



Implementation of the IMAKOM Organization Presence (Computer Student Association) Panca Budi Medan Development University Using QR Code-Based ID Cards

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ABSTRACT

Progress in the field of information systems today, has helped a lot in processing data that is very appropriate in supporting the processing of data into information. One of the technologies in question is the development of software applications especially for mobile devices. One of the fastest mobile devices is a Smartphone. In writing this thesis, the writer raises the title of the thesis of Attendance in the Organization of IMAKOM (Computer Student Association) Medan Unpab Based on Id Card Using Qr due to the still manual validation process at imakom organization so with this application later it will attendance online and the data generated online real time. This application is made using Android smartphone technology because of the many members of imakom using this smartphone because it has many advantages such as the availability of social media and can be used anytime and anywhere, in learning java programs that can be run on this smartphone, in this application later its will do a barcode performance in the form of qr code which will later be compiled to the data base automatically and generate reports in real time.

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1. Introduction

Attendance system is a system that plays a very important role for every organization where each organization must provide strict discipline to members who join the organization. The application is experiencing very rapid development, implemented in almost all fields, such as in the health sector (Hariyanto, Wahyuni, and Iqbal 2019), in the field of education that is pressing the number of students drop out (Wahyuni, Saragih, and Perangin-angin 2018), as well as in the field of organization both companies and governments. , implementation is the application of a system that will be implemented after analysis and planning (Alief Maulana, Muhammad Sadikin 2018). The development of attendance applications today has made it possible to report in real time. One of the most widely used attendance methods is using QR (Quick Response), magnetic cards, and finger print. QR (Quick Response) is basically Response which is the development of Bar Code from one dimension to two dimensions (2D). There have been many studies conducted using QR Code, one of which is implementing an application of abscess with a QR Code type scanner. Of all the advantages that QR Code has, researchers chose to make attendance applications using QR Code barcode scanners (Mohamad Ali Murtadho, Novan Adi Musthofa 2016). The QR Code is rectangular in shape, with three small black boxes at all three ends and is easy to read using the QR Code reader / scanner. Scans on the code will be automatically converted into information links and then will proceed to the browser. QR Code is often found on electronic products, business cards, newspapers and online communication software and can be easily read by mobile phones that have a QR Code Reader application. This code is very easy for someone to find more information about a product because of its simple and small size. The purpose of this study is to implement a QR Code-based ID Card in the IMAKOM organizational attendance application that can generate reports automatically and can easily find out the activeness of IMAKOM members.



2. Research methods

2.1. Research Stages

The stages of the research to be carried out are as follows:

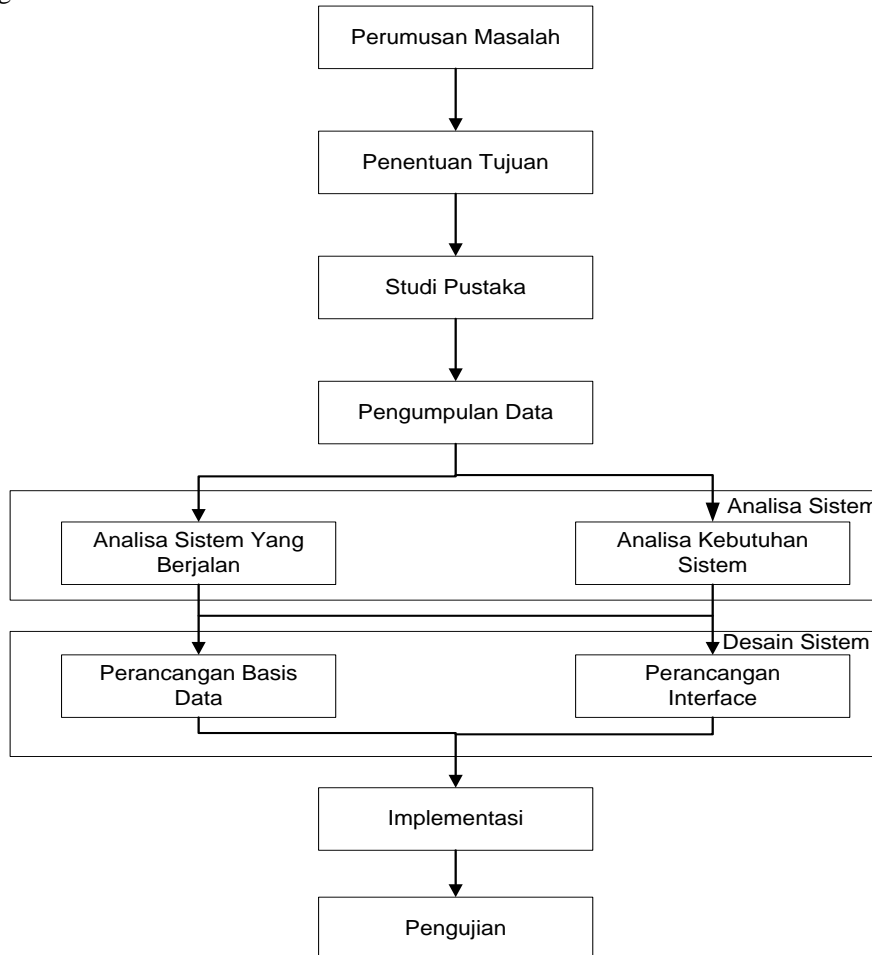


Fig 1. Research Stages

2.2. Research methodology

The research methodology that will be carried out in the writing of this thesis is as follows:

a) Study of literature

At this stage the necessary data collection is done by studying and selecting books, journals, papers and several sites related to the writing of this thesis.

b) Needs Analysis

This analysis is carried out to find out the scope of needs that will be used in implementing attendance in imakom organizations using qr code based id cards.

c) Functional Requirements Analysis

The ease of users to operate in implementing attendance at imakom organizations using a qr code based id card is an important consideration for building this application. Users will easily use it. This Functional requirements analysis is a service that will be provided in building applications. The services that will be owned by implementing attendance at an imakom organization using a qr code based id card are as follows:

- 1) Displays attendance at iMakom organizations using qr code based ID cards for Android smartphones.
- 2) Android smartphone users easily use the application by installing the APK file

d) Analysis of Non-Functional Needs

Functional requirements analysis consists of hardware requirements such as Lenovo Idepad 100, Processor: INTEL CORE I3 2.1GHz, RAM: 4 Gigabyte, CPU 1.80 G, 4 Megabyte RAM, 64 Gigabyte Disk Memory, Andriod 9 and software requirements such as, Operating System Windows 10 pro, CS4 Photo shop,

Android Studio, Android Software Development Kit (Android SDK), Java Development Kit (JDK), Android Development Tools (ADT).

e) Application Design

This stage is the stage of designing the flow of the application and also making the design of the application interface.

1) Use Case Diagrams User

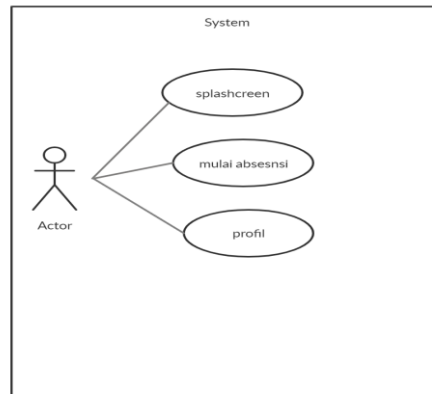


Fig 2. Use Case The attendance application in imakom organizations uses a QR Code based ID Card

2) Designing the Acitivity Diagram

Designing Activity Diagram of attendance implementation in imakom organizations using a qr code based id card is as follows

1. Activity Diagram Start Attendance

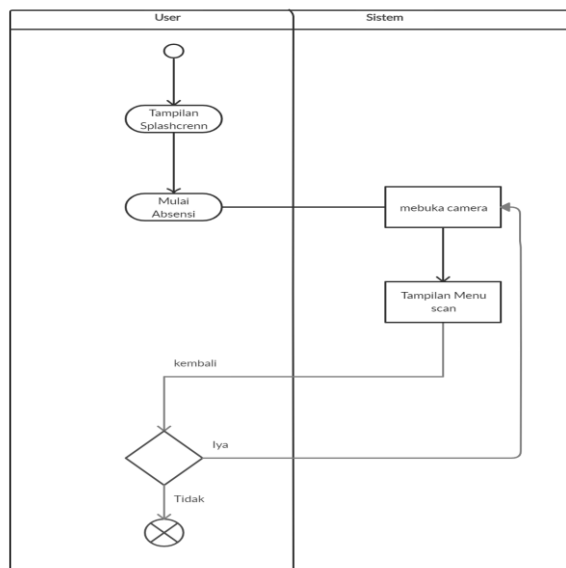


Fig 3. Activity Diagram Start Attendance

Designing Activity Diagram profile of attendance implementation profile in imakom organization using a qr code based id card can be seen in the following picture.

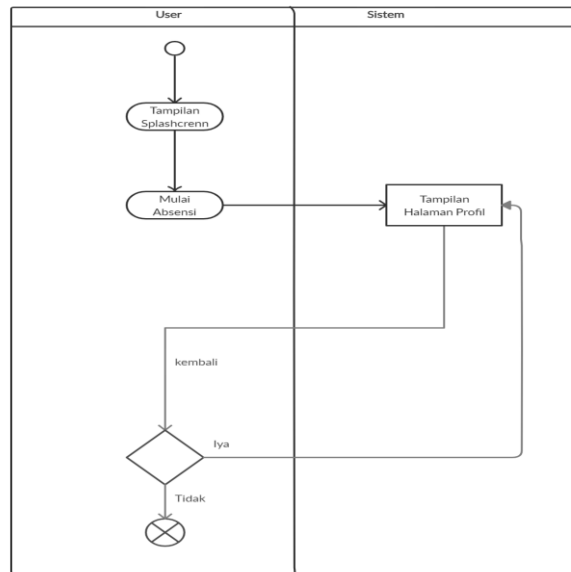


Fig 4. Activity Diagram profile menu

3. Results and Discussion

3.1. Display results

a) Main Display

The main page is the first page that appears when the program is run

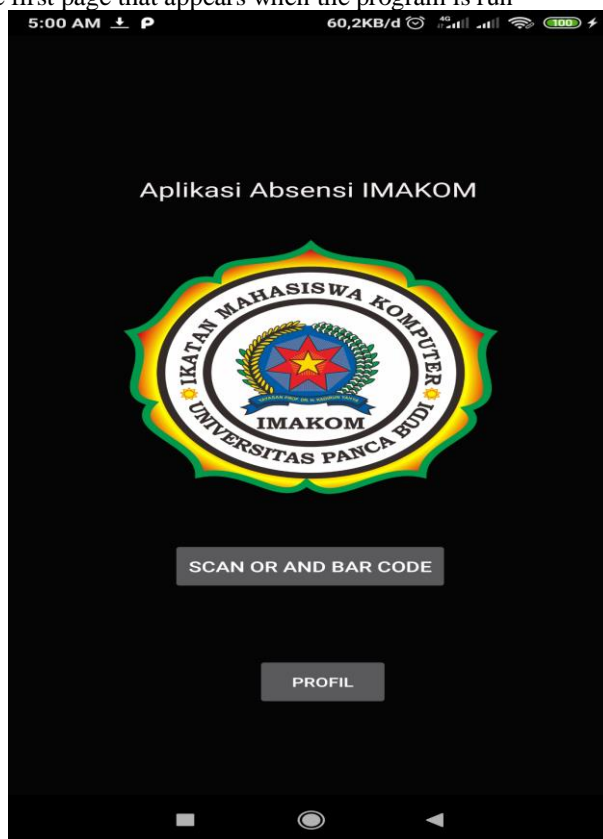


Fig 5. Display Page Title

In display picture 5 above will display the initial menu in the application. And there are two buttons on the start button attendance function to enter the scan qr menu to start the attendance process.

b) Barcod QR Scan Menu Display

In this view displays the cheating process on the existing barcod on the id card

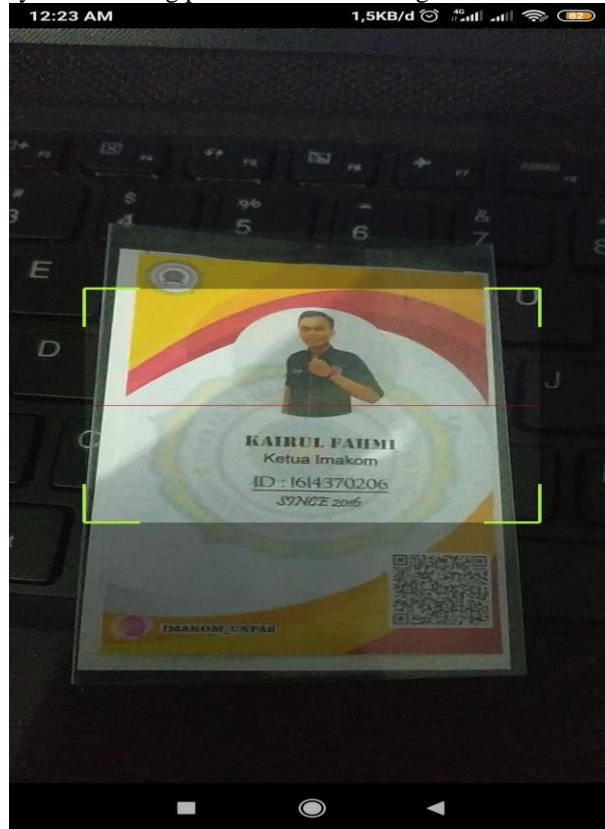


Fig 6. Display of Barcod Scan Procedures on Id Cards

Figure 6 shows the barcod scanning process on the id card, the results of which will be imported to the data base.

c) Display Results

In this view displays the final output of the attendance process which is converted into Excel format.

Timestamp	Name			
3/13/2020 0:25:25	Kairul Fahmi			
3/13/2020 0:26:00	Dhea Safitri			
3/13/2020 0:27:01	Kairul Fahmi			
3/13/2020 0:27:22	Mesi Ayu Lestari			

Fig 7. Display Page Results

In the display, figure 7 shows the results of the absentee record that shows the date, time and name of the members present.

d) Display Id Card

In this view, it displays the shape of the display *id card*



Fig 8. Display Id Card Form

4. Conclusion

Based on the descriptions that the author has explained in previous chapters and making the application, then the results of the implementation can be concluded as follows:

- a. With this application the data recording of active members in the IMAKOM (Computer Student Association) University of Universitas Pembangunan Panca Budi can be done in real time and
- b. Attendance application using a qr based ID card is based on Android running on the Android platform by using the Java programming language in building applications on Android Studio.

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