

Monitoring Application for Student Activity Units Administration Data of Nurul Jadid University Based on Android

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Article Information

Submitted March 12, 2024

Accepted June 8, 2024

Published October 1, 2024

Abstract

Nurul Jadid University (UNUJA) at Probolinggo, Indonesia, is one of the universities located in Karanganyar, Paiton District, Probolinggo Regency, which is based in Pesantren, as a place for students who want to gain knowledge not only in the religious field - but also technology and health. Administrative data monitoring activities from 17 Student Activity Units owned by Nurul Jadid University are still run manually or face-to-face directly between the student affairs section and the head of the student affairs section starts monitoring from submission of decision letters, budgets, work programs, proposals, and activity reports of each student activity units. Several problems arise in this way; the busyness of students with a tight lecture schedule causes a slow process of depositing files and others, impacting the predetermined time- Therefore, an application is needed to monitor administrative data at Nurul Jadid University. The RAD method was chosen in this study to achieve the expected goals. An Android-based student activity unit (SAU) of Nurul Jadid University of administration data monitoring application has been produced.

Keywords: Monitoring application, student activity unit, rapid application development, Android

1. Introduction

This research was used to design an Android-based application using the rapid application development (RAD) method for student activity unit (SAU) administrative data at Nurul Jadid University, Probolinggo, Indonesia. Monitoring is collecting and analyzing information based on indicators determined systematically and continuously in planned activities to take corrective actions to improve planned activities [1]. The process of regulating activities in an organization raises organizational activities by two or more people to achieve the agreed targets [2]. An Android application is a Linux-like operating system based on Google Kernel, which describes Android Spread as software with programs supporting a particular operating system [3]. A data flow, often called a flowchart, is a graphical description of a system that defines a relationship between entities. Data flows or flowcharts can explain manual activities, computer activity processes, or both [4]. Data flow diagram (DFD) defines the program in

detail using four symbols; DFD describes the process of interconnected data flows [5]. An Entity Relationship Diagram (ERD), is a structured diagram used to build a database; an ERD depicts the data stored on the system or its limitations [6]. Universitas Nurul Jadid (UNUJA) Ponotogo, Indonesia, is a higher education institution within the Nurul Jadid Foundation. According to the Decree of the Minister of Research, Technology and Higher Education Number 589/KPT/1/2017, October 19, 2017, and was inaugurated directly by the Minister of Research, Technology and Higher Education, Prof. H. Mohammad Nasir, Ph.D. on October 29, 2017 [7]. All universities certainly have student organizations (ORMAWA) that are a forum for students to develop external and internal abilities [8].

A study conducted by [9], *Design and Build a Web-Based Student Financial Administration Monitoring Administrative Information System (Case Study: SD Plus Mutiara Ilmu Pandaan)*, produces a web-based application that can

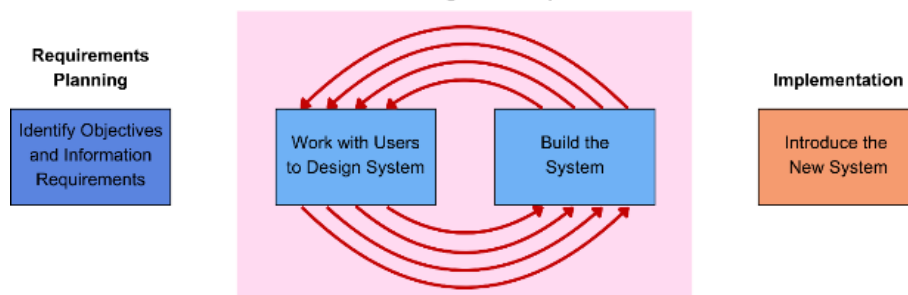
simplify and speed up the administrative data processing process. Another study was conducted by [10], *Drug Administration Monitoring for Patient Application Design*, resulting in an application that can help nurses control patient drug administration. Another research was conducted by [11], *Student Monitoring Information System Using SMS Gateway*, which resulted in an information system that can compile student attendance and grade data records and quickly submit attendance reports and student grade information. Another study was conducted by [12], *Application of Warehousing Materials at PT. PLN (Persero) Banjarmasin Area* produces a database application that can simplify searching and updating data to get more accurate and timely information that users expect and need. As the world of technology develops, it is increasingly advanced to suggest that each individual or institution implements technology in all activities [13].

2. Method

Research methodology is a scientific method to obtain data with a specific purpose and use. Through research, humans can use these results. Generally, the data obtained from research can be used to understand, solve problems, and predict problems. Research methodology is one of the methods by which the writer collects data to compile a report through research, problem formulation, and data analysis. This system development method uses the Rapid Application Development model (RAD), a linear sequential development method requiring a shorter development cycle in software development.

The realization divides into three stages: demand planning, design process, and realization [14].

Figure 1.
RAD method steps.
RAD Design Workshop



Requirements Planning

At this step, we meet to identify the application's or system's purpose and the information needed to achieve the goal. And produce some needs that will be raised or designed in this study. The data collection method is the most crucial step in a study

because the primary purpose of research is to get data.

Design

The RAD design seminar is where the design stage involves users using a flow chart design, which will show or describe the flow of the program from the first run until the

program is closed. In the next design stage, the entity relationship diagram (ERD) describes the relationship between entities, ranging from graphical symbols to data diagrams, and explains all data processing clearly.

Implementation

When both the user and the supervisor approve the design process on a system, the researcher implements the data obtained in a program. After all the programs are complete, the next stage is the testing stage, when the shortcomings are determined. If there are errors, the user can provide suggestions and opinions to improve the application; some of the tests carried out are:

Internal testing: Black Box

The black box testing method focuses on the functional requirements of the system, so black box testing allows system or application developers to create a set of input conditions to exercise the functional requirements of the program. Black box testing is not an alternative to white box testing but is an additional method for finding other errors besides the white box method. Black box testing tries to see several categories of errors, including incorrect or missing functions, interface errors, data structure errors or external database access (if any), performance errors, and initialization and termination errors.

External Testing: Direct user testing

External testing conducted in this study uses direct user testing. It means we can determine if the program works correctly by testing it directly with users. Through external testing, users will understand the pros and cons of the program and improve the system.

The Likert scale method is used to Likert scale to measure the level of user satisfaction. The Likert scale is a measurement scale developed by Likert in 1932. A Likert scale has four or more questions, which combine to form a score or value representing personal characteristics such as knowledge, attitudes, and behavior [15]. Respondents will give the above questionnaire to fill in according to the response points that it provides. Each response point will give a weighted value; the best response point (Strongly Agree) will provide the highest value of 5, and the lowest (Not Strongly Agree) will be given a value of 1. After that, the interval (vulnerable distance) and percent interpretation will determine the assessment by finding the interval score.

3. Result and Discussion

a. Requirement Planning

Requirements planning shapes the services users need from a system and the system's limitations that will operate and develop.

1. Functional Requirements

Functional Requirements are needs that have a direct relationship with the system. The functional requirements of this application include:

- a) BAUAK (General and Financial Administration Bureau) admin can log in and log out to the monitoring system for Decree submissions, activity submissions, and activity reports.
- b) Admin can display submission data and respond to each SAU of Nurul Jadid University.
- c) The admin can receive notifications for every submission made by each SAU of Nurul Jadid University.

- d) Admin can provide information related to the proposed activity funds.
- e) UKM can see the status of their submission.
- f) UKM can see how much funds have come down and proof of transfer.

2. Non-Functional Requirements

Non-functional needs are needs that are not directly related to certain features in the system.

a) Hardware Requirements

The hardware used in building this application is a laptop with the following specifications:

1. Intel (R) Celeron (R)
2. 4 GB Ram.
3. 120 GB SSD hard drive.

b) Software Requirements

The software used in building this application is as follows:

1. Operating systems such as Windows.
2. Android Studio 4.2.2
3. XAMPP v5.1.1.
4. Sublime Text 3

b. Design Process (Design Workshop)

In this study, system design will be carried out by making flowcharts, DFD (Data Flow Diagram), ERD (Entity Relationship Diagram) and equipped with database design and program design so that the design is easier to understand in detail.

a) System Flow (Flowchart)

Figure 2.

Flowchart of the old system for UKM application files.

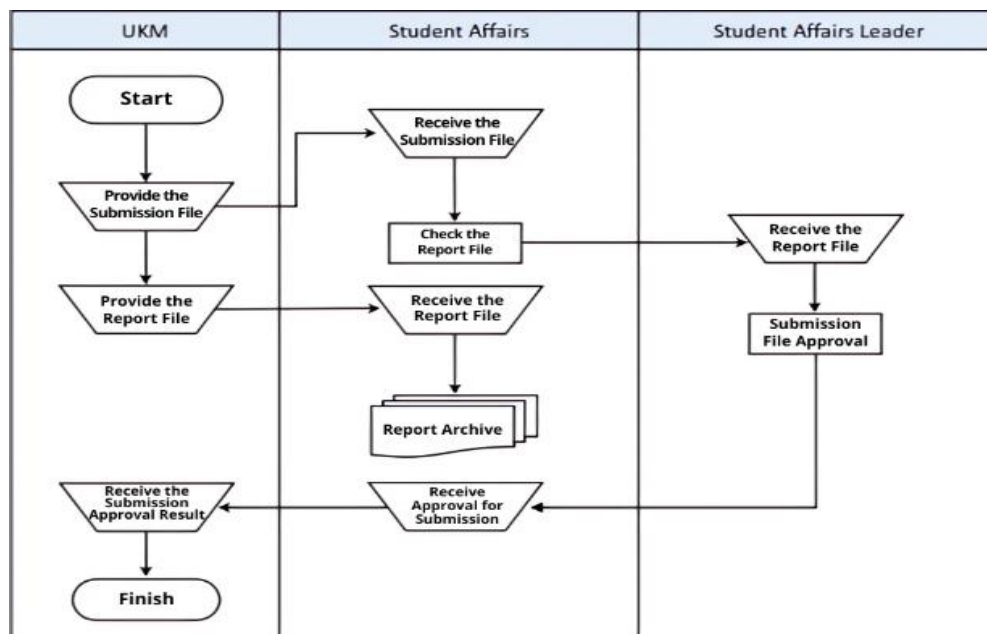


Figure 3.
Flowchart of the new system of SAU Nurul Jadid University.

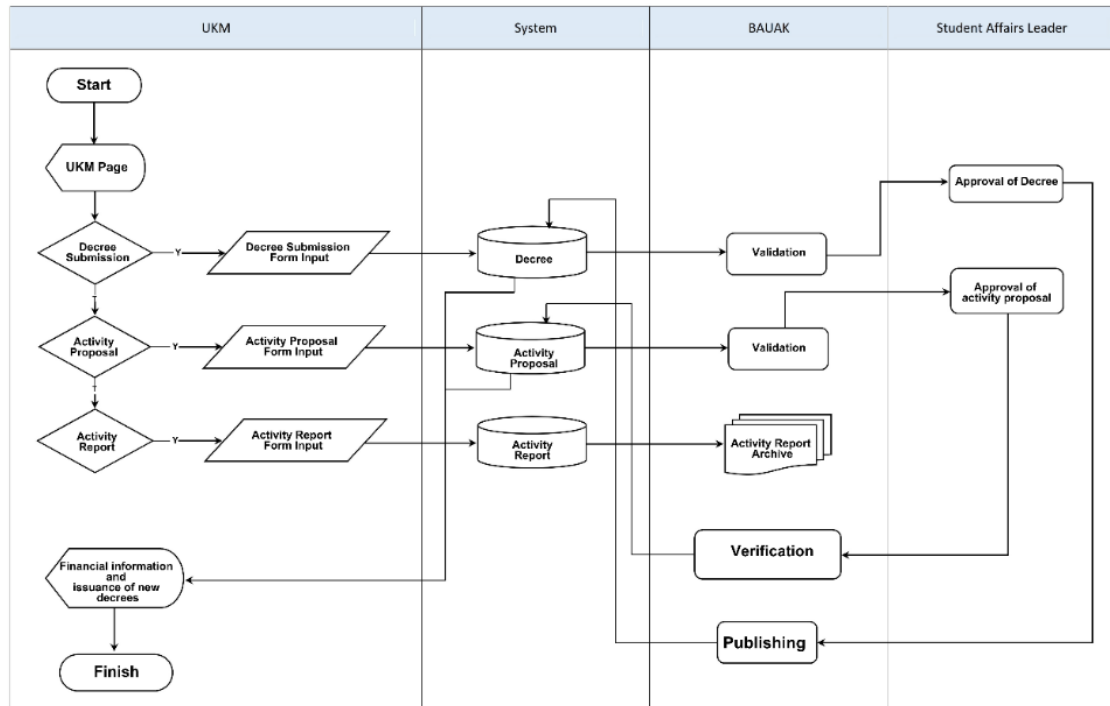


Figure 4.
Diagram of SAU applications and reports.

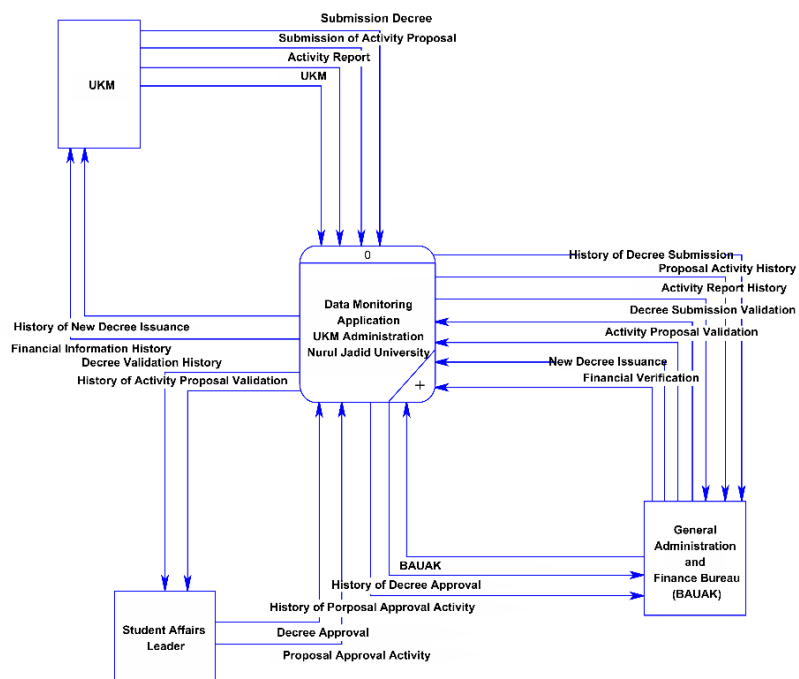
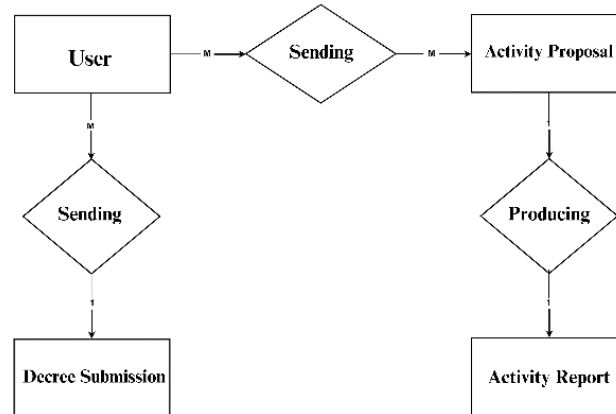


Figure 5.
Monitoring of SAU administrative data.



b). Implementation

Program implementation is the steps or procedures to complete the approved system design. Below is the implementation and testing of the Android-based Nurul Jadid University SAU Administration Data Monitoring Application.

Figure 6.
BAUAK, student affairs, and UKM login.



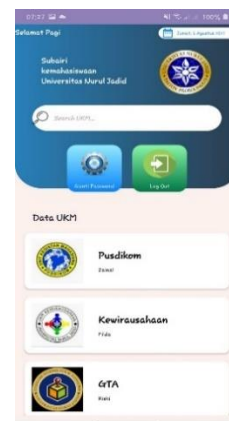
a. Login Page BAUAK, Student Affairs, and UKM

The main menu page or login page is the initial appearance of an application when opened; BAUAK, Student Affairs, and SAU use the login menu.

b. BAUAK and Student Affairs Main Menu Page

The BAUAK and Student Affairs menu page is the initial appearance of an application when finished logging in. In this application for monitoring submissions and reports, the design of the main menu page that will be displayed is five, consisting of menus, logout, search, change password, and list of SAU data. SAU data. Each menu will be directed to the menu.

Figure 7.
BAUAK main menu, student affairs.



c. Testing Results

In testing the Application for Submission of Decree, activities and reports at Nurul Jadid

University based on Android are carried out to determine how this implementation follows the previous design. For the results of testing several processes provide the following results:

1. Internal Testing: Black Box

Internal testing is done by observing the execution results through test data and checking the software's functionality. Internal testing conducted with Mr. Fathur Rizal, M.Kom, with six questions related to the use of application functions, revealed that six were appropriate and 0 not applicable. The proof of testing is attached.

2. External Testing: Direct Testing to Users

External testing conducted in this study uses direct testing on users; twenty Nurul Jadid University students will be selected as users. Direct testing was carried out on August 10, 2021, and the results of the validation of users lists are in Table 1.

A total of 20 administrators/ students were given a questionnaire containing questions and for the questionnaire that had been filled in. After the questionnaire was collected, the results were as shown in Table 1.

a. Weight Value on Each Scale

Table 1.
Score weight table.

Response Points	Scores
SS	5
S	4
C	3
TS	2

STS	1
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b. Interval value (range) and percent interpretation

$$I = 100 / \text{Total Score (Likert)}$$

$$I = 100 / 5 = 20$$

$$\text{Result (I)} = 20$$

So, the interval value of the distance from the lowest 0% to the highest 100% is as much as 20. Then, the percentage of assessment on each scale is as follows:

c. Results from the questionnaire given

d. Calculating the Results of Respondents' Answers

Table 4.
Score percentage table.

Answer	Description
0% - 19,99%	Very Bad
20% - 39,99%	Bad
40% - 59,99%	Good
60% - 79,99%	Pretty Good
80% - 100%	Very Good

Table 2.
Questionnaire results of UKM administrators.

No	Questions	Strongly Agree	Agree	Sufficiently	Disagree	Strongly Disagree
1.	Has the system helped monitor decree submissions, activity submissions, and activity reports?	11	7	2	0	0
2.	Has the system created helped in the process of service and delivery of information?	7	11	2	0	0
3.	Are the designs easy to use?	7	11	2	0	0
4.	Do the features in the system match the needs?	7	12	1	0	0
5.	Is the system working correctly?	8	10	2	0	0
6.	Do users have difficulty operating the system?	10	6	4	0	0

Table 3.
Counting the results of the UKM management questionnaire

Q/R	Q.R					Total	%
	SS	S	C	TS	STS		
Q1	55	28	6	0	0	89	89%
Q2	35	44	6	0	0	85	85%
Q3	35	44	6	0	0	85	85%
Q4	35	48	3	0	0	86	86%
Q5	40	40	6	0	0	86	86%
Q6	50	20	12	0	0	82	82%
Total							513%
Result							85,5%

4. Conclusion

Based on the process of designing and developing monitoring applications for submission of Decree, activities, and activity reports at Nurul Jadid University, it can be concluded that after testing 20 users, from the calculation of the total percentage of 85.5%. Therefore, this SAU administration data monitoring application is categorized as very good and feasible for use at Nurul Jadid University.

5. Acknowledgments

Our gratitude goes to the entire academic community of Nurul Jadid University and all those directly or indirectly completing this research.

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