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Designing a Presence Information System for Student Mentoring Activities Using the Laravel Framework at STT NF

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Article Information	Abstract	
Received : 15 Jul 2024 Revised : 8 Aug 2024 Accepted : 30 Oct 2024	STT NF is a private higher education institution that combines technological knowledge with Islamic values. To achieve this goal, STT NF has a program called student mentoring. Mentoring is led by a mentor and attended by several mentees. The mentoring evaluation process is conducted regularly to	
Keywords	assess the progress of each mentee in each group. The evaluation results of each group are sent to BKPK of STT NF. The researcher intends to build an	
Attendance, Mentoring, STT NF, Laravel Framework, Extreme Programming	information system for student mentoring attendance using Lar Framework. The design method used the extreme programming appro Based on the discussions conducted, it determined that there are mentoring activities dashboards to be created. There are two known categories, namely admin and mentor. The program was tested using b box testing with 22 scenarios. Based on the testing, it was concluded that categories function correctly.	

A. Introduction

Sekolah Tinggi Teknologi Terpadu Nurul Fikri (STT NF) is a private university that combines technology with Islamic character development. STT NF's goal is to produce graduates who are competent and have moral and religious character[1]. To support the institution's goal, STT NF has a student mentoring program that is held regularly every month. Mentoring is an activity of a group that discusses Islamic knowledge guided by a mentor[2], [3]. A mentor must have a deep understanding of religion and a religious character to guide their members.

In evaluating mentoring activities, mentors need to be monitoring carried out by mentors to discover their members' development. The evaluation result will be sent to Character Building Coordinating Board (BKPK) STT NF. So that BKPK can determine mentoring members (students) who can follow the next process to become a mentor. However, mentoring activities could not be carried out offline during the pandemic, so online mentoring activities began.

Currently, the monitoring of mentoring activities is traditionally done by BKPK, namely by taking notes directly or using Google Spreadsheets. Google Spreadsheet is a feature provided by Google to take notes online in real time[4]. So, during online mentoring, there are often errors in recording the attendance of mentoring activities. This encourages the creation of an information system to support the management of these activities.

This research aims to design an information system that can manage attendance at student mentoring activities at STT NF using the Laravel Framework. While many studies have developed attendance systems, this study offers several significant novelties. First, the use of the Laravel Framework provides efficiency and scalability that have not been widely explored in the context of mentoring attendance systems in Indonesia[5], [6]. Laravel offers numerous advantages, including simplicity, quality assurance, security, time and cost savings, comprehensive documentation, and ease of use[7]. Second, this system is specifically designed to support student mentoring activities, unlike conventional attendance systems that usually focus on class attendance. By addressing the specific needs of student mentoring activities at STT NF, this system can help mentors and BKPK STT NF evaluate and improve the effectiveness of their mentoring programs. The novelty of this approach contributes significantly to enhancing both the efficiency and effectiveness of mentoring programs in educational institutions. The resulting problem formulation focuses on building a presence information system using the Laravel framework to support student mentoring activities at STT NF. Based on this formulation, the research aims to build and design information systems by understanding user needs in student mentoring activities at STT NF. The research was titled "Designing a Presence Information System for Student Mentoring Activities Using the Laravel Framework at STT NF."

B. Research Method



Figure 1. Flowchart of Research Methodology

1. Observation

The first stage of this research is observation. The observation activity carried out is to make direct observations of the object under study. The object under study is students who carry out mentoring. This is done to find out problems and deepen information about mentoring activities at STT NF.

2. Literature review

The literature review stage is carried out to strengthen the observations that researchers have made. In this stage, researchers collect and review previous studies that discuss themes similar to this research. The results obtained from this stage are how researchers implement related research that has been done, then find out the shortcomings in previous studies so that researchers can avoid the same mistakes and improve existing shortcomings.

3. Design



Figure 1. Extreme Programming Framework

In Figure 2, the process of designing this research using the method of the design stage researchers will use the Extreme Programming method[8]. Extreme

Programming is a stage in the development of information systems in which there are several stages, such as Planning, Design, Coding, and Testing[9], [10].

a. Planning

Researchers conducted a needs analysis based on what researchers had obtained in the previous stage. So that researchers can understand the flow of the system needed and provide a clear description of the features and results needed.

b. Design

In the design process, researchers compile a system model from the results of the needs analysis that has been done previously. Then, the database model is made, which describes the relationship between the data in the system. Researchers use The Unified Modeling Language (UML) for system modeling, which consists of a Use Case Diagram, Activity Diagram, Component Diagram, and Deployment Diagram[11]. Meanwhile, database modeling is an Entity Relationship Diagram (ERD)[12]

c. Coding

The coding stage is the application of the previous system model design phase, where the design is converted into program code. The programming language used in developing this web information system application is the PHP programming language. At the same time, the database implementation uses MySQL[13].

d. Testing

At this stage is the process of testing the system. The focus on testing is carried out on system features and functionalities that system users have determined. Then, testing will be reviewed by the user. The test method used is the Black Box method. In this Black Box testing, the main focus is on system input and output, without paying attention to the details of the system's internal implementation[14].

C. Result and Discussion

The first step taken in designing an information system is system analysis. This process aims to examine the needs of the system that needs to be developed. At this stage, user requirements will be evaluated, and a use case diagram will be defined to identify the needs of the information system.

1. User Requirement

The user requirements will explain the needs that a user must have. The process of collecting user requirements is done by analyzing existing problems. Currently, the process of filling in the attendance of mentoring activities uses several different Google forms, which are stored in spreadsheets[15], [16]. The following table describes the documents used and the contents of the dashboard stored in the current Google Drive:

Description No Name 1 STT NF Online form for weekly mentoring Mentoring Attendance Form 2 of STT NF Contains a summary of the conducted Summary Mentoring Attendance Data attendance data

Table 1. Current Mentoring Activity Dashboard

3	The data of Ikhwan 3.5	Contains data of male students from STT NF
4	The data of Akhwat 3.5	Contains data on female students from STT
5	Old data	Contains an archive of mentoring activity data at STT NF

Seeing the problems in Table 1, an analysis was carried out related to user needs when filling out attendance after conducting mentoring activities. After the analysis process is carried out, the user needs for the mentoring activity attendance application are obtained.

a. User requirement category

	Tuble El ober Requirement	65
Code	Description	User
R.001	View information on the dashboard	Admin, Mentor
R.002	Log in and log out	Admin, Mentor
R.003	Manage mentor data	Admin
R.004	Manage Mentee Data	Admin
R.005	View mentee data	Mentor
R.006	Filling in Attendance	Mentor
R.007	View Attendance	Admin, Mentor
R.008	Manage Account	Admin, Mentor
R.009	User Management	Admin

Table 2. User Requirements

In Table 2, user requirements, there are two categories of users, namely admin and mentor. Admins can view information on the dashboard, login and log out, manage mentor and mentee data, view attendance, manage accounts, and user management. Meanwhile, mentors can view the dashboard, login and log out, view mentee data, view and fill out attendance, and manage accounts.

b. Application user category

In Table 3, the application user category describes user categories that have different access rights. User categories are divided into 2, namely admin and mentor.

Table 3. Application User		
User	Description	
Admin	Admin who manages the application as a whole	
Mentor	Users who can manage and provide information related to the Presence of their mentoring group	

c. Application Menu Categories

In Table 4, mentor users can only fill in and view their group's attendance, while admins can view attendance data for all mentoring group activities. Then, the admin can manage by adding, deleting, or changing existing mentor and mentee data.

Table 4. Application Menu			
User		Description	
Admin	1.	Dashboard	

	2.	Manage Data	
		a. View attendance data	
		recap	
	3.	Manage mentoring group data	
		a. Manage mentor data	
		b. Manage mentee data	
	1.	Dashboard	
Mentor	2.	Filling in Attendance	
	3.	View group data	

2. Use Case

In this section, we will explain the Use Case Diagram of the STT NF mentoring attendance web application based on the analysis results[17]. The system use case diagram is depicted in Figure 3.



Figure 2. Use Case Diagram

3. System Design

The process of designing this information system is to create a Domain Model and Activity Diagram.

a. Domain Model

Figure 4 is the Domain model used in the system to identify objects in the list of requirements that have been classified in the same area (domain).



Figure 3. Domain Model

b. Activity Diagram

One type of UML diagram is the Activity Diagram, which is activities that occur in a system. Figure 5 is a UML picture to illustrate the Activity Diagram of Displaying Dashboards[18]. Figure 6 is the Activity Diagram of Manage Mentor Data. While the Activity Diagram for Filling Presence is depicted in Figure 7, and the Activity Diagram for Managing Accounts is in Figure 8.



Figure 4. Activity Diagram of Displaying Dashboard



Figure 5. Activity Diagram Manage Mentor Data



Figure 6. Activity Diagram of Filling Presence



Figure 7. Activity Diagram of Manage Account

4. Interface Implementation

Implementation is the stage carried out to carry out the information system development process. The implementation process is carried out based on the analysis and design that has been done. In this section, the results of the system interface that has been created based on the design and explanation of the features built will be displayed.

		admin 🤹
Dashboard	Dashboard	
🚊 Lihat Presensi		
≯ Ketola >		
	Creptages O BREK STT MF 3502	

Figure 9. Admin Dashboard

			suiona 🧟
Dashboard			
RELEMANCE (TOBAL) 2	MENTER (TOTAL)	\$ PERTENSION (TOTAL) 4	
	Copyright © BASHE STT M	# 2022.	

Figure 10. Mentor Dashboard

5. System Evaluation

In discussing system evaluation using the Black Box Testing method to test several scenarios. The scenarios tested were 22 points. Each scenario is given its own test case. Then, the test results will be generated in the form of appropriate or inappropriate[19], [20]. Table 7 is the result of testing several scenarios using Black Box.

1.

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Table 5. Black Box Testing Results			
No	Test Scenario	Test Case	Test Result
1		Not entering Email and password	Match
2	Access to Login	Entered the wrong Email and/or password	Match
3		Entered Email and password correctly	Match
4	Access the dashboard	Enter the dashboard URL when not logged in	Match

5		Access the dashboard page when logged in	Match
6	Access	Access the attendance data recap page for all groups using an admin account.	Match
7	data recap	Access the attendance data recap page for all groups using other than an admin account.	Match
8	Access mentor's group	Access the mentor's group attendance data recap page	Match
9	attendance data recap	Access another mentor's group attendance data recap page	Match
10	Add	Access the match group mentoring data from the page	Match
11	attendance data	Access the form page for filling in other group mentoring data	Match
12		Click the submit button to add data	Match
13	Edit	Access the edit form page for a specific attendance	Match
14	Attendance data	Access the edit form page on a specific attendance belonging to another group.	Match
15	View	Access mentoring group attendance table	Match
16	data	Access another mentor's mentoring group attendance table	Match
17	View mentor	Access the overall mentor table	Match
18	data	View specific mentor data.	Match
19 20	Add mentor data	Access the add mentor Fill out the form and click the submit	Match Match
21		Access the mentor edit form	Match
22	Edit mentor data	Fill out the form and click the submit button	Match
23	Delete mentor data	Click the delete mentor button	Match
24	View mentee	Access the overall mentee table	Match
25	data	View specific mentee data.	Match
26	Add mentee	Access the add mentee form	Match
27	data	Fill in the form and click the submit button	Match
28	Edit mentee	Access the mentee edit form	Match
29	data	Fill out the form and click the submit button	Match
30	Delete mentee data	Click the delete mentee button	Match
31		Access the overall group table	Match

32	View group data	View Specific group data.	Match
33		Access the add group form	Match
34	Add group data	Fill in the form and click the submit button	Match
35		Access the group edit form	Match
36	Edit group data	Fill out the form and click the submit button	Match
37	Delete group data	Click the delete group button	Match
38	Access profile	Click the profile button	Match
39		Click the edit profile button	Match
40	Edit profile	Fill in the edit form and click the submit button	Match
41	Log out	Click the logout button	Match

Black box testing has 22 scenarios, with each scenario can have more than 1 test. From all scenarios carried out, the test results show that the system has run according to its function.

After testing the features using the black box, researchers conducted interviews. The interview respondent is the head of BKPK STT NF, who understands the technical process of STT student monitoring activities.

Table 8. Interview Results		
Questions	Answers	
What do you think of the appearance of this system?	It's still the default look, but it's good. But there are parts that can still be improvised, for example, on the dashboard.	
How do you think this information system can solve problems in terms of attendance recording?	With this system, data recording no longer uses Google Forms, and data management becomes more centralized in one system.	
What do you expect from the completion of this system development?	Managing mentoring attendance becomes easier, tidier, and centralized in one system	
What efforts will be made to make this system work?	 Training and socialization to mentor who will later use this application Deploy this system in a hosting so that it can be accessed by all users Conduct further development and maintenance in the future 	
What are the things that can be done to make this system useful for users?	Conduct socialization with a mentor and other BKPK admins	
Apart from recording attendance, what problems	 Monitoring and evaluation of each mentor's activity 	

Table 8. Interview Results

can be solved with this system?	2.	Further development could include e- learning and a mentoring information center
What do you think are the shortcomings that need to be improved in this system?	1. 2. 3. 4.	You can't change your own password yet There is no sorting and filter feature to show specific data in the table The attendance status is changed from present/permission/sick to present/(permission/sick)/alpha Addition of data recap content on the dashboard. Such as the average attendance of mentors, the number of mentors displayed in the form of a chart

D. Conclusion

The design of a web-based mentoring activity attendance information system at STT NF using the Laravel framework can meet the needs of attendance at mentoring activities at STT NF. The design process is done by conducting interviews in advance with the BKPK to find out the needs of the system. Then, the system design is done with the Extreme Programming method. After the system is built, testing of the system is done using the black box method and also interviews. Based on the results of testing the black box method, the system has a score of 100% and has run as expected. The results of the interview method test analysis show that the system can be used in mentoring activities so that it can meet the needs of Presence in mentoring activities at STT NF.

This research still has some shortcomings, so further development can still be done. There are several suggestions that researchers propose for future research, namely:

- a. The system can be further developed by improving existing deficiencies or adding additional features such as e-learning or information centers.
- b. The limitations of this research are in user experience testing to determine user satisfaction with the system.
- c. The testing phase on the system can use other UAT tests, such as A/B testing.

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