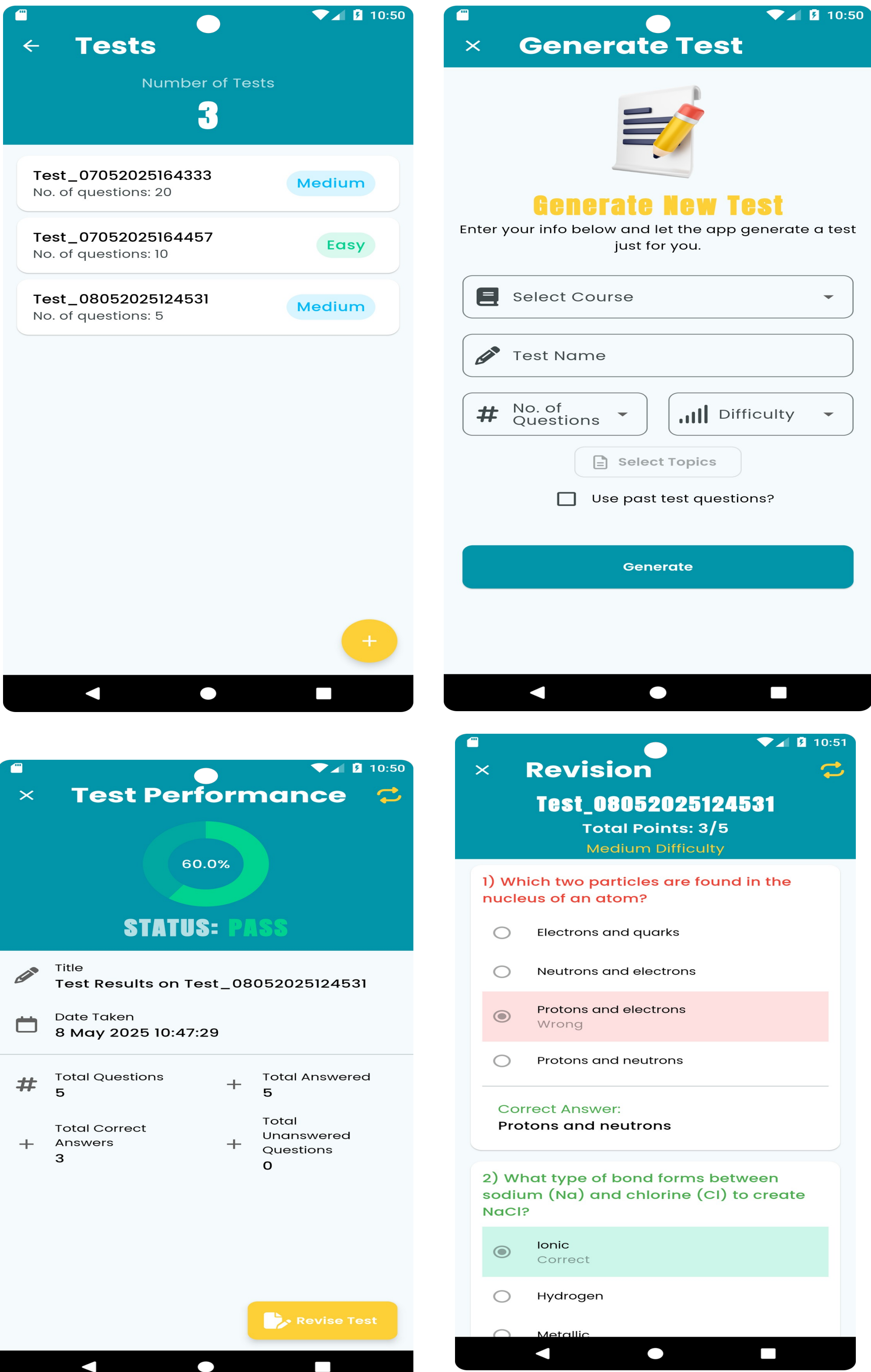
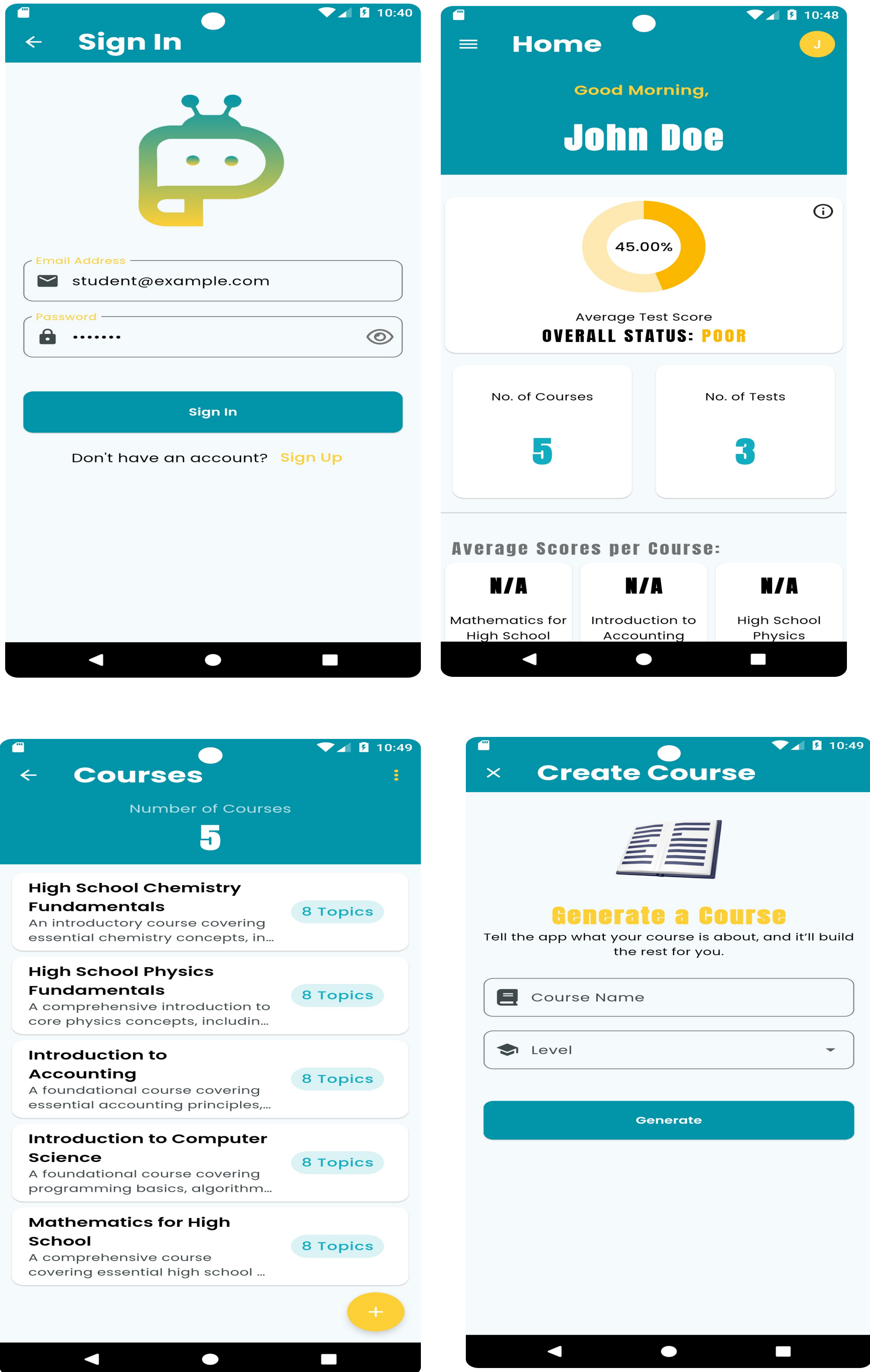
6.0. System Overview



7.0. Use Case Diagram



8.0. Screenshots



Conclusion

A significant development in the use of artificial intelligence in individualized education and assessment is Practice Pal. The platform provides a versatile, user-friendly solution that is suited to the various learning requirements of students ranging from primary school to undergraduate by combining cross-platform mobile development with robust backend services and an AI-driven content generating technique. It stands out from other educational resources due to its capacity to create course content dynamically, generate appropriate tests, offer immediate assessment and feedback, and support several learning cycles. Practice Pal meets a significant and growing need in modern education as students look for more flexible and independent learning spaces. Future improvements, such as language support, customized paths to learning, and more advanced analytics, have the potential to boost the platform's accessibility and influence globally.

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