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Implementation of an Android Mobile Application-Based Payment System for Avicenna Integrated Islamic Elementary School Bekasi

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Abstract: The manual school payment system creates quite long queues and does not create time efficiency. Parents of students are required to come to school, especially to the Administration section because the system is still manual. This research was conducted at a Private Elementary School in Bekasi City. The split payment system makes many parents confused and often scattered. Every month there are several fees that parents must pay at this school. Tuition fees, Parent Teacher Association (POMG), Teaching and Learning Activities (KBM), and Books. It is hoped that this research will make it easier for parents so that the financial system in the school can run well and according to expectations. Then there is no longer a long queue system because the administration counter is only filled by 1 school employee. So that every parent can make school payments in real time, 24 hours whenever and wherever just by accessing this application. Of course, this payment application works with a bank in collaboration with the school foundation.
Keywords: Payment, Application, Android 14 Up

INTRODUCTION

The manual school payment system has caused many parents to experience difficulties because they must come directly to the school at specific times. On the other hand, the increasing use of internet access has provided many alternative ways to exchange information. The development and application of modern technology have brought numerous benefits to society. One of them is mobile-based technology. By using a device equipped with various features, users are greatly assisted in many aspects of their daily activities. It is believed that society today has become more open and able to access information more easily in real time.

One of the primary needs of individuals today is information, including information related to the school payment system. Many parents are often unaware or forget about school fee payments, and it is also common for payment receipts to be lost. Therefore, the existence of this technology will help improve the school's financial system, particularly in managing monthly school fees, which will be fully recorded in a single mobile-based application.

SDIT Avicenna Bekasi is one of the best private schools with an excellent flagship program, namely Tahfiz. This educational institution also has a very large number of students. Data from 2014 shows that there were 1,100 students enrolled from grade 1 to grade 6, and this number continues to increase each year. As the number of students grows, an online and well-structured financial system becomes increasingly necessary.

Through this research, a new payment system will be implemented to facilitate financial staff in managing bookkeeping processes. In addition, this study is expected to help parents or guardians monitor monthly tuition payments more easily. The payment application is developed using Java, C++, and Android Studio programming languages. Its implementation is mobile-based, allowing the entire school financial system to become transparent and accessible in the palm of the user's hand.

RESEARCHMETHOD

In this study, data collection was used as the main source of information to obtain valid and reliable data. The data were collected directly by the researcher from the research subjects. The data are divided into two types, namely primary data and secondary data, which complement the findings of previous studies. Therefore, it is expected that this research method will produce final results that meet the intended objectives.

In addition to distributing questionnaires to 1,000 parents or guardians, several important steps need to be prepared. These include designing the system workflow, followed by the design stage to ensure that the user interface meets expectations and provides efficient usability. After that, the process continues to the implementation phase of the developed application. However, a trial-and-error process will be conducted to identify any potential problems or obstacles within the application.

RESULTS AND DISCUSSION

Berdasarkan hasil dari penelitian ini,peneliti akan menjabarkan secara lebih dalam mengenai aplikasi yang di buat seperti diagram alur,story board dan bentuk aplikasi setiap halamannya. Step by step perlu di lakukan agar penelitian ini memperoleh hasil yang sesuai dengan kebutuhan sehingga nantinya akan memiliki manfaat dan pengaruh yang sangat besar di masa depannya khususnya setiap pergantian angkatan sekolah yiap tahun.

Story Board

A visual representation is used to illustrate the sequence of events in a system that will later be implemented. A storyboard is a technique for outlining the overall interaction between a person (or multiple users) and a particular product in narrative form. It consists of a series of images, sketches, and text that together create a story. A storyboard is a key element that is essential before developing an application. The following is the storyboard that will be used in the development of the school tuition payment application.

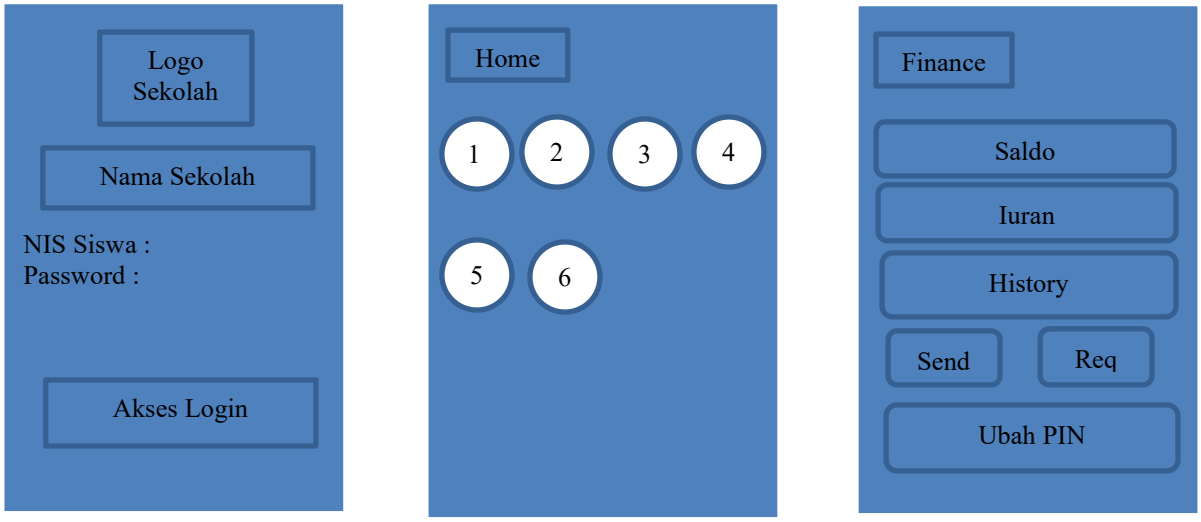

Figure 1. Storyboard of the School Tuition Payment Application

This application consists of several pages, including the main page, the menu page, and the financial page. On the main page, several labels are displayed, such as the school logo and the school name. In addition, there are input fields that serve as account credentials for each student, namely the Student Identification Number and Password. A command button is provided as access to log in. The main page contains only

one database system that stores the identity accounts of all students in the school. This application requires an ID as a prerequisite to access the application system.

The second page is a continuation of the first page. Once access is successfully granted, the next page will appear, which is the home page display. On this page, there are several menus that can be accessed by parents, namely Number 1 Attendance, Number 2 Grades, Number 3 Information, Number 4 Communication, Number 5 Academic Calendar, and Number 6 Finance. This research focuses only on Number 6, which is the finance section. The home page displays buttons used by the school to simplify administrative processes for all students.

The core page of the application is the financial page. On this page, there are several command buttons that function as tools for financial accessibility. There are six command buttons, namely Balance, Fees, History, Send, Request, and Change PIN. This page is integrated with a database that supports the function of each command button.

Program Listing

After the storyboard is created, the next step is programming, which involves developing a program that can be executed within an application. The process of writing, testing, improving, and maintaining the code that builds the computer program will be explained in the program listing excerpt below:

```
protected void onCreate(Bundle savedInstanceState){
        super.oncreate(SavedInstanceState);
        requestWindowFeature(Window.FEATURE_PAGE_TITLE);
getWindow().setFlags(Windowmanager.LayoutParams.FLAG_FULLSCREEN,

WindowManager.LayoutParams.FLAG_FULLSCREEN);
        setContenyView(R.layout.activity_splash);
Thread timer - new Thread(){
        public void run (){
        try{
        } catch(InteruptedException e){
        e.printStackTrace();
        }finally{
        Intent openMain = new Intent
("com.menu")
        startActivity(openMain);
        }
    }
};
```

This application was developed using a combination of programming languages such as Java and C++, which were then compiled using Android SDK Tools along with data files and resources into an Android App Bundle.

Output

The results of the program input are related to the data of all students. These important components are associated with the commands given by each user or application user. Output is a crucial part of this research. The process requested through input is in the form of text. The following is the display of the application output that has been developed:

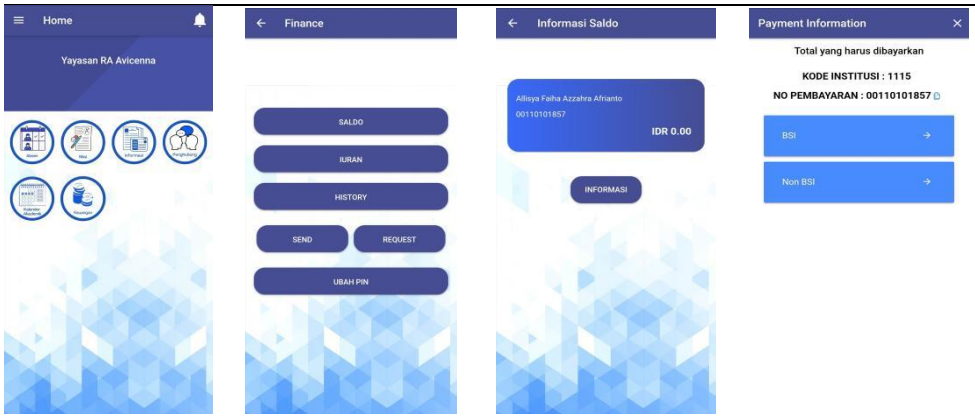

Figure 2. Programming Output Results

Application Usage Level

This application has been used by more than 1,000 parents or guardians because it greatly facilitates mobility in the school payment process without requiring them to make payments directly at the administrative office. The application is highly efficient when used, as the process is very fast and does not require long waiting times. The account required to access the application system only requires the NIS (Student Identification Number) of each student. The following is the user data collected by the researcher from parents or guardians:

Table 1. Results of the Questionnaire on Application and Non-Application Users

No	Grade Level	Number of Students (Parents/Guardians)	Using the Application	Not Using the Application
1	Level 1	196	188	8
2	Level 2	224	205	19
3	Level 3	168	168	0
4	Level 4	168	164	4
5	Level 5	160	153	7
6	Level 6	165	159	6
	Total	1,079	1,037	44

CONCLUSION

This study concludes that the implementation of the school tuition payment application has made it easier for most parents or guardians to pay monthly school fees without having to visit the administrative office. The application is very easy to use and efficient in terms of time. Parents are highly satisfied with the use of this application because it provides several useful features, such as balance top-up and an automatic debit system for monthly payments. The researcher hopes that in the future there will be additional features to further develop this application so that it becomes even more beneficial for the long-term advancement of the school.

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