INTERNATIONAL JOURNAL ON MANAGEMENT AND EDUCATION HUMAN DEVELOPMENT

J. Management & Education Human Development

ISSN: ISSN: 2775 - 7765
web link: http://www.ijmehd.com

Joss App: Schedule Matching App to Set Up Realtime Group Activity Schedule

Eko Muhammad Rilo Pembudi
Muh. Ihsan Syaputra Arfa

Undergraduate Student, Department of Informatics Engineering
Ahmad Dahlan University Yogyakarta, Indonesia

Received:16/07/2021 Accepted: 29/08/2021 Published: 07/09/2021

Representative e-mail: sri_wiyati@yahoo.com

ABSTRACT

Communication technology today cannot be separated from aspects of human life. The development of various communication technology devices that are quite significant from each generation is influenced by increasing complex human demands and needs. Communication technology products that are widely used by society today are smartphones. Due to its practical nature, smartphones are inseparable devices in everyday life. More than 50% of internet users in Indonesia use the internet. The sophistication of smartphone technology really helps everyday human life both as a medium of communication, a medium for data exchange, a source of information, and a means of transacting in the business world. But sometimes humans also need to interact directly with other humans, as the human understanding in sociology says that humans are social beings who cannot live their lives individually. Meetings between individuals or between groups in person sometimes experience obstacles because each person's busyness is different. In fact, sometimes there are meetings that have to be canceled due to difficulties in scheduling the people we want to meet. One of the difficulties in matching schedules occurs because the methods used in scheduling and matching schedules are still conventional. In October 2020, the author conducted a survey on "The difficulty of making an appointment with someone" to 34 respondents, the results of the survey showed that more than 50% of respondents had difficulty meeting someone, this was due to various reasons, one of the reasons What respondents said most was the difficulty in matching schedules with friends. The results of the same survey also reveal that almost 100% of respondents still use conventional methods of recording their daily schedules. From the problems described above, an application is needed to assist the community in managing and matching schedules between individuals or groups.

Keywords: *Joss App, Matching App, Realtime Group Activity Schedule*

I. INTRODUCTION

Today's communication technology cannot be separated from aspects of human life. The development of various communication technology devices that are quite significant from each generation are influenced by increasingly complex human demands and needs. Communication technology products that are widely used by people today are smartphones. Due to its practical nature, the smartphone is an inseparable device in everyday life as a tool to support needs. Based on data in the Indonesian Digital Report 2020 per January, the number of internet users in Indonesia reached 175.4 million people. This number shows that more than 50% of Indonesia's population has access to the internet. The same report also explains that 54.6% of internet users in Indonesia access the internet using smartphones (Kemp, 2020). The sophistication of smartphone technology is very helpful in everyday human life, both as a communication medium, data exchange media, information source, and a means of transacting in the business world. But sometimes humans also need to interact directly with other humans, as the understanding of humans in sociology which says that humans are social creatures who cannot live their lives independently (Umanailo, 2016: 84). Meetings between individuals or between groups directly sometimes experience obstacles because the busyness of each person is different. In fact, sometimes there are meetings that have to be canceled because of the difficulty of arranging schedules with the people we want to meet. This often happens in the community, offices, even at the college level. One of the difficulties in matching the schedule occurs because the method used in recording schedules and matching schedules is still done conventionally.

Based on the results of interviews with 30 UAJY civitas academica, they still use conventional methods to record academic activities that they have to do every day (Dewi et al, 2016). In October 2020, the author has also conducted a survey about "The difficulty of making an appointment with someone" to 34 respondents, the results of the survey show that more than 50% of respondents have difficulty meeting someone, this is due to various reasons, one of which is the reason that most respondents expressed was the difficulty of matching schedules with friends. The results of the same survey also reveal that, almost 100% of respondents still use conventional methods in recording their daily schedules. Then, still in the same survey, most of the respondents want an application that can remind users of the schedule of activities that have been recorded either through alarms or notifications. From the problems described above, an application is needed to assist the community in managing and matching schedules between individuals or groups. The research conducted by the author aims to build a smartphone-based application by implementing a UI/UX design that is as simple as possible to make it easier for all people to use the application. This application will be developed under the name "Joss App", which functions as a scheduler, which can be shared online with other individuals or groups in real time, has a reminder feature that can be set by the user, and can also match schedules between users by utilizing the Exhaustive Algorithm. Search. This research is divided into two stages, first analysis and application design based on a survey of community needs for the features that exist in the application, and second application development.

II. LITERATURE REVIEW

2.1. Scheduling

According to Pinedo in Hartadi (2016), scheduling is a decision-making process regarding the allocation of limited resources for tasks from time to time which has the aim of optimizing one or more goals (Hartadi et al, 2016). Then, according to Xu Zhenhao in Wibowo (2015), a good schedule can not only reduce fabrication costs but also reduce the possibility of violating the due date (Wibowo, 2009). Each task must have a different priority level, both in terms of time and in terms of the need for the task. The purpose of scheduling is none other than to make it easier for someone to manage their daily schedule so that scheduling is more organized.

2.2 Exhaustive Search Algorithm

Exhaustive search algorithm is an algorithm that can search for objects with certain criteria by working to find all combinations and permutations of existing objects. In this search, the more objects there are, the more possible solutions will be obtained (Setiawan MH et al, 2017). The exhaustive search algorithm is a combination of depth first search and backtracking. In simple terms, this algorithm has the following stages:

1. Looking for possible solutions
2. Testing the solution to see whether the resulting solution is appropriate or close to the expected results or has met the requirements.
3. If a solution has been found, the search process may be stopped, or the solution search process can be resumed to be compared and matched again

2.3 Firebase Realtime

Firebase is a platform developed by Google for building mobile applications and websites. Firebase was originally founded in 2011, then Google acquired it in 2014. Firebase itself has a real-time service, where when data changes, applications connected to firebase will update directly on the device. There are several features provided by firebase, which are as follows:

1. Analytics, a feature used to observe user behavior
2. Develop application, divided into several features such as cloud messaging, authentication, real-time database, storage, hosting etc.
3. Grow, to publish finished products

Figure 1. Firebase

Firebase Realtime Database is a database service provided by Firebase that can be used to store data from apps. The data is stored in the form of JSON (JavaScript Object Notation) which will be connected in real time to applications that are connected to Firebase. Firebase's real-time database service has 3 core capabilities:

Realtime

Applications that are connected to the firebase database will automatically get changes to data/information so quickly.

Offline

Apps connected to firebase are responsive even when they're offline, thanks to the Firebase SDK, which can retain data and changes to the app's storage media. When the client connects to the internet network, the Firebase SDK will make automatic adjustments to data changes that are synchronized by firebase and the application.

Accessible from client devices

This feature is an easy service for Firebase to access the real-time firebase database directly from the user's device without going through a web browser or server. Firebase's database is a No SQL database, where the Firebase database does not use a table system in its storage. Additionally, Firebase has different optimizations and functionality when compared to relational databases.

2.4 Smartphones

Smartphones or also known as smart phones are very popular in Indonesia. Smartphones are popular because of several features that make it easier for people to use them. Like browsing, chatting and even just playing games. Smartphones are Internet-enabled phones that usually provide Personal Digital Assistant (PDA) functions such as calendar functions, agenda books, address books, calculators, and notes (Adzani, 2016).

Smartphones in Indonesia currently mostly use the Android Operating System. Android is a Linux-based mobile operating system that includes an operating system, middleware, and applications. Android provides an open platform for developers, so that developers can create their own applications. Android was originally developed by Android Inc, a company that makes software for mobile phones which was later purchased by Google Inc. There are two types of Android distributors. The first is from Google, and the second is from OHD (Open Handset Distribution). Based on comparative data on the use of iOS smartphones in Indonesia on the website gs.statcounter.com (2020), namely, Android 72.92%, iOS 26.53%, Samsung 0.22%, KaiOS 0.07%, Windows 0.03%, and the unknown is 0.13%.

2.5 UI/UX

User Interface is the process of dialogue between the computer and the user that allows for input from the user and output from the computer. An interface that is user friendly is very important, especially for users who do not understand the field. User Interface is part of an information system that requires user interaction to create input and output. From the two statements, the User Interface is the part that stimulates the dialogue between the user and the computer that allows the input and output processes to occur on the computer.

User Experience is the user experience that is felt when the user interacts with the system. The system in question is applications, websites and other software. According to Larasati in Adzani (2016), there are many factors that affect the UX of users, namely:

1) What does the design of a system look like according to its original purpose
2) System capabilities and limitations
3) Fill system view
4) System functional

III. RESEARCH METHODS

This research uses literature study and observation method. The literature study in this scientific paper uses references that support the content of scientific research, which comes from books, websites, and articles related to the research discussion. While the observations were obtained from the results of filling out questionnaires through google forms which were distributed to students. Then the results of the observations are analyzed to be used as a reference in the development of the application to be made.

IV. RESULT AND DISCUSSION

3.1 Opportunity

Based on the observations made by writing on 34 respondents, 55.9% of the respondents, mostly students, still admit to having difficulties when they want to meet friends and lecturers. This is due to the difficulty of matching schedules between one individual and another (Appendix 1). From the author's analysis, this is 100% because the respondents still use a simple way of recording schedules, one example is using the notepad app available on every smartphone, there are even respondents who do not record their daily schedule because they feel the lack of benefits from using notepads on smartphones. Nearly 50% of respondents expect a scheduler application that can be synchronized with other users' schedules and has a reminder alarm that can remind users of upcoming schedules. Smartphones have become a technology that is almost used by all Indonesian people, based on data in the Indonesian Digital Report 2020 per January on the number of internet users in Indonesia reaching 175.4 million people. This number shows that more than 50% of Indonesia's population has access to the internet. The same report also explains that 54.6% of internet users in Indonesia access the internet using smartphones (Kemp, 2020). This is an opportunity to develop the Joss App on smartphones, especially on the Android platform, where android users almost

reach 80% of users in Indonesia, where people in Indonesia also need an application that can record, remind, and share schedules with other users.

3.2 Solution

Scheduling is a decision-making process that deals with allocating limited resources to tasks over time for the purpose of optimizing one or more goals. Each task must have a different priority level, both in terms of time and in terms of the need for the task. The purpose of scheduling is none other than to make it easier for someone to manage their daily schedule so that scheduling is more organized.

A. Problem Identification The design of this application is based on a survey of user needs on a schedule recording application that can be used on Android smartphones, namely:

1. Can share private schedule with others.
2. Can search and view other people's schedules that have been shared
3. Personal data is stored on the cloud server in real time.
4. Can do group schedule matching automatically.
5. Has a user schedule reminder feature

B. User Identification and Use Case

Users are people who interact with the application that is built. There is only 1 type of user in this application, namely users who take notes, view other people's schedules, and also share their schedules with others. Use cases are patterns of behavior on the system. Each use case is a related action of the user and the system in a process. The needs of users are: Users: Add personal schedules, delete personal schedules, change personal schedules, share schedules with other users, manage personal data, match schedules with users or groups.

C. Application Development Stages

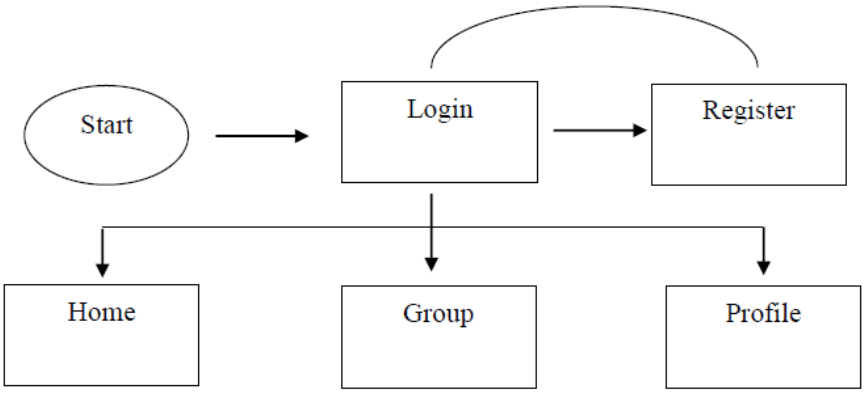
At the application development stage, several stages are needed in developing it. The steps needed are determining application boundaries, application design, application development and release processes.

1) Limits

Application Based on the identification of the problem, this application can be run on smartphones with the Android Lollipop 5.0.1 operating system and above.

2) App Design

The following is a flowchart of the application that will be developed from the design that has been described previously:



From the flowchart above, we can see the design stages of using the application to be made. The following is an explanation of the flowchart above:

1. Start

Start is the basic display that will be displayed on applications such as a splash screen. Start Login Register Home Group Profile 9

2. Login

At this stage, before the user uses the full application, the user must first log in using a registered account or using a google mail account or Facebook account.

3. Register

Users can register their accounts so that schedule recordings made by users are stored in real time in a database that can be synchronized with other connected users.

4. Home

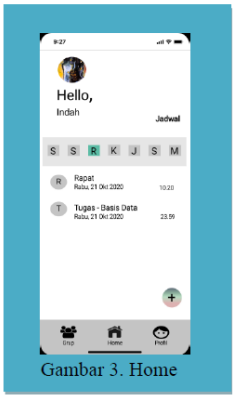
Displays a list of tasks that have been logged by the user. Adding recent task records and deleting completed tasks.

5. Group

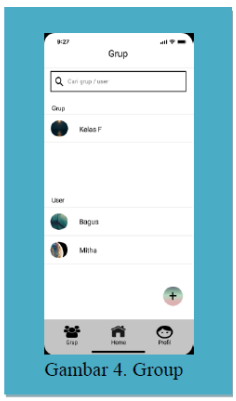
Search for other users or groups to schedule matching with other users. In addition, this menu also displays a list of users/groups that have been added by users as schedule matching partners.

6. Profile

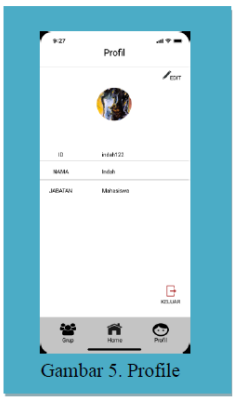
Displays user personal data such as photo, name, email and id that will be shared for use by other users in making schedule matches. After the flow of the application is created, the application enters the prototyping stage. Prototyping process using Figma. Here is a basic view of the application that will be made



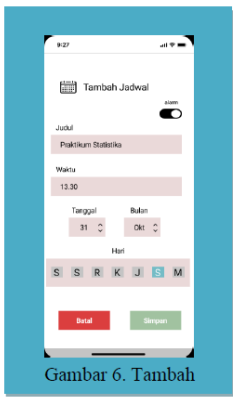
Gambar 3. Home



Gambar 4. Group



Gambar 5. Profile



Gambar 6. Tambah

3) Application Development

The application development process goes through several stages, namely, tool preparation, application development, application testing on each Android device, and application UI testing.

a) Preparation of tools

The tools that need to be prepared for the development of this application are Android Studio 4.1 and a Firebase account

b) Application Development

This application development is developed using the Android Architecture Component, namely MVVM (Model-View-View-Model) and uses the Kotlin language which is the current language that is fully supported by Google in developing Android Native applications. The application development process starts from collecting the required assets into 1 folder, preparing the assets so that they can be used on any Android device starting from Android Lollipop 5.0.1. Then, when the assets are ready, the next process is to prepare the real-time Firebase as the application database. Then, the application layout is based on the prototype that has been made previously. Connect the app with firebase, then make sure the app is already connected with firebase.

c) Application Trial

On Device Testing the application uses a smartphone developer, according to the version, if the developer does not have the device needed, the alternative can be to use an emulator from Android Studio.

d) UI Trial

After the application goes through device testing and does not experience any problems, the application enters the UI testing stage, where this test serves to test the appearance of the application. This test uses the JUnit library which is the default testing library for android studio. In this trial, the application will be tested automatically.

4) App release

After the application is successful at the next development stage, the application enters the release stage where at this stage the application will be released on the Play Store which is the official store of Android.

IV. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

The conclusion of this study is that the Joss App application can help the community, workers and students in managing their daily schedules. Joss App features scheduler, reminder, and schedule matcher between individuals or groups based on user id. This application is also integrated with real-time firebase which can help users synchronize directly to the application UI when data on other users is changed. The schedule match uses the Exhaustive Search Algorithm which can help users to accurately match the schedule.

4.2 Recommendations

Recommendations in the application development process there are several things that need to be considered, namely upgrading Firebase real-time to premium so that the application can be widely used by people in Indonesia, then the UI/UX design of the application requires further research so that users get a satisfactory experience and design.

REFERENCES

Kemp, Simon. 2020. Digital 2020: Indonesia. https://datareportal.com/reports/digital-2020-indonesia. 24 Februari 2020 (19:00).

Wibowo, Setyoningsih. 2015. Penerapan Logika Fuzzy Dalam Penjadwalan Waktu Kuliah. Jurnal Informatika UPGRIS. Vol 1.

Hartadi R., Hidayat, A., Utomo V. G. 2016. Perancangan Aplikasi Penjadwalan Mata Kuliah. Jurnal Bianglala Informatika. Vol 4.

Umanailo, M. C. B. 2015. Ilmu Sosial Budaya Dasar. Namlea: Fam Publishing

Dewi F. K. S., Indriasari T. D., Prayogo. 2016. Rancang Bangun Aplikasi Pengingat Kegiatan Akademik Berbasis Mobile. Jurnal Buana Informatika. Vol 7 (4). 303-132.

Setiawan M. H., Imrona M., Murdiansyah D. T. 2017. Optimasi Rute Angkutan Kota Secara Simultan Menggunakan Algoritma Exhaustive Search. Indo Jurnal On Cumputing. Vol 2. 47-45.

Adzani M. L. 2016. Analisis dan Perancangan UI/UX pada prototype Aplikasi Mobile E-Commerce Gramedia.com. Sumber Lain: https://gs.statcounter.com/. 2020. https://gs.statcounter.com/os-marketshare/mobile/worldwide. 11 November 2020 (21.25)