

# Android Lecture Timetable Application For Tertiary Institution

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**Abstract**—Timetables are essential in every tertiary institution. It has the major advantage of ensuring that there are no conflicts in scheduling lectures; however, the complications associated with understanding scheduled timetables are quickly becoming a major problem. Several cases of scheduled timetable misinterpretation, miscopying and forgetfulness have been reported by students and lecturers in higher institutions. This paper describes the complete design, implementation and testing of an Android Lecture Timetable Application (ALTA) using Visual C# programming language, the Android Software Development Kit (to simulate a virtual device emulator) and SQLite (as the database). ALTA is a mobile application that includes a reminder alert to remind students and lecturers of their lecture times.

**Keywords**—Android, Timetable, Reminder Alert, SDK

## I. INTRODUCTION

The term "timetable" is made up of two words: "time" and "table." In general, this assigns relations to a table that lists the expected times for events to occur [1]. A timetable is the overall schedule of a specific teaching that will be attended at a specific time by a group of students and the lecturer. It necessitates the use of specialized resources such as a classroom, teaching aids, and a laboratory room. In addition to meeting other needs, scheduling is parallel to the resources made available [2] and [3]. A timetable is a strategy for teachers and students to share lecture time and duration, lecture venue, and lecture date over a predetermined time period (typically a week), while adhering to a set of varying constraints. Timetables are useful for scheduling lectures and allocating resources such as time and locations for lectures or examinations. A well-planned timetable serves as a tool to help students and lecturers manage their time. This, in turn, leads to competence and positive performance outcomes [2]. A timetable is a document that serves as a broad guideline for the time-wise allocation of resources to subjects in order to reduce or eliminate conflicts in classroom allocation and time scheduling [4] and satisfy a set of necessary objectives [5], by establishing the necessary objectives in which

classroom resource allocation for students and lecturers is used without conflict. A timetable specifies which object interacts with which resource as well as when. Students, lectures, and courses are the objects in a tertiary institutional setting, with infrastructure and time serving as the resources [6].

The paper-based method of disseminating and publicizing academic schedules in tertiary institutions is inadequate. This paper-based approach has some bottlenecks that limit and, at times, obstruct the necessary detailed information that the timetable is supposed to pass on to the students [2]. The paper-based system, which is a manual timetable system, entails tedious paperwork and manual data entry, which results in scheduling errors and the failure to provide information at the appropriate time. This has an impact on the educational institution's throughput, while resources and time are wasted. As a result, the possibilities of Information and Communication Technology (ICT) can be linked to improve tertiary institutions' current paper-based approach by developing the Android Lecture Timetable System, which is an in-built, flexible and user-friendly timetable management software designed by this paper. It is simple and easy to use, as well as very simple to install on Android phones.

Android is a mobile operating system that is primarily designed for touchscreen mobile devices such as smartphones and tablets. It is based on a modified version of the Linux kernel and other open-source software. An android phone is a high-tech smartphone that runs on Google's Android Operating System (OS) and is used by a variety of mobile phone manufacturers. It is easier to multitask and choose from hundreds of great applications when using an Android phone. Android is an operating system (OS) for smartphones. A Smartphone is essentially a core device that functions similarly to a computer and contains the operating system (OS). Smartphones, for example, have become increasingly powerful and are now an integral part of many people's daily lives. As mobile devices become more like personal computers, they will begin to replace objects we carry around with us, such as planners, to-do lists, and so on, as well as assist us in completing our daily tasks [7].

Smart phones have become ingrained in the daily lives of both students and teachers. Smartphones are becoming more universal, user-friendly, computationally powerful and widely available, which motivates trailblazers to investigate the development of complex mobile applications in order to fully utilize the capabilities of smart mobile phones [2]. This paper work designed an android lecture timetable with a reminder alert for when the lecture will begin using the android application's accessories. A Reminder is a tool that allows you to keep track of important information such as due dates and locations. Reminders have proven to be an extremely useful tool in time management. The Reminder System allows you to "set and alert" and then be reminded when the time arrives. Due to the obvious increasing popularity of Android devices, this platform was chosen for the implementation of this paper [8]. Android Lecture Timetable is an application designed to keep both students and lecturers at tertiary institutions from forgetting about the lectures they have registered for.

## II. LITERATURE REVIEW

[9] presented a paper to automate the manual process of lecture time tabling system, in which the manual lecture time table operates on central time tabling system implemented by a set of committee members, making it more difficult in getting a flawless lecture scheduling that is time consuming and energy sapping, leading to loss of information, general apathy, classroom clashes, and resource wastage. This paper developed an automated lecture time-tabling system to provide convenience in scheduling lecture time-tables, reducing time constraints in fixing courses and venues, and reducing the risk of course omissions and classroom clashes. It also includes space allocation for lectures and merging of similar courses for a specific lecturer. Questionnaires were distributed to staff, committee members, and students to gauge their opinions on the existing system and the new system to be developed, and the results were analyzed using the Statistical Package for Social Science (SPSS) version 20. The data gathered was analyzed, and based on the results, the new system (automated time tabling system) will be the best method for addressing the shortcomings of the old system (manual time table).

[10] presented a paper on a lecture time table reminder system on the Android platform, stating that forgetting the stipulated schedule or time of lectures for one reason or another has always been a major concern for students, resulting in the students' missing classes and thus lagging behind in what the lecturer has taught the other students. The primary goal of developing the Lecture time table reminder system is to reduce this problem to a manageable level. Lecture Timetable Reminder System is an Android-based mobile application that reminds students of Computer Science, 500 level, Federal University of Technology, Akure, about their upcoming lectures. Java, Eclipse, the Android Software Development Kit (SDK), PHP, and MySQL are the primary tools used in the

development of this application. The programming language used was Java, the Integrated Development Environment (IDE) was Eclipse, and the Android SDK was a virtual device emulator. Then PHP was used to generate a response tailored to each user's request to the application, with MySQL serving as the database. This was created using a web-based platform.

According to [2], timetabling is a critical component of scheduling in all educational settings. The scheduling of times and locations for lectures and examinations at universities is referred to as timetabling. To avoid event conflicts, these activities are logically structured in a time-wise manner, presented on papers, and posted on notice boards. However, the challenges posed by the use of paper and notice board-based timetables include timetable schedule forgetfulness, misinterpretation, miscopying, the cost of rescheduling, and the slow time to reach for the rescheduled timetables; thus, the need for automated timetables. The implementation of Android and web-based timetable customization systems for the Faculty of Computer Science and Information Technology at Bayero University in Kano, Nigeria, was discussed in this paper. The web-based system includes an administrative module for scheduling and rescheduling lecture, examination, and invigilation timetables. Furthermore, the Android timetable customization system allows users to view, customize, set reminders, and provide rescheduled timetable updates. It was built on the internet connection.

[2] investigated the current timetable approach used by the Department of Library and Information Technology at the Federal University of Technology, Minna in order to improve it. The study's findings revealed that the Department used a paper-based manual approach, in which the Department publishes and distributes its timetable on the Departmental notice board, which serves as the only means of correspondence between the students and the Department; the students are then tasked with accessing the content of the timetable. The study used the Structured System Analysis and Design method. Observation, record inspection, and interviews were used to gather information. The preliminary investigation findings revealed that the current method for publishing and disseminating the timetable is a paper-based method, and it was concluded that the method is inefficient in managing the proximity of the students to the content of the timetable. As a result, an Android Mobile Timetable Application was recommended, developed, and implemented to serve as a platform for managing academic activities such as lectures, tests, and exams for the Department's students. Redesigning to include an administrator interface for easy uploads of timetables in a centralized database accessible to registered users is another suggestion, to create an application version that can run on other popular mobile operating systems such as Apple iOS and Microsoft Windows, and to incorporate Google Map so that students who are unfamiliar with the school

environment, particularly newly matriculated students, can easily locate lecture venues.

[11] presented the Automated System Preparing Timetables (ASPT) system, which was designed to help organizations organize and maximize their time. ASPT is an interactive system that is part of a larger project involving a time-table scheduling system in higher education. The goal of this paper was to create a computerized and automated system for preparing timetables for the business faculty in order to save time, avoid clashes, make the best use of the facilities, and create a better learning environment for students and a more suitable teaching environment for lecturers. To implement, a database application was used.

### III. SYSTEM ARCHITECTURE

The system architecture depicts the timetable database being loaded into the webserver and the webserver loading or downloading the timetable into the user's Android phone (the user must have downloaded the application and signed up at the first use of the application). The system architecture of the lecture time table reminder system on the Android platform is shown below.

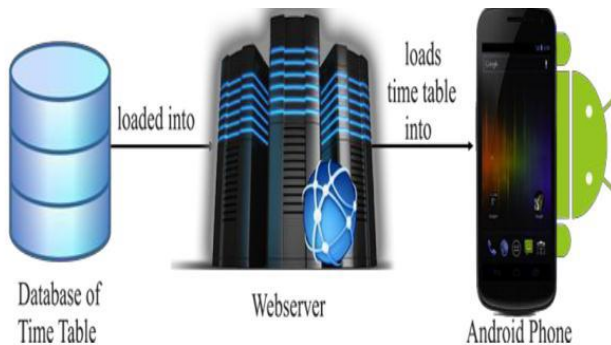


Fig. 1. System architecture [10]

The design above is web-based, so it cannot be accessed without an internet

connection; however, this paper is not web-based and starts working once it is installed on an Android phone.

As shown in Figure 2, the data flow for Android systems is described using a use case diagram system modeling approach. The main actors of the Android application are illustrated in the use case diagram as lecturers and students. Essentially, the two actors can update, view, and customize timetable schedules, update assignment/homework, give notes, and change settings.

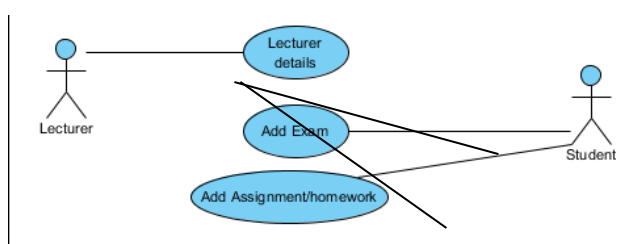


Fig. 2. Android Lecture Timetable Application Use Case Diagram

### IV. IMPLEMENTATION

This section describes the development and testing of an Android Lecture Timetable Application (ALTA) with the Visual C# programming language, the Android Software Development Kit (to simulate a virtual device emulator), and SQLite (as the database). Figures 3, 4, 5, 6, 7, and 8 depict the various screens of the lecture time table reminder application, as well as a description of the action each one performs. When the time table applications is launched, the home screen page appears, where schedules based on the day of the week can be added as shown in Figure 3 below.

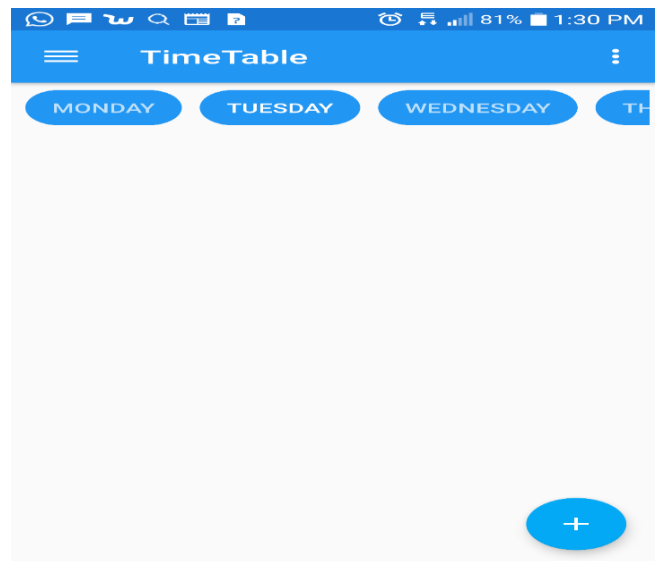


Fig. 3. Home Screen Page

Figure 4 is the add lecturers' page that displays the lecturer's details. The lecturer's name, position, phone number, and email address can be added and updated, with a background color of your choice.

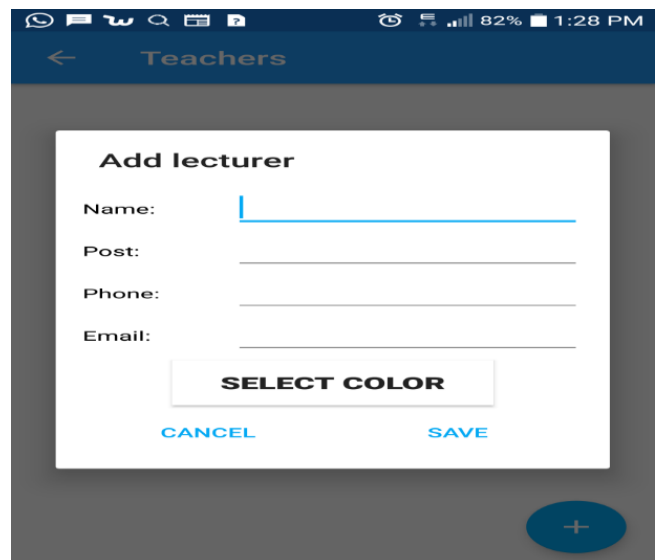


Fig. 4. Add Lecturers' Page

Figure 5 depicts the schedule of exams to be taken, the date and time to be taken and a background color of your choice.

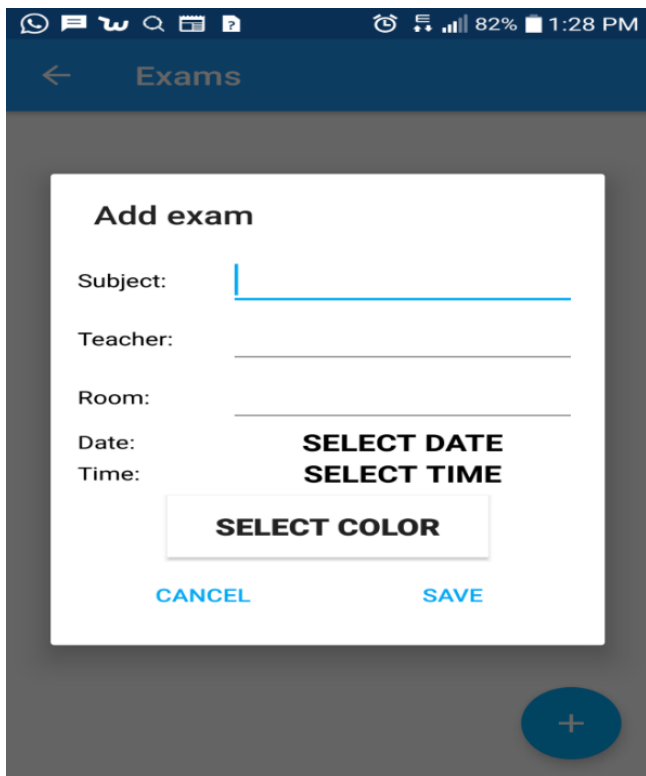


Fig. 5. Add Exams Page

Figure 6, which is add homework page, shows the homework/assignment schedules and submission deadlines in a color of your choice as a background.

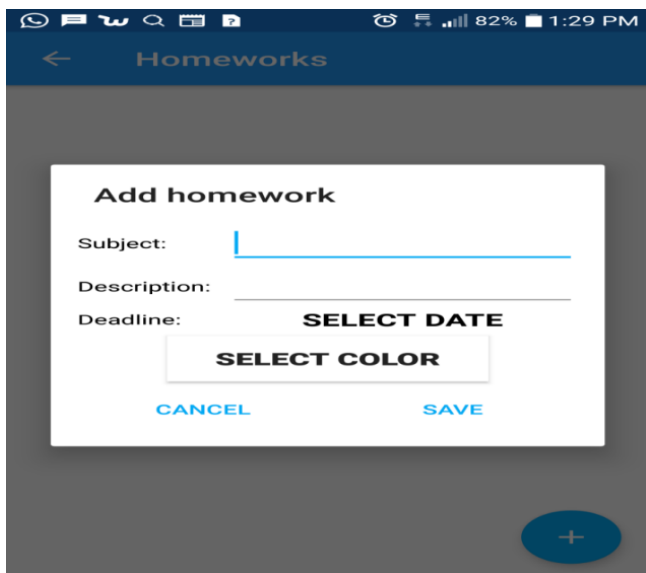


Fig. 6. Add Homework Page

Figure 7 shows the functional menu on the functional components page.

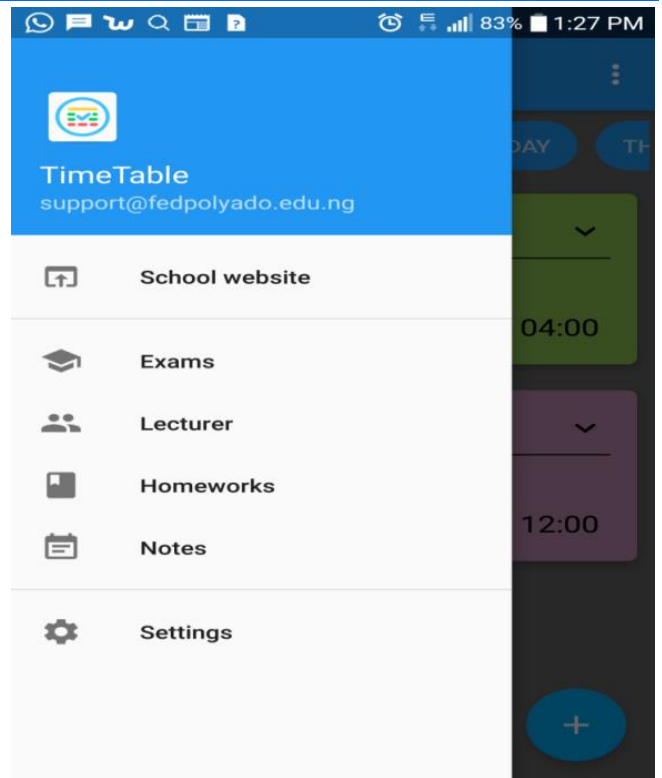


Fig. 7. Functional Components Page

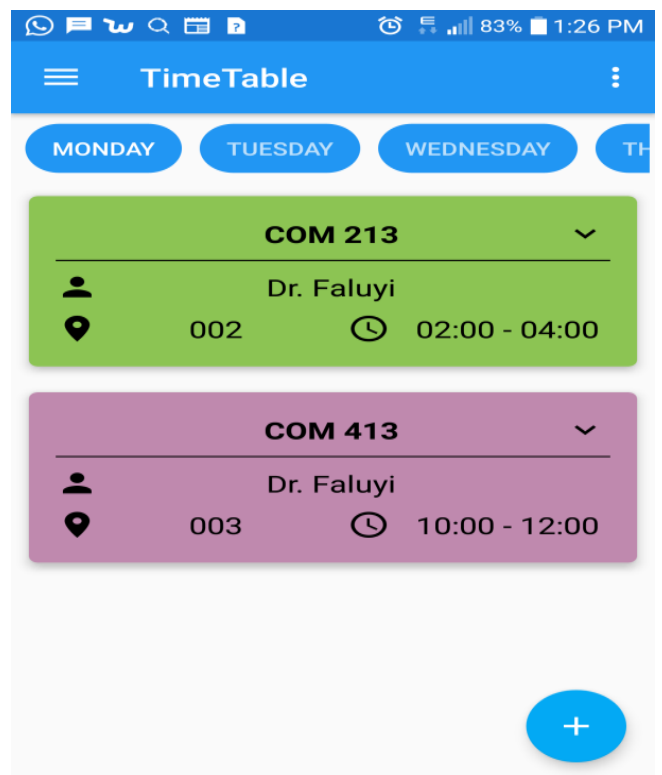


Fig. 8. Time Table Page

Figure 8 depicts how the application appears when it is loading the lecture schedule into an Android device. Figures 4, 5, 6, and 8 show the + sign icon for adding a new record.

After the time table has been successfully loaded, a notification appears indicating that the timetable has

been successfully installed. Each lecturer will be notified at the time set for the lecture.

#### V. CONCLUSION

The complexities associated with understanding scheduled timetables, timetable misinterpretation, miscopying and schedule forgetfulness are rapidly becoming a major problem in every tertiary institution. The purpose of this paper was to discuss the design and the implementation of an Android-based lecturer timetable application that provides reminders to lecturers and students. The application manages scheduling, rescheduling, customization and on-the-go reminders with color backgrounds; it was very flexible and could be used without an internet connection. The paper's future may include voice reminders.

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