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MOBILE-BASED REAL-TIME LECTURE REMINDER SYSTEM

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ABSTRACT

The proliferation of technology is significantly transforming manual operations and improving their performance. Lecture Reminder is a tool that helps students and teachers keep track of Lecture dates and locations. It is a very important tool for time management. Widespread inefficiencies are associated with the traditional manual method of course reminders within tertiary institutions. Staff and faculty often forget an appointment that has been scheduled and may not teach a course on the scheduled date. Students skip classes due to incorrect location and time following an impromptu change of location and time, inaccuracies, and placement errors from paper records, as well as a lack of streamlined recall processes. This study conceptualizes and creates a dedicated Android mobile-based real-time lecture reminder system to bypass the limitations associated with the manual method of course reminders. A lecture reminder system is important for busy people because of the burden of remembering and memorizing all academic activities. Again, modern mobile devices such as smartphones have become increasingly powerful and are part of people's daily lives. The growing popularity of Android devices partly explains the motivation for choosing the platform for implementing this system.

Keywords: Android mobile application, Real-time lecture reminder, Technology, Institution

1.0 INTRODUCTION

In the digital age, technology plays a pivotal role in improving the way we interact with information and manage our daily tasks (Haleem, Javaid Qadri & Suman, 2022; Collins & Halverson, 2018). This is particularly evident in the education sector, where mobile applications and digital tools are transforming how students manage their academic schedules. With hectic routines, multiple assignments, and overlapping commitments, students often face difficulties in keeping track of their lecture timings, class schedules, and academic deadlines. This issue can lead to missed classes, forgotten assignments, and overall disorganization, hindering students' academic performance. Therefore, it becomes imperative to develop solutions that assist students in staying organized and on top of their commitments.

The Android Mobile-Based Real-Time Lecture Reminder System is an innovative solution designed to tackle these challenges by helping students manage their lecture schedules more effectively (Milind *et al.*, 2016; Ayeni, Dada, & Talabi, 2017; Mathias, Abifarin & Imavah, 2019). This mobile application, running on Android platforms, sends real-time notifications to students about upcoming lectures, helping them stay on track and ensuring that they never miss an important class. It aims to address the specific problem of forgetfulness, poor time management, and last-minute rushes caused by untracked or forgotten class schedules.

One of the primary issues faced by students today is managing their academic schedules efficiently (Jhonlawi 2024). With diverse academic calendars, multiple subjects, and frequent changes in lecture timings or venues, it can become difficult to remember everything. Many students struggle to manage these schedules manually, relying on physical planners, sticky notes, or desktop calendars, methods that can easily be forgotten or overlooked (Lund & Wiese, 2021). Missing lectures not only disrupts learning but can also affect grades, student participation, and overall academic success.

Additionally, traditional methods of managing schedules do not provide flexibility in case of last-minute changes, such as class cancellations or room changes, which are increasingly common in dynamic academic environments (Kim Hu & Harold, 2025). As a result, students often find themselves unprepared or unaware of such alterations, further

exacerbating their scheduling issues. To overcome these barriers, a more advanced solution is needed (Ozcan, 2013), one that is accessible, reliable, and provides real-time updates directly to students' smartphones (Parchment & Sankaranarayanan, 2013; Fadiya & Iruoma, 2015).

The Android Mobile-Based Real-Time Lecture Reminder System is designed to address these issues by leveraging the power of smartphones, specifically Android devices, to create an easy-to-use, automated, and highly accessible solution. The system allows students to input their class schedules directly into the application, which then sends timely, real-time reminders and updates. These notifications help students stay on top of their lecture timings (Adewale, Abdulkareem & Adelakun, 2014) and manage their academic commitments with greater ease.

The system is designed to be intuitive and user-friendly, offering seamless experience for students of all technical backgrounds. Students can simply input the details of their lectures, such as the course name, lecture timing, and location. The app will then process this information and automatically notify students at predetermined times before each lecture (Hasan, Mustapha & Baharuddin, 2015), ensuring that they have sufficient time to prepare or travel to class. Moreover, the system supports real-time updates (Jadhav & Gupta, 2015, meaning if there are any changes to the schedule (such as a class cancellation or venue change), students will be instantly notified through push notifications.

The Android Mobile-Based Real-Time Lecture Reminder System is a practical and effective solution designed to help students manage their lecture schedules more efficiently. By leveraging the capabilities of modern smartphones and integrating real-time notifications, the system ensures that students never miss a lecture and can stay organized in their academic pursuits. The system is poised to make a meaningful impact on student life by reducing stress, improving punctuality, and contributing to better academic outcomes

2.0 SYSTEM DESIGN

The real-time lecture reminder mobile application system developed in this study is based on the existing implementation infrastructures and modelled according to the existing mode of lecture reminder systems. The software development life cycle (SDLC) employed for this system is the waterfall model. The waterfall approach is called a linear or sequential method because it involves different phases, each leading to the next. The sequential approach starts from the system level through the analysis, design, coding, testing, and support.

The application implementation framework followed the process of structuring, planning, implementing, and controlling to ensure the quality of software and hardware design within the requirements of the software development life cycle. The development and coding architecture of this real-time mobile lecture reminder application includes both hardware and software system design. The application's graphical user interface is designed and implemented with Android User Interface Studio (AUIS) technology. For Android communication purposes, AUIS makes use of the "Gradle" console to compile .apk files. This module is developed for authorized administrators to access and deliver lecture schedule information details to the public. Such Information comprises the lecturer's name, course code, course title, lecture venue, and time.

The system uses a client-server approach on Windows 98 as a platform, and the development exploited SQL functionality as a database. PHP scripting language (Laravel framework) is used in software development for the backend architecture of the available data, and MySQL is used for database development and a structured relational model of the data, while Flutter is used for the frontend development of the system. This is to provide a better interactive information environment and promote higher impromptu notification speed.

Input/Output Design

Input design details the descriptions of the data critical to establishing the new system to operate effectively. Such data includes the username and password. The output design specifies both the new system architecture and contains names and essential

information about students and staff, together with defined system responses for authorized error situations.

Database Design

An effective storage system for vital information is specified through the database design. The storage method of essential information constitutes a database. The market provides multiple database management systems (DBMS), where ORACLE and MS ACCESS, and SQL SERVER are among the available options. The selected DBMS for this study uses MySQL server. The system database named 'lecturer-reminder' contains approximately 11 database tables. The database contains table objects as storage units for data.

Data Flow Diagram

Figure 1 illustrates the data flow pipeline life cycle of the software development for the real-time lecture reminder application, highlighting the roles of the user and administrator. Class Administrators is authorized to add or remove classes and oversee the website statistics, including student registrations, faculty registrations, available courses, and other relevant information.

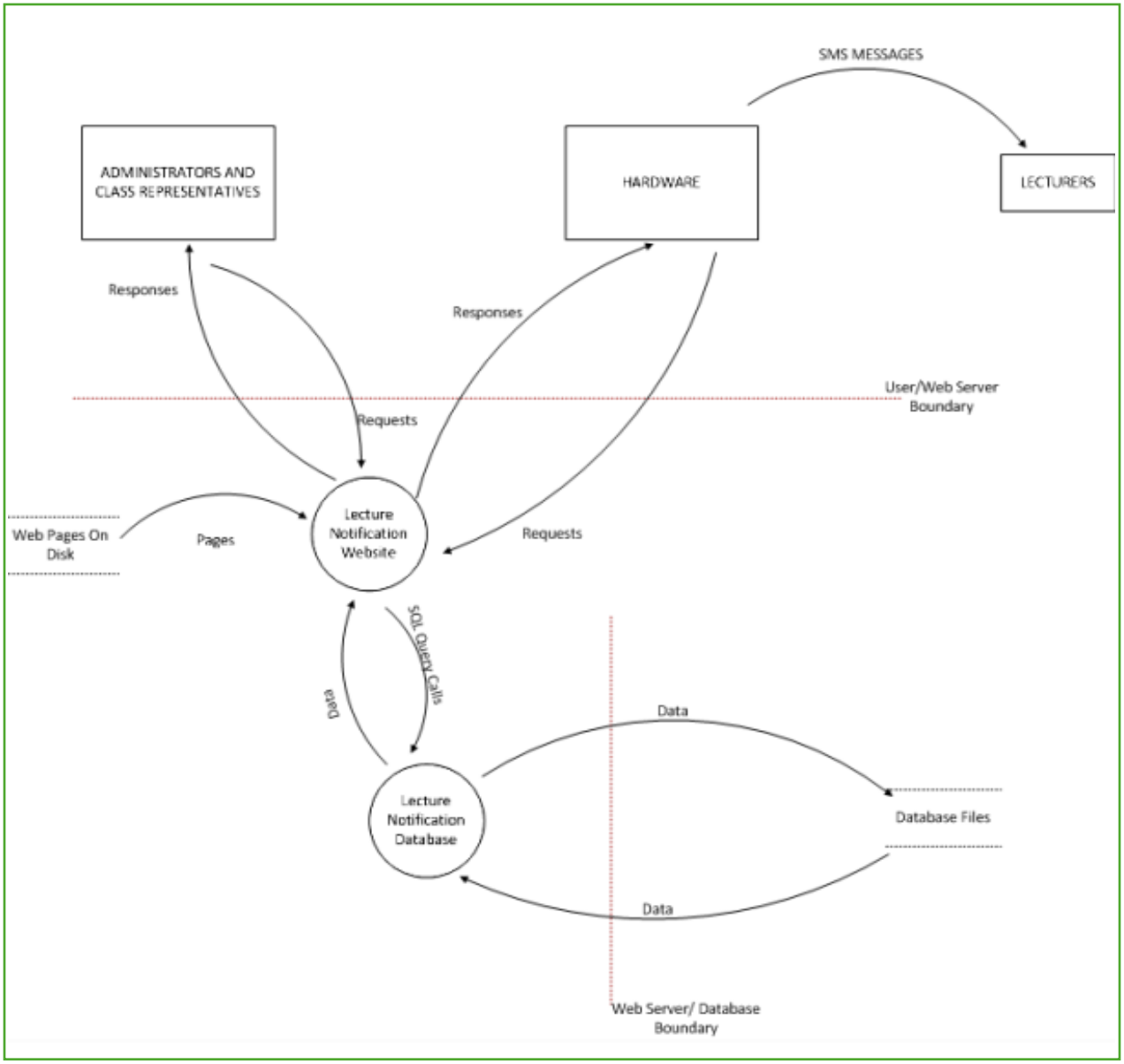


Figure 1. Data Flow Diagram

System Architecture

Figure 2 is a 2-tier architectural design that explains each phase of the application and what it consists of. The design includes the different operating tiers, such as the client tier, the end-user tier, and the application tier, which is also the primary application used. The database level includes the other physical part of the data management of the system. The database level describes the logical aspect of the system, which contains the records of the system and the data of the customer or the user. All input is tailored to the user of this system. The goal is to retrieve the data for use when necessary.

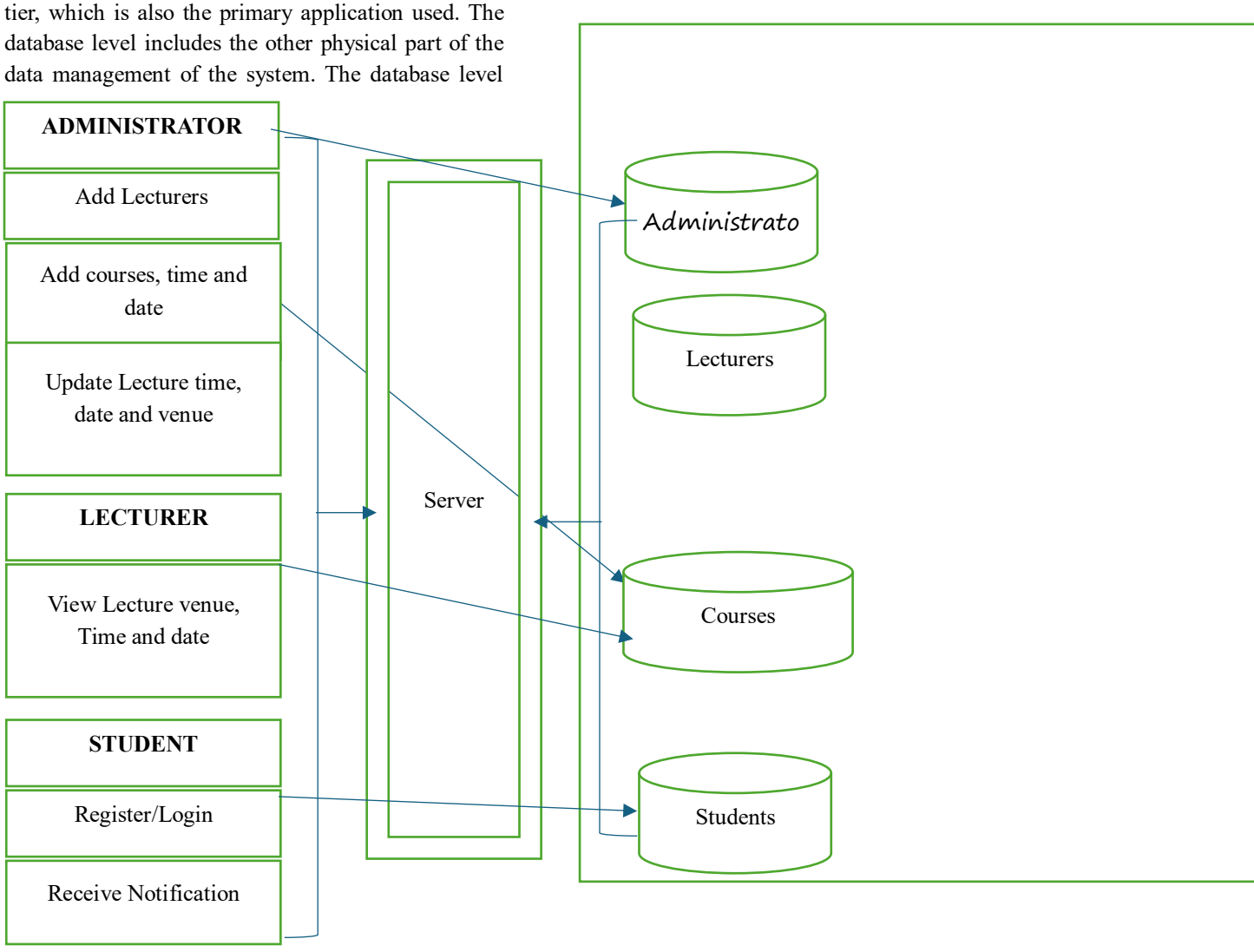


Figure 2. System Architecture

3.0 RESULTS AND DISCUSSION

This real-time lecture reminder system is designed and implemented on an Android-based smartphone. The system takes ambulatory information from a real-time built-in tri-axial accelerometer of a Smartphone and temporal information from calendar data. The reminder system prevents unwanted prompting. The application was designed with a notification feature to serve both the system administrator and the individual lecturer/students. The database operates on the server, while the user interface runs on the browser client-side. This setup enhances the database's performance while minimizing the network traffic. The database program runs on the server to handle the tasks of

managing the database files stored on the file server. The client-side database program then sends requests to the server database program to perform and manipulate the data. The client-side allows the users to register, log in, and make some inputs, which are encrypted by the server-side program on the platform. Once the server-side detects an SQL attack, it prevents the attack and files an attack log, and sends it to the administrator.

The graphical user interface includes figures that show the different actions and operations that can be performed by the modules of the system. It includes figures that show the functionality of this system.

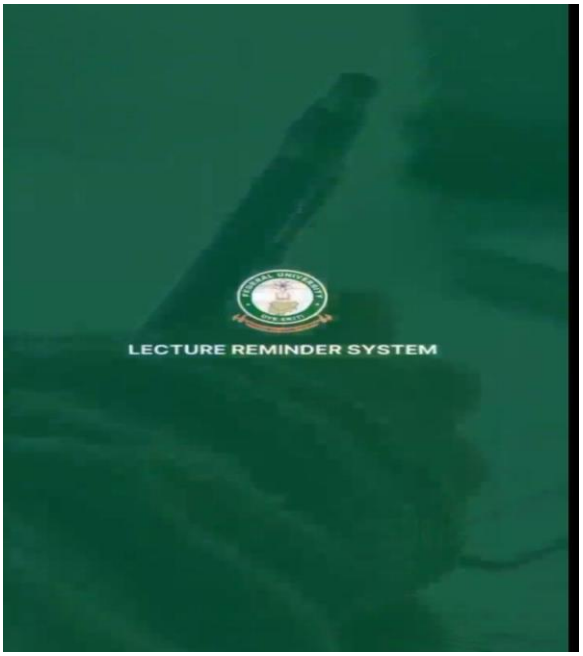


Figure 3. The landing screen

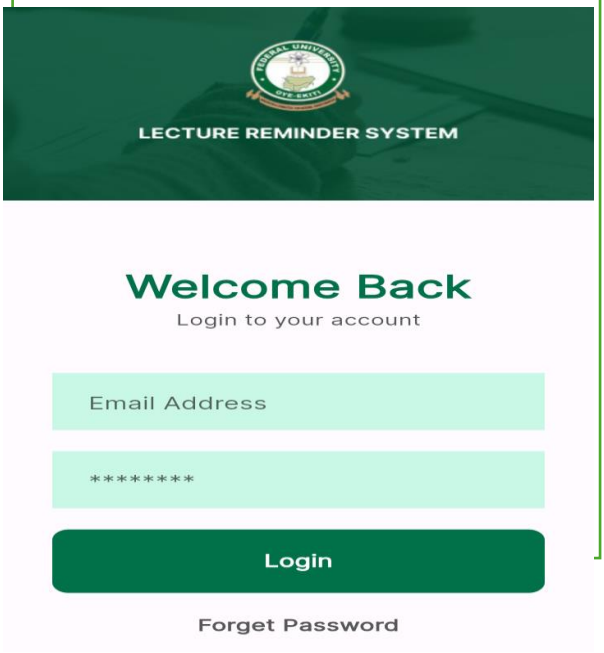


Figure 4. The login screen

Figure 3 is the landing page that shows the application logo, offering a clean and minimalist introduction to the main functionality of the system; it allows easy navigation to all the users' pages on the system while Figure 4 is the login page that allows new users to access an existing account on the application. Users provide information such as their email address and password to access their accounts whenever they want to log into the system.

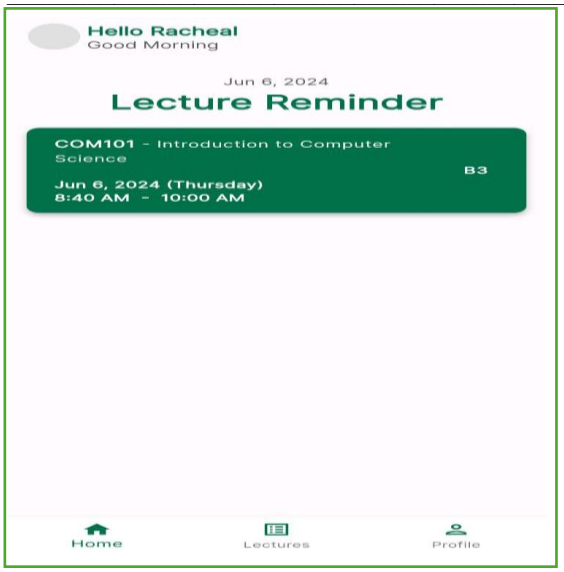
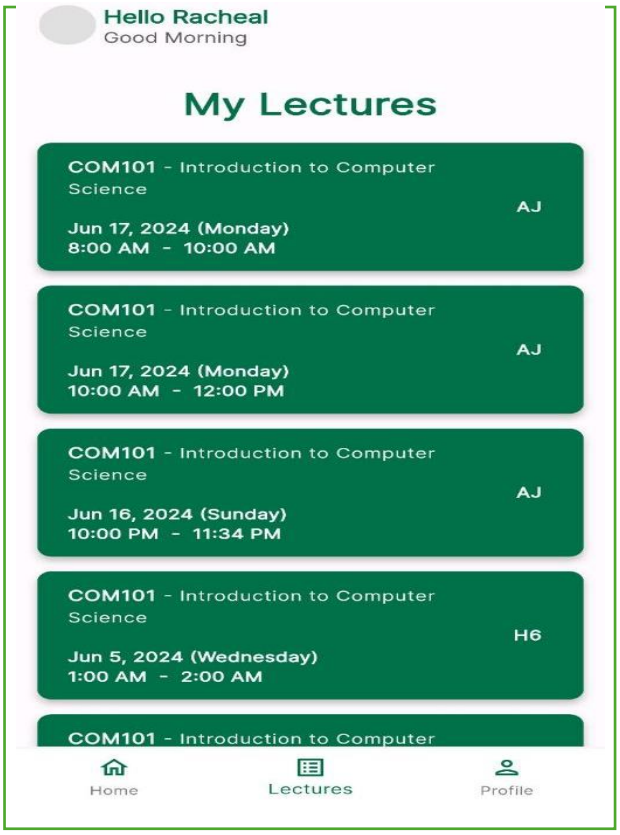


Figure 5. The home screen

Figure 6. The OTP verification screen

Figure 5 is the home screen page that shows the list of scheduled lectures, the lecture time, the lecture date, and the venue. This allows users to view the upcoming class schedule. Figure 6. is the OTP Verification Screen that allows users to verify their account by providing the OTP sent to their given email on the page during password change. A one-time password (OTP) enhances security by verifying user identity before granting access to personalized lecture timetable reminders.



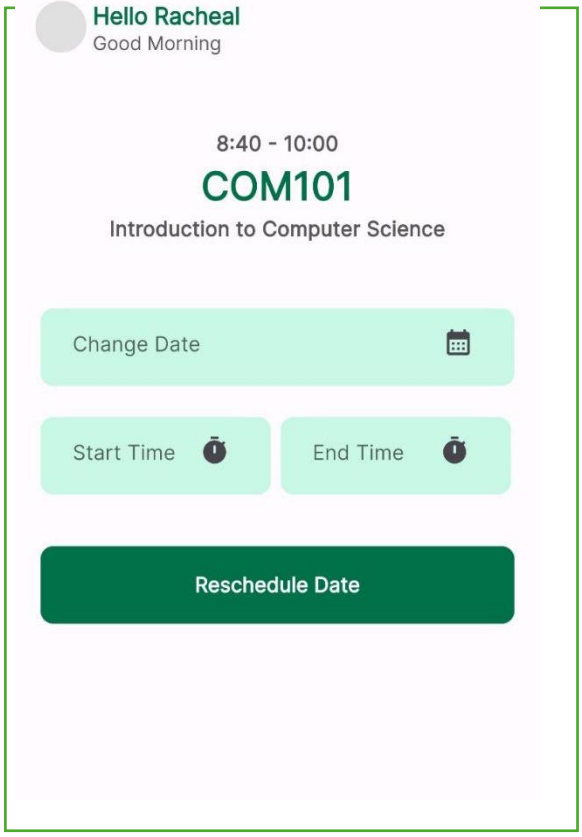


Figure 7. The scheduled lectures screen

Figure 8. The lecture reschedule screen

Figure 7 is a sample of a scheduled lectures screen showing the list of already scheduled lectures. COM 101 was used to test on different scheduled dates with their location, date, and time. Figure 8 is the Lecture Reschedule Screen that allows users to change the lecture date and time by selecting a new date from the calendar, inputting start and end times then proceeding to reschedule.

Generally, this real-time lecture reminder system will have these modules: the admin, the lecturer, and the student. The admin of this lecture reminder application can add all the lecturers of the institution to the system, assign courses, course code, and title, add time to the lectures, add dates the lecture will hold, and also add the lecture venue. The lecturer at the other end can see all the courses assigned to him/her, date, time, and venue. While the students receive notification of the classes. This study implements lecture reminder systems on the Android platform.

4.0 CONCLUSION

This real-time lecture reminder application is designed mainly for mobile phone users. The proposed system is an application that prompts and reminds users about their registered lecture on a specified date/time. The real-time lecture reminder system was created and deployed to offer a quick method for delivering information to a large audience in the blink of an eye. It facilitates communication among a vast network of people and devices. This system is adaptable to user interaction and provides additional operational services beyond those found in existing solutions.

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