Utilization of QR Code in Student Attendance Application Design

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Abstract. The use of QR Codes has been widely applied in everyday life. Both in the field of finance, information dissemination and administrative purposes. This paper will discuss the design of a student attendance application by utilizing the QR Code on the student card as an input medium that will be read by the system. This research was conducted at SMK Negeri 1 Percut Sei Tuan

**Keywords:** QR Code, Student Attendance Application

1 Introduction

The information system currently running on the Percut Sei Tuan attendance system is still documented in a Microsoft Excel file and if the BK teacher forgets to save the data, he or she must repeat the data input again and re-check [1]. From the opinion above, it can be concluded that the system that has been running so far has many shortcomings and weaknesses, including: 1 Information management is still manual or semi computerized. 2 Devices used are still susceptible to viruses. 3 It is very likely that the data will be corrupted due to viruses and interference with the electrical current device. 4 Temporary data storage, namely in books that are prone to damage or loss [2].

2 Research Method

After the system analysis stage, a system design is then made. System design is a useful step to improve the work efficiency of an existing system [3]. The system design that will be used is the Use Case Diagram and Activity Diagram [4].
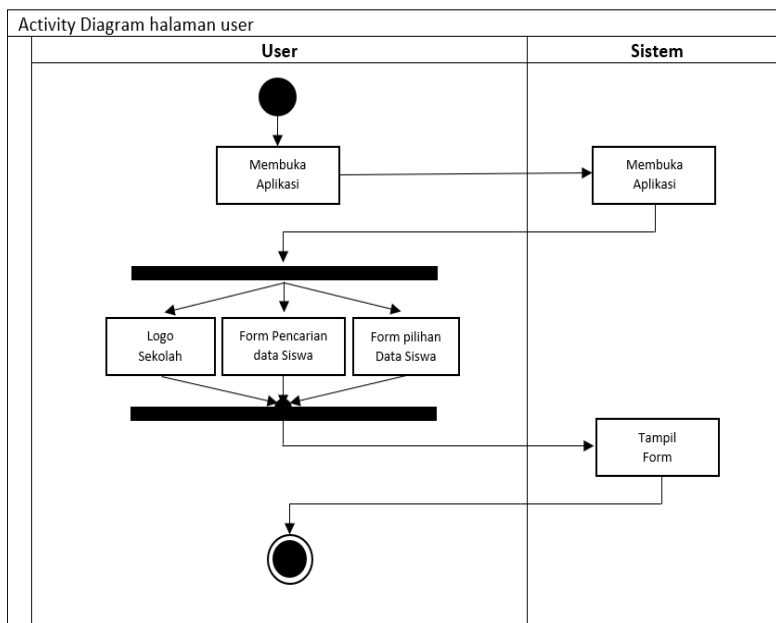
2.1 Usecase Diagram

The following is a use case diagram for the attendance process at SMK Negeri 1 Percut Sei Tuan :
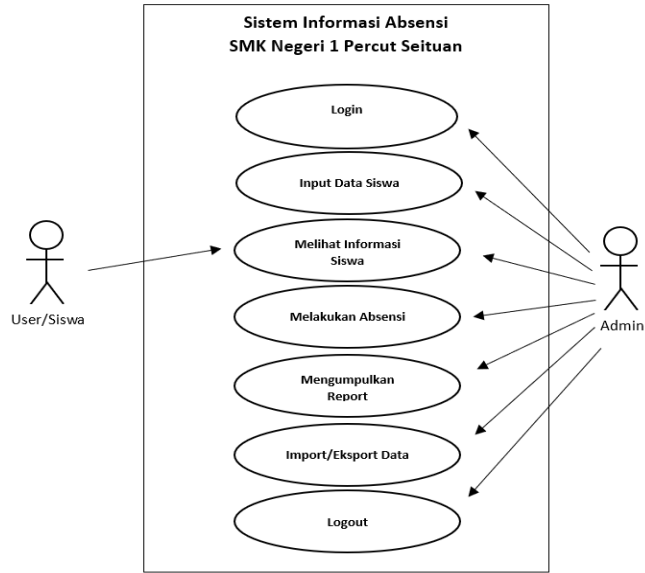
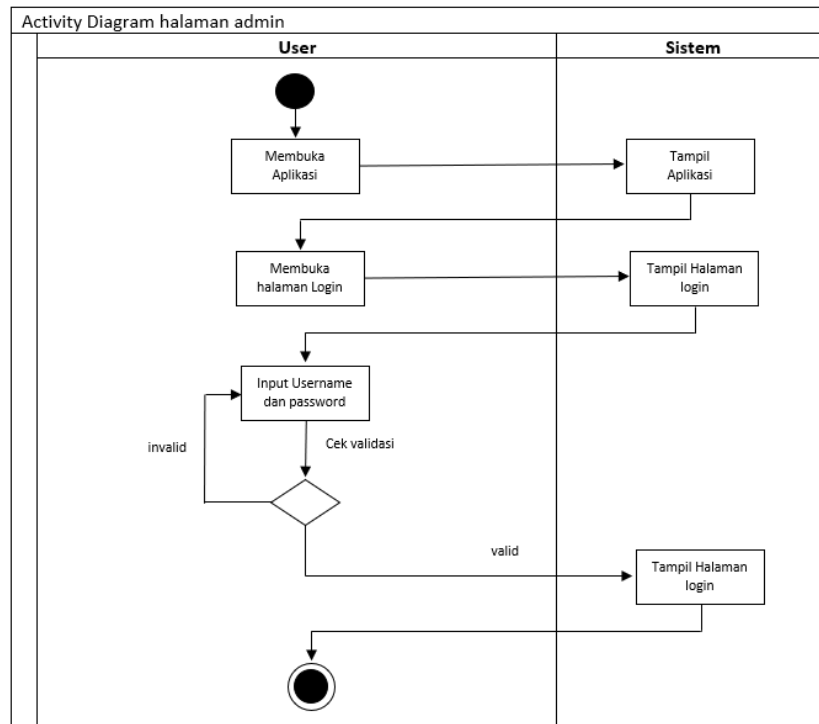**Figure 1.** Use case Diagram

2.2 Activity Diagram

The following is a use case diagram for the attendance process at SMK Negeri 1 Percut Sei Tuan

Figure 2. Activity Diagram User

The following is an activity diagram on the Admin Login page as shown in the image below:

Figure 3. Activity Diagram Login User

2.3 Id Card Design

Here is the student card design by applying the QR Code

Figure 4. Id Card

3 Results and Discussion

Implementation is carried out after the design is completed and will then be implemented in the program language that will be used [5]. The purpose of implementation is to confirm the design program module to the system actors so that the user can provide input to the system builder [6]. This system has been created using the PHP programming language and MySQL as the database. The following image is the main page of the attendance application.
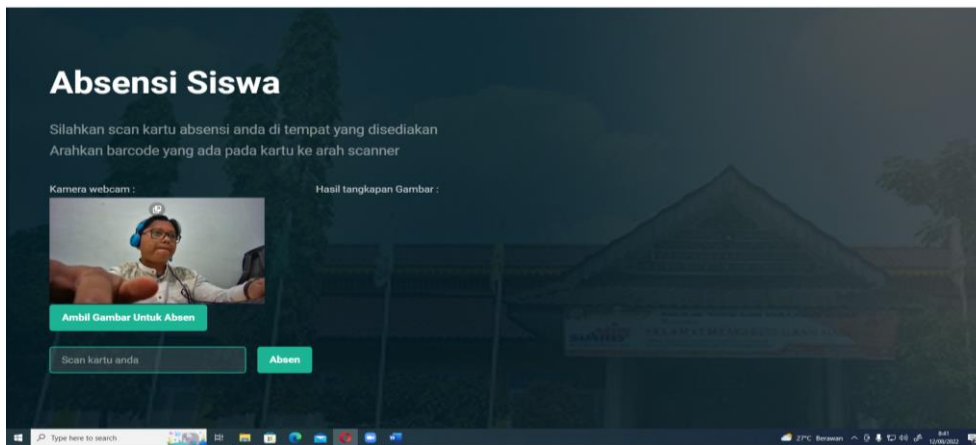

Figure 5. The Main Page Of The Attendance Application

Testing the basic functions of the system aims to find out the results of the basic functions in this application system. The results of testing the basic functions of this system can be seen in the following table:

Table 1. Testing the basic functions of the system

True Test Results (True Data)			
Input Data	Expected	Observation	Conclusion
Id card	The results of the QR code scan on the id card will record student attendance data based on the unique code in the QR Code	Id card Valid	Succeed
False Test Results (Wrong Data)			
Input Data	Expected	Observation	Conclusion
Id card	Can display errors	Showing error message	Succeed

4 Conclusions

From the results of the tests that have been carried out to get the expected results. In testing here, it is still in the testing phase which is limited to testing functionality. Undesirable things can happen without specific testing, especially in the interface and data management which is likely to experience data shortages or the addition of certain features from existing

ones. So that in running the system as a web-based application, it certainly affects the web browser to run the system as a web-based application [7].

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