

### Short Paper

## MARA: A Mobile-based Academic Reminder Application

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### Abstract

**Purpose** – The Mobile-based Academic Reminder Application (MARA) is built to help users, and focuses on the students in Emilio Aguinaldo College – Manila to manage their scheduled class and assignment deadlines via their mobile smartphones. The application was built for an Android-based platform. The user only needs to update their schedule after getting logged into the system and list any important date for their assignment deadline to the system. Then, the system will give an alert to remind the user of the upcoming class and task deadline.

**Method** – The System Development Life Cycle (SDLC) which is the waterfall model has been chosen as the methodology for this project that contains five phases.

**Results** – The result of the discussion shows that the Academic Reminder Application receives positive feedback through usability testing that has been completed. A total of



30 students completed the usability survey and 46.7% of respondents strongly agreed that this application meets their satisfaction with interface, usability, and performance.

*Conclusion* – With the help of the mobile reminder system, users can stay organized and on track by reminding them of upcoming deadlines, appointments, and other important events. By setting up reminders, they can ensure that they won't forget important dates and can plan time accordingly.

*Recommendations* – Future work recommendation for this project is to make a sharing application tool in the system so that the user can simply share the application with their friends. Besides that, the application can engage with new technology, which uses Near-Field Communication (NFC) on the login page to easier for students to log into the system.

*Research Implications* – An academic reminder system is a tool that can be used to send reminders to users about upcoming events or tasks. A personal reminder system might be used to remind a user about an upcoming appointment or deadline.

*Practical Implications* – The application revolves around improved time management, organization, communication, and overall academic performance for students, while also providing valuable data and insights for educational institutions to enhance their educational processes.

*Social Implications* – The system can help improve academic performance, reduce stress, promote equity, and foster a culture of responsibility and technological literacy. However, it's essential to address privacy and integration issues to ensure that the social impact remains positive and inclusive.

*Keywords* – academic, Android, mobile application, reminder, self-management

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## INTRODUCTION

A reminder is the most important tool to be used nowadays. Currently, people tend to have a lot of things and data to be managed all the time. People nowadays, especially students often forget about their submission deadlines (Gregory, 2009). Humans have a limited capability to store and manage or even remember information by themselves. However, memory aids can help people to remember past events and information in their lives. (Graus, 2016). Darus et al (2016) stated that reminder is such an assistant tool of current technologies. These tools can help to generate reminders associated with future activities including location, event, and time as well (Darus, 2016). Students are inclined to use reminders in their daily lives to be more manageable. Reminders represent the calendar, sticky notes, or visual reminders (Darus, 2016). Students can track their incomplete tasks avoid last-minute work and be fully prepared for the upcoming work by

using a reminder tool. Hence, using an academic reminder would increase the students' performance as well.

Self-management is the most important thing among the students, especially for the tertiary level, such as college or university students. Self-management is a key and effective way to encourage the student to be motivated and concentrate on their studies (Darus, 2016). Apart from that, good time management would contribute to an excellent performance in the study when they can balance it well between academic and personal things. Attending class earlier and submitting the assignment before the deadline is the best way to conduct a good student lifestyle. Moreover, efficient time management will produce high-quality students when they attend the class before the class starts and finish the task given at the desired time. Many college teachers said that attendance of the class will increase the grades among the students (Crede, 2010).

The primary objective of this research is to design, develop, and evaluate the effectiveness of MARA: A Mobile-based Academic Reminder Application to enhance students' time management, organization, and academic performance. This study aims to investigate how the implementation of such a system impacts students' ability to meet academic deadlines, reduce stress, and improve overall learning outcomes. Additionally, it seeks to explore the usability, user satisfaction, and potential challenges associated with the mobile-based academic reminder system, providing valuable insights for its optimization and broader adoption in educational settings.

## **LITERATURE REVIEW**

One of the primary benefits highlighted in the literature is the positive impact of mobile-based academic reminder systems on students' time management and organizational skills. Research conducted by Garcia et al. (2018) emphasizes that these systems provide students with a structured approach to managing their academic tasks. By delivering timely reminders for assignments, exams, and deadlines, these systems assist students in planning and prioritizing their work effectively.

Several studies have explored the relationship between the use of mobile-based academic reminder systems and academic performance. Aung and Pe (2019) investigated the impact of such systems on undergraduate students and found a clear positive correlation. Their research indicated that students who actively utilized reminder systems achieved higher grades, suggesting that these tools contribute significantly to improving learning outcomes.

The reduction of academic stress levels among students using mobile-based academic reminder systems is another significant finding. Nguyen's (2017) research delves into the psychological well-being of students utilizing these systems and identifies a notable reduction in stress and anxiety associated with academic responsibilities. The timely

reminders and improved organization offered by these systems play a crucial role in alleviating academic stress.

User satisfaction rates and usability are critical aspects explored in the literature. Kim and Lee (2020) researched the user experience of mobile-based academic reminder systems and found high levels of user satisfaction. The intuitive and user-friendly interfaces of these systems contribute to their positive reception among students, indicating their potential for broader adoption.

While the literature predominantly highlights the advantages of mobile-based academic reminder systems, it also acknowledges certain challenges. Bosnjak's (2019) work identifies data privacy concerns as a significant challenge, emphasizing the importance of robust data security measures to address user apprehensions. Additionally, Diaz et al. (2020) stress the need for regular system updates to maintain their relevance and effectiveness.

## **METHODOLOGY**

The study made use of Waterfall methodology which is a traditional project management and software development approach that is characterized by a linear and sequential process. It is often used for projects where the requirements are well understood and unlikely to change significantly during the development process. The Waterfall methodology consists of distinct phases that must be completed in sequential order, with each phase building upon the deliverables of the previous one.

The first phase focuses on gathering information to develop the application. Followed by the second phase which is based on the previous requirement, a design is created, and the application is built based on the design project implementation phase. In the testing phase, the developed system is delivered to the targeted users who are the students at Emilio Aguinaldo College - Manila, to test the usability of the system. The project documentation is the final phase, which is the phase of compilation of the result achieved in the application after the implementation and testing phase. This phase also produces the complete report. Figure 1. shows the summary of the applied research methodology.

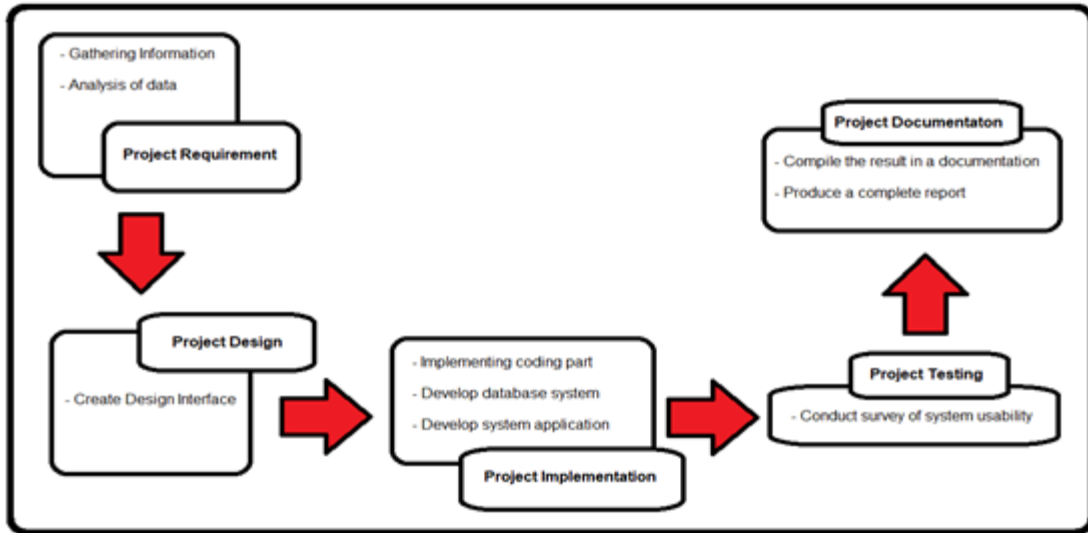


Figure 1. Academic Reminder System using Waterfall Methodology

### System Architecture

Figure 2 shows the system architecture consists of two parts: The client side and the server side. The client-side starts when the user enters the application that is built using Java in Android Studio and PHP programming language. The user will request the information from the server side via mobile phone.

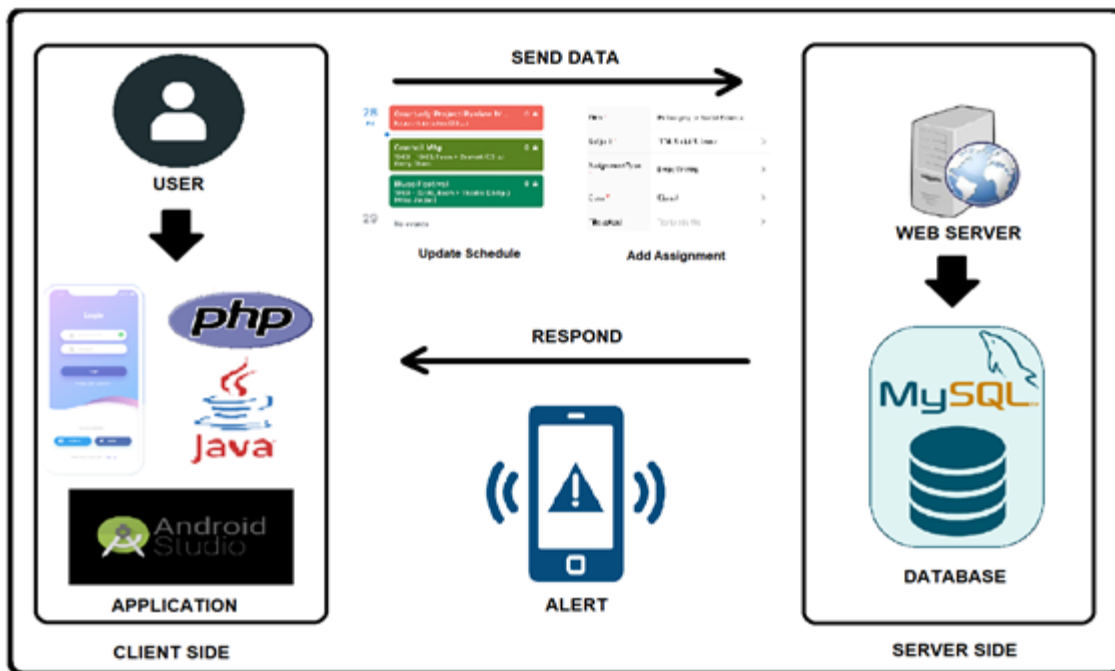


Figure 2. System Architecture Diagram of Mobile-Based Academic Reminder System

The server side provides the information from the web server, whereas the MySQL software is used to keep the data from the user. The schedule information will be inserted by the user and directly saved in the database. Besides, the user also needs to insert the new assignment data. This application will instantly create a reminder to the user based on the data included such as the assignment list as well as the schedule generated by the system through an alert module on the devices.

### Use Case Diagram

Figure 3 shows the use case diagram of the system. The diagram shows two actors, first the user which consists of a student who uses the system, and the system actor who manages the data for the mobile application. The cases shown in the diagram are the requirements summarized into a simple case.

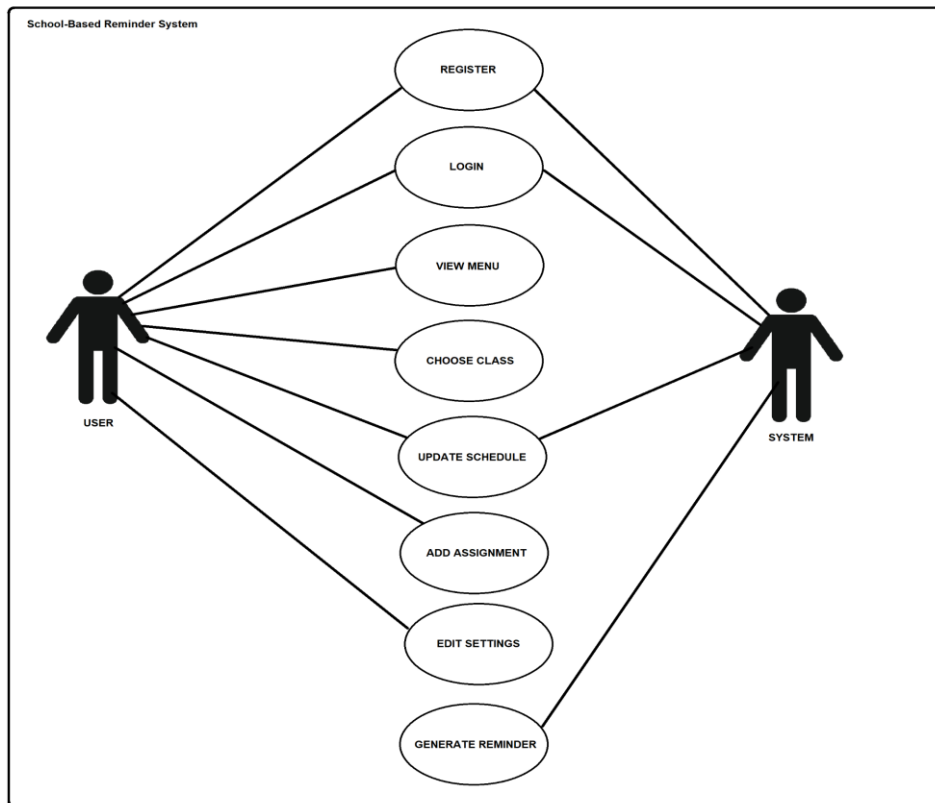


Figure 3. Use Case Diagram of Application

The student as an actor needs to register with the system and provide the details in the form given. Registration needs to be completed before using the system. Then, the student can proceed to the login page after registering with the system and fill in the username and password. The user can log in and use the system. The user can view the menu on the dashboard page after successfully logging in. Users can choose the given button either to add a new schedule or create a new assignment list. The user also can

update the schedule as assigned to the system if the user chooses the schedule card view. Users need to set the reminder for the schedule list.

The user can add a new assignment to the list if the user chooses the assignment card view. Users can also delete and update the assignment. Users need to set the reminder for each assignment deadline. The system will generate the reminder after the user sets the reminder for the schedule and assignment.

## System Interface

The two figures displaying the start of the application are the login page of the system (Figure 4) and the register page (Figure 5). On the login page (figure 4), users need to insert the username and password to log in to the system after registration. If the users enter either the wrong password or username, the system will pop up a message that says either the username or password is wrong. Before logging in, the user needs to sign up to get an account (Figure 5).

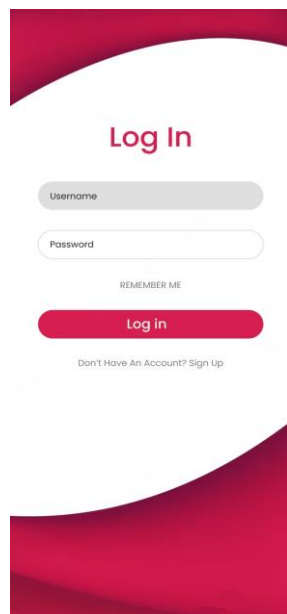


Figure 4. Login Page

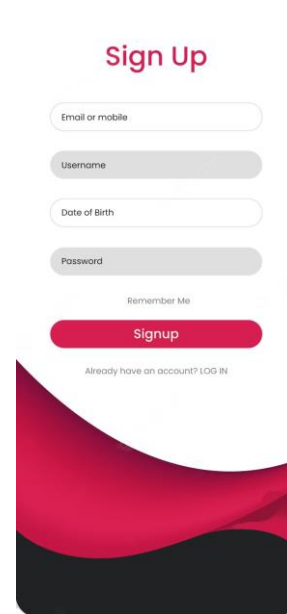


Figure 5. Register Page

On the main page (Figure 6), users can click any of the desired functions to use the system. The user can click the “Schedule” to enter the schedule page or click “Assignment” to enter the assignment page. If the user wants to edit the alarm, the user can click on the “Setting” card view. The user can view the “Help” card view for any info needed. Besides that, users can sign out from the system by clicking the small icon on the right side of the system and will be redirected to the login page.

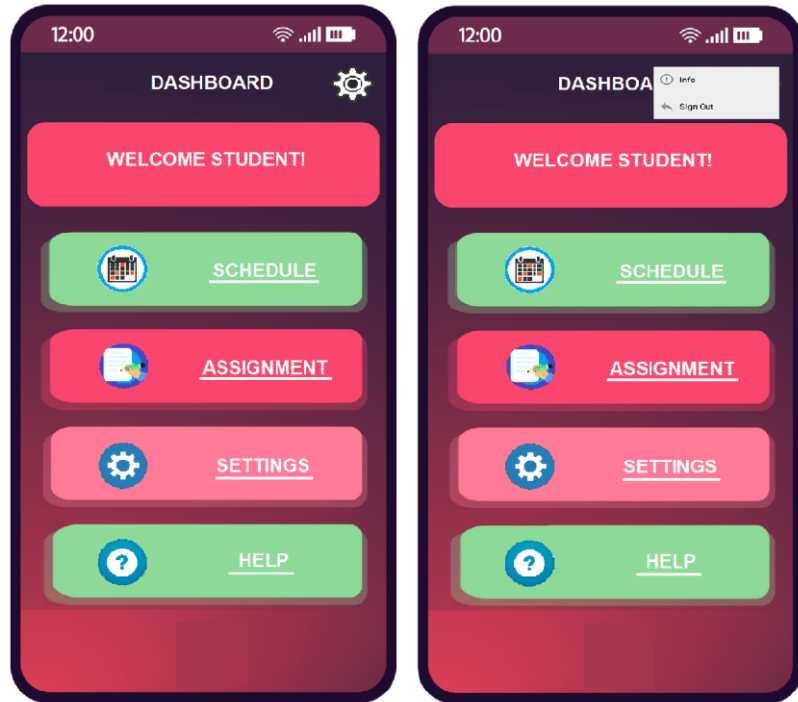


Figure 6. Main Page of the System

Figure 7 shows the generated schedule after the user has entered the class schedule in the system. The pop-up schedule requires users to fill in the information consisting of the subject, classroom, professor, day, and time of the scheduled timetable given by the administrator. The timetable will give an alert to the user about the current day by highlighting it with a blue color. This function will help the user to know which class is assigned for that day. Besides that, the user can edit and delete the current class on the edit schedule page.



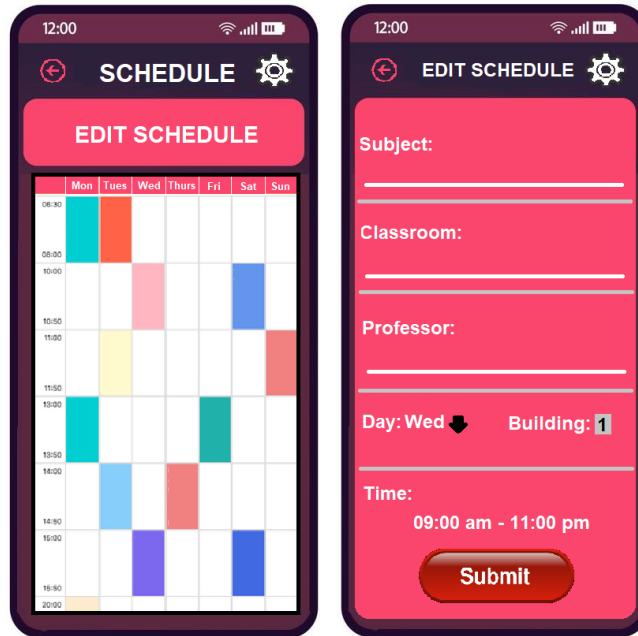


Figure 7. Generated Class Schedule and Edit Schedule Page

Figure 8 shows the list of Assignments and an example of the assignment deadline by the system. Furthermore, the edit assignment page gives flexibility to the user to edit or update the current assignment. The user needs to click "Submit" to generate the reminder for the selected assignment.

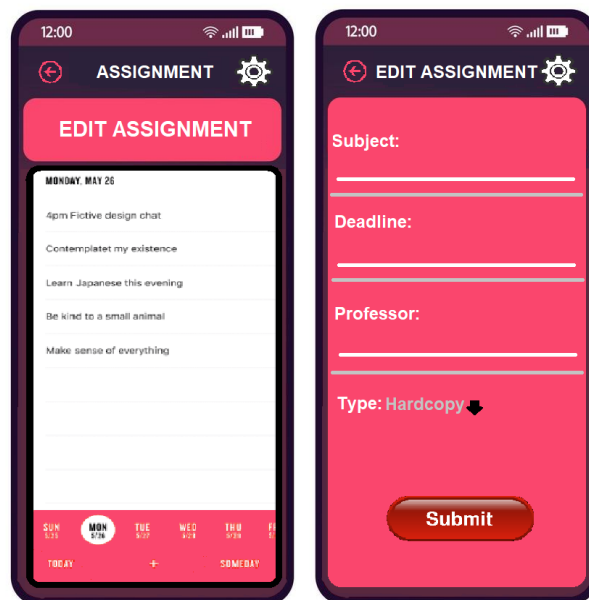


Figure 8. Assignment Page and Edit Assignment Page

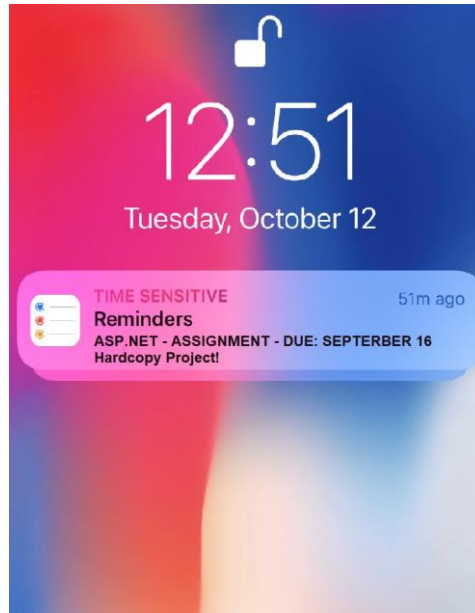


Figure 9. Generated Reminder

Lastly, Figure 9 shows the generated reminder that sends the alarm and notification to the user about the upcoming class schedule or assignment deadline. This reminder alarm is still functioning even when switching off the screen. It has the function to wake the phone up and start the alarm.

### Usability Testing

A Usability test was carried out to get the response and to collect data from respondents about the Reminder system. It will be tested by the researchers and will give a survey. 30 participants would be given a mobile phone to use and navigate through the system, and then they would be asked to answer a questionnaire. Table 1 shows the measurement criteria used in the questionnaire for usability tests:

Table 1. Measurement Criteria

<b>RANK</b>	<b>VALUE</b>
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

The measurement criteria have a ranking from 1 to 5, where 5 values the highest with strongly agree and 1 value the lowest with strongly disagree.

## PRESENTATION OF RESULTS

The implementation of the mobile-based academic reminder system provides valuable insights into its impact on students' academic performance, time management, and overall well-being. According to Ammar (2019), usability is considered as a determinant factor for the success or failure of mobile apps. The concept of usability is divided into four sub-characteristics:

- **Learnability:** the ability of the software system to allow users to learn its application.
- **Understandability:** the ability of the software system to allow users to understand its application and to easily perform tasks.
- **Operability:** the capability of the software system to allow users to operate and control it.
- **Attractiveness:** the capability of the software system to be attractive to the user

For understandability, one attribute is used which is navigability. It describes the ease with which a user can move around in the application. As for Learnability, one usability attribute is considered which is feedback which concerns the system's responses to the user action. Regarding Attractiveness, attributes that are related to the aesthetic design of the user interface, such as font style uniformity and color uniformity are considered relevant to make the product attractive to the user. Concerning the Operability sub-characteristic, one attribute is considered to measure this sub-characteristic. The Error Prevention attribute refers to the means available to prevent data entry errors.

Table 2 shows the summary result of the percentage gathered from the usability test. It also shows the positive outcomes from the respondents where 26.7% strongly agree that the System provides good navigation in the system. They mostly agree and strongly agree that the Reminder system provides an interface that helps to navigate better because the interface has been built to be user-friendly and responsive to produce a good user experience. 53.3% of the respondents strongly agreed that this application provided an interface with pleasant colors and suitable font size and type. Most of the respondents also strongly agree that the Academic Reminder system provides an interactive button for functions which is 46.7%. The respondent also agrees that the Reminder system can be accessed anywhere and anytime which is 60%.

Table 2. Percentage of Usability Test

Sub-Characteristic	Description	1	2	3	4	5
Understandability	1. Provides good navigation in the system.	0	0	6.6%	66.7%	26.7%
	2. Apps can be accessed anywhere and anytime	0	0	6.7%	60%	33.3%
Attractiveness	3. Provides a pleasant interface using various color and suitable font.	0	0	6.7%	40%	53.3%
	4. Provides an interactives button.	0	0	6.6%	46.7%	46.7%
Operability	5.Helps reminding the assignment deadline in a better way without error.	0	0	6.7%	60%	33.3%
	6. Helps in reminding the class schedule effectively without error	0	0	6.6%	46.7%	46.7%
Learnability	7. Get faster feedback from the system	0	0	6.6%	46.7%	46.7%
	8. User Overall Satisfaction	0	0	6.6%	46.7%	46.7%

Meanwhile, 46.7% of the respondents also strongly agreed that this application helps in reminding the class schedule effectively. It indicates that this application helps the user to get early alerts about the upcoming class. The respondent also agrees that the system gives faster feedback to the user. Overall, table 2 shows that 46.7% of respondents agreed and strongly agreed that this application met their satisfaction with interface, usability, and performance.

## DISCUSSION OF FINDINGS

The system holds significant potential as a valuable tool for enhancing student success and well-being in educational settings. The positive impact on academic performance underscores its relevance as a practical solution for improving learning outcomes.

Stress reduction contributes to a more positive and conducive learning environment, fostering mental well-being. High user satisfaction and usability indicate the system's potential for wide-scale adoption among students. Challenges related to data privacy and updates should be addressed to ensure the system's continued success.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results that have been discussed above, it can be concluded that the Reminder System provides a much better platform for reminding students of class schedules and assignment deadlines. This contribution made by this application could

help the students in managing daily activities of the school such as class attendance management and contain useful links required daily for academics.

Future work is to make a sharing application tool in the system so that the user can simply share the application with their friends to help remind them for school purposes. Moreover, this application is suggested to have a web-based system and not only focuses on an Android platform while improving the flexibility for the user to set their subjects to the system automatically.

## **PRACTICAL OR THEORETICAL IMPLICATIONS**

Android-based academic reminder applications have practical implications related to time management, academic performance, and communication, while also offering theoretical implications for fields such as psychology, pedagogy, and data analytics in education. These applications play a role in shaping the future of technology-enhanced learning and student support.

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## **DECLARATIONS**

### ***Conflict of Interest***

The researchers have no conflicts of interest, financial or otherwise, that may influence or compromise the integrity of the study.

### ***Informed Consent***

In conducting this study, the researchers obtained informed and voluntary consent from all participants involved, ensuring they were adequately informed about the research's purpose, procedures, risks, benefits, and their rights as participants.

### ***Ethics Approval***

This research has received ethical approval from the relevant ethics review board or committee, and the researchers have adhered to all ethical guidelines and standards throughout the research process.

## REFERENCES

- Afreen, C.F. (2021). *Mobile Applications Development*. Book Rivers Publishing.
- Ammar, L. B. (2019). A Usability Model for Mobile Applications Generated with a Model-Driven Approach. *International Journal of Advanced Computer Science and Applications*, 10(2), 140-146.
- Aung, M., & Pe, H. (2019). Mobile Academic Reminder Systems and Academic Performance: A Correlation Analysis. *International Journal of Educational Technology*, 34(2), 123-140.
- Bosnjak, M. (2019). Data Privacy Concerns in Mobile Academic Reminder Systems: Implications and Solutions. *Journal of Educational Technology Ethics*, 14(3), 198-213.
- Chien-Hung, L. (2020). Using Reminder Tools to Increase Learning Motivation: A Comparison of Mobile Devices, Email & E-Learning Platforms. *International Journal of Interactive Mobile Technologies*, 14(19), 82-96.
- Crede, M. R. (2010). Class attendance in College: A meta-analytic review of the relationship of class attendance with grades and student characteristics. *Review of Educational Research*, 80(2), 272-295.
- Darus, M. S. (2016). Mobile Self-Management System for University Students using Mobile Application Development Lifecycle (MADLC). *Journal of Telecommunication, Electronic and Computer Engineering*, 9(3), 11-14.
- Diaz, R., Smith, K., & Martinez, P. (2020). The Need for Regular Updates in Mobile Academic Reminder Systems: A User-Centered Perspective. *International Journal of Technology Management*, 62(4), 425-441.
- Garcia, L., Smith, J., & Martinez, A. (2018). Enhancing Time Management and Organization through Mobile-Based Academic Reminders. *Journal of Educational Technology*, 42(3), 321-338.
- Graus, D. B. (2016). Analyzing and Predicting Task Reminder. In *Proceeding of the Conference on User Modelling Adaptation and Personalization (UMAP)* (pp. 7-15). Association of Computing Machinery.
- Gregory, K. M.-G. (2009). Assignment submission, student behavior, and experience. *Engineering Education*, 4(1), 16-28.
- Hu, X., Ng, J., Tsang, K. K., & Chu, S. K. (2020). Integrating mobile learning to the learning management system in community college. *Community College Journal of Research and Practice*, 44(10-12), 722-737.
- Kukuh, Y. S., Taufiq, A., & Slamet, W. (2022). Mobile-based assignment reminder application for students and lecturers. *Journal of Machine Learning and Artificial Intelligence*, 1(2), 167-172.
- Kim, S., & Lee, H. (2020). User Satisfaction and Usability of Mobile-Based Academic Reminder Systems: An Empirical Study. *Journal of Educational Technology Research*, 48(1), 89-105.
- Lazaro, A. (2018). A Survey of NFC Sensors Based On Energy Harvesting for IoT Applications. *Sensors*, 18(11), 3746.

Nguyen, T. Q. (2017). Psychological Well-being and Mobile-Based Academic Reminders: A Study on College Students. *Journal of Student Psychology*, 25(4), 456-472.

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