Component Loan Application Design and Check Loan Transactions for Dependent Free Letters at the AI Building at The State Polytechnic of Malang Web-Based

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Abstract — The development of information and communication technology is a major need in this advanced era with the aim of all computerized activities ranging from office work, banking, administration, libraries, education, government, organizations, and many more that are very dependent on the sophistication of computers and existing applications. inside it. In the AI Polinema Building in the component borrowing room, the component borrowing system and transaction checking for existing collateral-free letters still use the conventional system which causes ineffectiveness in component borrowing and free-of-liberty letter processing. Therefore, a research will be conducted to design a component loan application and check loan transactions for a Web-based free letter. Based on the problems above, in this study the researchers created a system that can support component lending and checking loan transactions for Web-based free letters. This system uses the Visual Studio Code application. From this study, it was found that the system that has been created by the researcher can run well and can help improve the performance of the technicians on duty in the loan room as well as the effectiveness of time for students in the loan process and managing free letters.

Keywords — Loan Applications, Loan Transactions, PHP and Visual Studio Code.

I. INTRODUCTION

The development of information and communication technology is currently increasingly rapidly making people compete to use it according to their goals and needs in both business and non-business environments. In this advanced era, everything is computerized, starting from office work, banking, administration, libraries, education, government, organizations, and many more that depend on the sophistication of computers and the applications in them [1]. The use of information technology in an organization is currently quite important because it can facilitate an organization to process data that can be used by its users. The easier it is to access information from the organization, the easier it will be for the organization to develop for the better and the better the system created, the easier it will be for humans to complete all their work and problems [2]. One of the forums or gathering places for people who can take full advantage of information sources is the organization, in order to make the processing of inventory data easier, faster, efficient and accurate [3].

In the AI Polinema Building, the system for borrowing components and checking loan transactions for collateral-free letters still uses the conventional system. If you are still using the borrowing system and checking loan transactions for collateral free letters conventionally, it will cause ineffectiveness and take longer. For example, when borrowing from the AI Building laboratory, students have to

come and write down on a small piece of paper what components are needed or which will be borrowed from the technician. After writing, you have to wait for the technician to pick up the borrowed components [4]. At the time of observation, the technician said that the method was not effective because those who borrowed components were not only representatives of the group but almost all group members joined the crowd in the component borrowing room which caused other groups who would apply for component loans to be hampered due to groups of students who were not interested and for the students themselves as well [5] have to waste time practicum for borrowing components. And at the time of observation, the technician also conveyed the obstacles when checking loan transactions for free letters, namely the loss of small student loan records that made student dependents who damaged components or removed not replaced or lost from their responsibilities [6].

Based on the problems above, a study was made with the title "Design of Component Loan Applications and Checking of Loan Transactions for Dependent Free Letters at the AI Building of the Malang State Polytechnic Web-Based". In this study there is a Web-Based Component Lending Information System, an Information System that will be created using the PHP programming language with MySQL as the database [7]. With this information system, it can help and make it easier for technicians in the component lending room in processing data on borrowing goods, both from the process of borrowing

or returning goods, collecting data from component transactions, component coding processes and making component loan transaction reports for free letters [8]. So that the data collection process carried out by AI Building technicians becomes more organized.

II. METHOD

A. The System Block Diagram

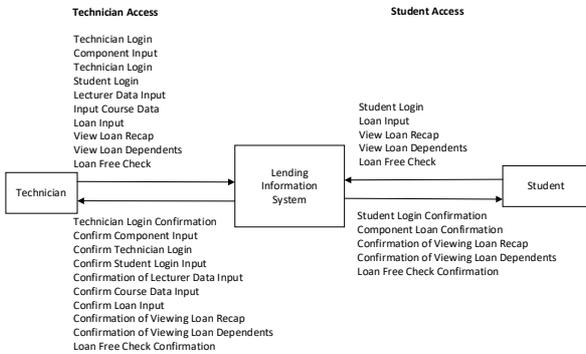The block diagram of the system in this study is shown in Figure 1 below.

Figure 1. Block Diagram System

Figure 1 shows the planning of the component lending system and checking the loan dependents for the management of the dependent letter. First, technicians, in this system technicians can access all the features that exist in the system. Such as technician login, component input, technician login input, student login input, lecturer data input, course data input, loan input, loan recap, view loan dependents, and loan-free checking. For students, they can only access several features such as student login, loan input, view loan recap, view loan dependents, check loan free [9].

For the loan process, students get a username and password from the technician to log in, then students can go directly to the menu for borrowing goods. On the menu, students can directly input the components to be borrowed along with the amount to be borrowed and then click save. After that, students wait for approval from the technician to then be able to take the borrowed components in the loan room [10].

For students who want to know if they have loan dependents or cannot go directly to the dependents menu, if the student wants to print a dependent letter, they can go directly to the dependent free check menu. For students who have loan dependents that have not been completed, the student cannot download the dependent letter. However, if the student is free of dependents, he can directly download the free letter which can then be taken to a technician to ask for a signature [11].

B. The System Work flow

Figure 2 below is a flowchart of how the system works starting from logging in as a student. To make a loan, you must fill out the loan form first and then choose the component to be borrowed, if the component is still available, you can proceed to the next stage, namely providing the

component borrowed by the technician, if the component is not available, the student must choose another component that is still available.
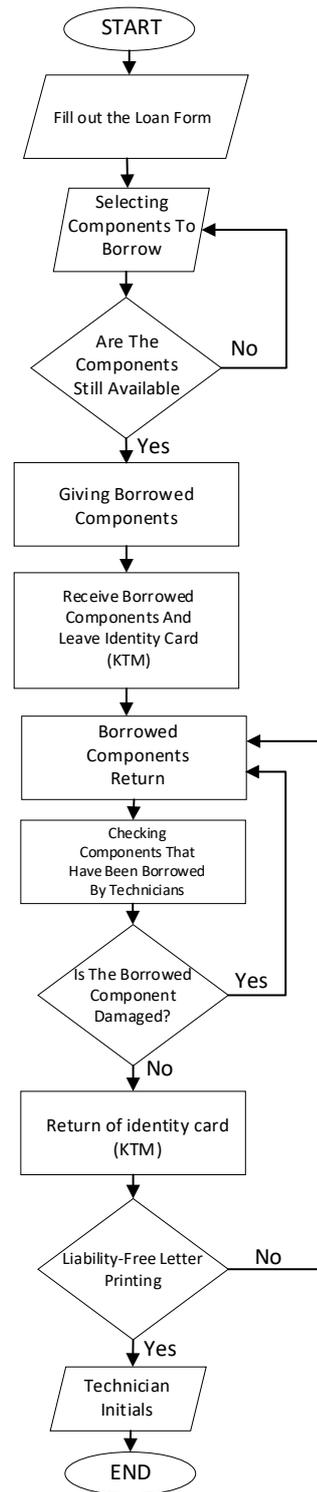

Figure 2. System Work flow

After the technician has prepared the borrowed components, students can pick them up by submitting their KTM card as collateral for the loan [12]. Then for the return of components,

the technician must go through the checking stage, if the component is damaged the student must replace it and if the component being inspected is not damaged, the student can take his KTM. Furthermore, the printing of the dependent letter can only be downloaded if the student does not have dependents then can ask the technician for initials. If you have dependents, you must complete the dependents first so that the free letter can be downloaded.
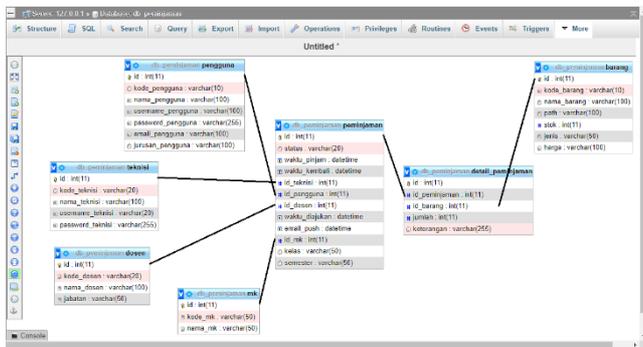
C. Database Design

Figure 3. Diagram Entity Relationship (ERD)

The database serves as a place to store data. Database planning is used to design program inputs and outputs to match what is planned. Database planning takes reference from the data analysis process [13].

III. RESULTS AND DISCUSSION

A. Standart Operation Procedure User as Student

1. Make sure the cellphone is connected to the internet.
2. Then click the following link https://indoscriptt.xyz/simponen-polinema/
3. Login by entering the username and password given by the admin then enter the user as a student.
4. Students can only access the features of borrowing goods, recap of loans, loan dependents and free checks
5. If you are going to make a loan, select the menu for borrowing goods, then fill in all the existing data and select the component to be borrowed and click save.[14]
6. For overtime loans there will be a warning on the dashboard.
7. To check the dependent letter, students can view it by logging in or without logging in by clicking the check menu for dependents.
8. For students who do not have dependents can directly download the letter free of dependents, but for students who have dependents must complete the dependents.

B. Standart Operation Procedure User as Technician

1. Make sure the cellphone is connected to the internet.
2. Then click the following link https://indoscriptt.xyz/simponen-polinema/
3. Login by entering your username and password then also enter the user as a technician
4. Technicians can access all features in the system such as input of goods for inputting components that can be borrowed, technician data input for login access, lecturer data input for data input when students borrow, course input for data input when students do borrowing, borrowing goods, recap of loans, student dependents, input of student data and free checks.[15]
5. Technicians can help students make loans if students have problems.
6. Students who borrow components must wait for approval from technicians.

C. Testing user as a Student

Figure 4. Login Page

Figure 4 Students must first login using the username and password that has been given by the technician and enter the user as a student. Also make sure the device is connected to the internet.
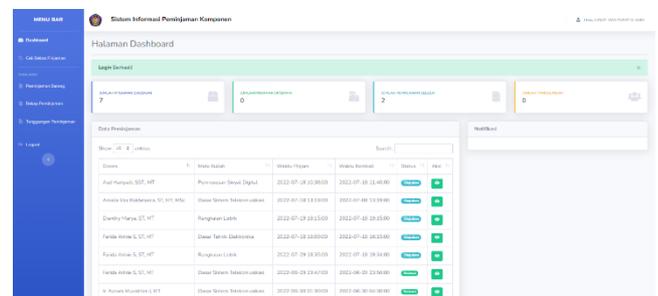

Figure 5. Dashboard Page

Figure 5 On the student dashboard page there are several features such as free checks, borrowing goods, loan recaps,

loan dependents and there are also several notifications in the form of the number of loans submitted, the amount of loans received, the number of loans completed, the number of dependents, loan data and also notifications for notification.
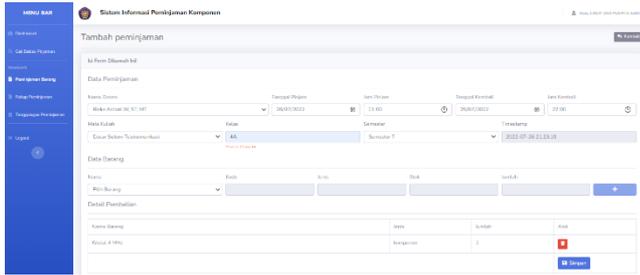

Figure 6. Component Borrowing Page

If students are going to make a loan, they can directly select the borrowed item menu and fill in all the existing data then click save.
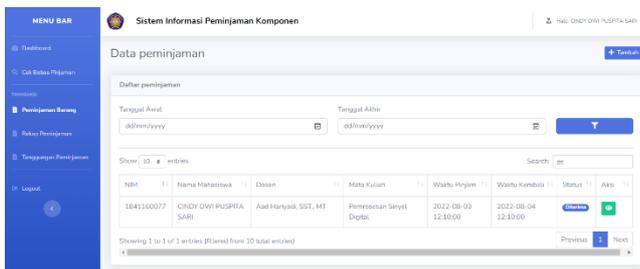

Figure 7. Appearance After Borrowing

After clicking save the component to be borrowed, its status is submitted and if it has been approved by the technician, the status will change to approved.
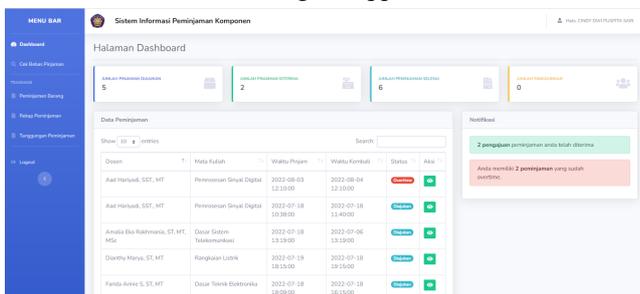
Figure 8. Approved Loan Notification Display On Dashboard

If it has been approved by the technician, the status will change to approved.
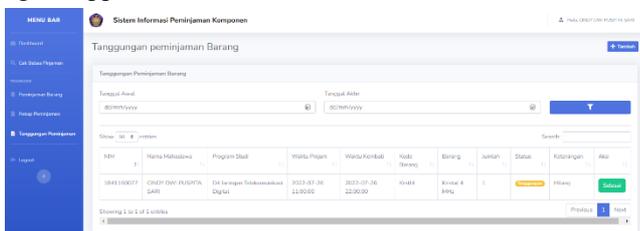
Figure 9. Loan Dependent Menu Page

When finished borrowing, the student returns the component and is checked by the technician whether the component is in good condition or not, otherwise the student must replace it with dependent status. to check dependents can directly click the dependents menu.
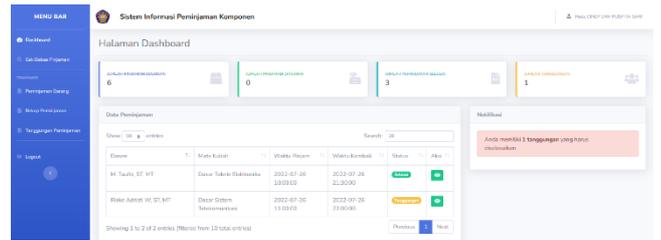
Figure 10. Display Of Loan Dependent Notifications On The Dashboard

The dashboard display on the loan dependent notification is written how many loan dependents have not been completed.
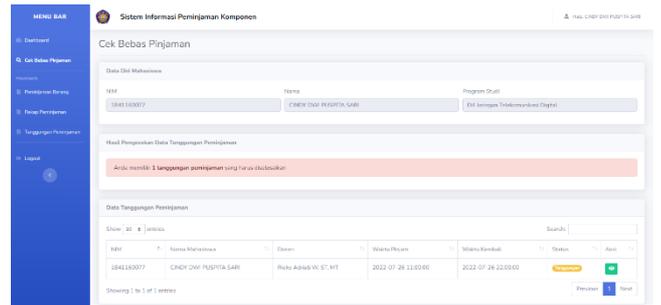
Figure 11. Display On Dependents-Free Checks For Students Who Have Loan Dependents

If you have dependents, the student cannot print the dependents and must complete the dependents.
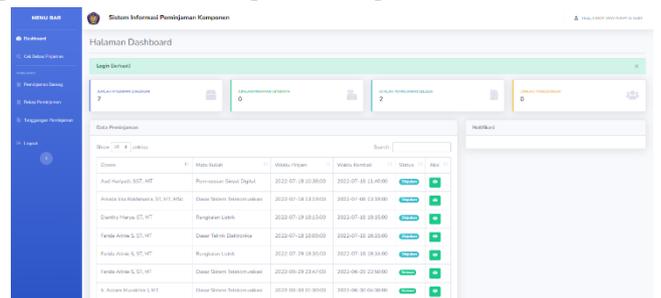
Figure 12. Loan Notification Completed On Dashboard

Students who do not have dependents or have completed their dependents, on the dashboard notification the loan has been completed according to the loan that has been made.
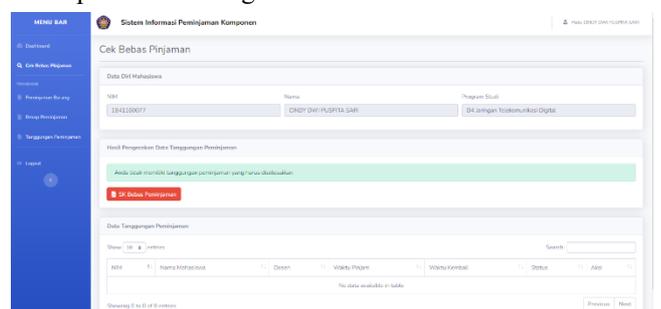

Figure 13. Printing Page For Students Who Have No Dependents

For students who do not have dependents, they can directly download for free fiber borrowing.
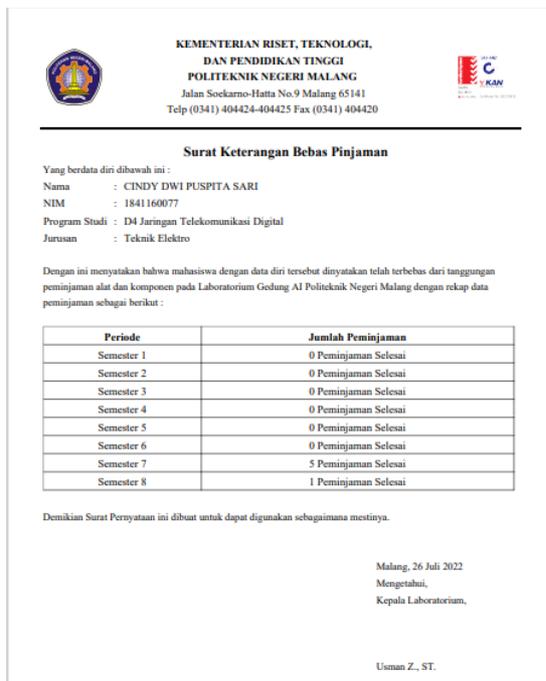
Figure 14. The Result Of The Download Of The Certificate Of Being Free Of Responsibility

This is the result of the download of the certificate of free of responsibility.
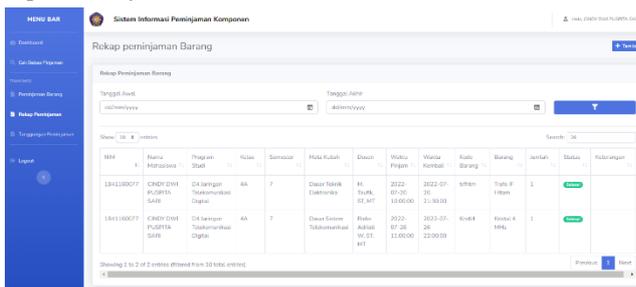

Figure 15. Loan Recap Menu

The borrowing recap menu is the history of the loans that have been made.
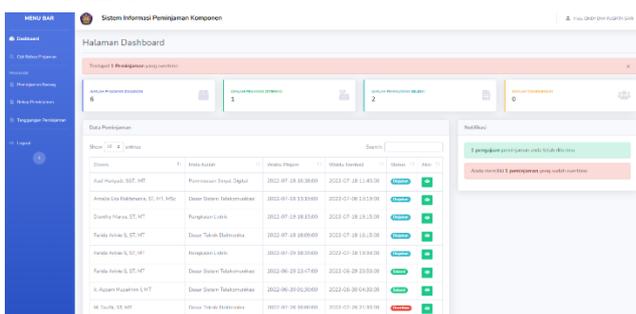

Figure 16. Loan Overtime Notification

Students who borrow more than the loan time will display a warning on the dashboard that the borrowing time is overtime.

D. Testing User As A Technician

Figure 17. Login Page

The technician must first login using the registered username and password and enter the user as a technician. Also make sure the device is connected to the internet.
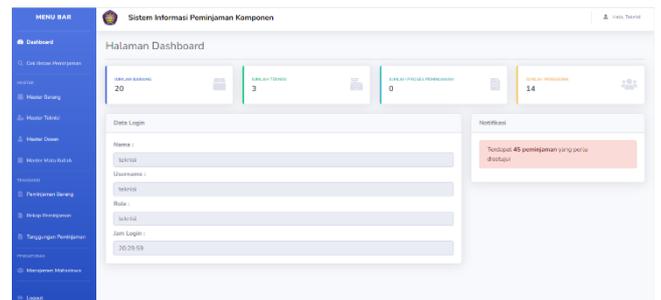
Figure 18. Technician Dashboard

On the technician dashboard there are features in the system such as input items for inputting components that can be borrowed, technician data input for login access, lecturer data input for data input when students borrow, course input for data input when students borrow, goods borrowing, loan recap, student dependents, student data input and independent checks. On the dashboard there are also several menus of information such as login data, notifications, the number of items entered, the number of registered technicians, the number of borrowing processes and the number of registered students.
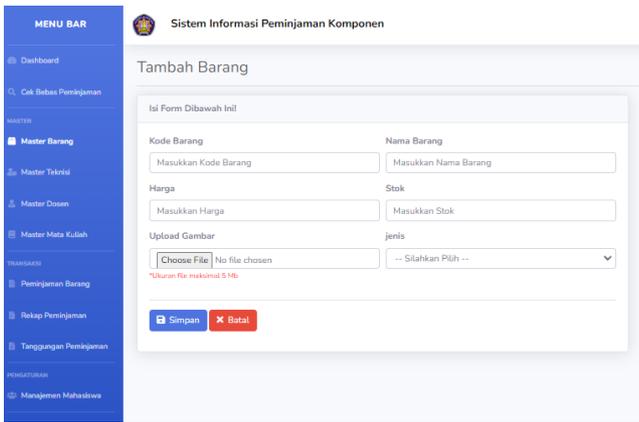
Figure 19. Component Input Page

To input items, click the "+" sign in the upper right corner and then you can fill in according to the items to be inputted.
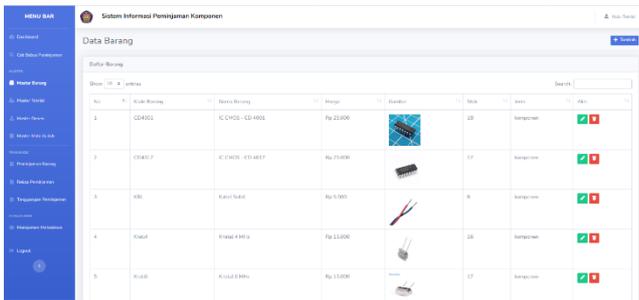

Figure 20. Component Input Result
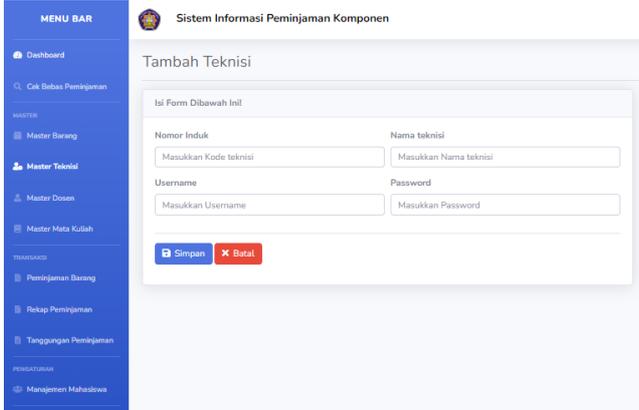
The input result will be like this.

Figure 21. Technician Input Page

To add technician data, click the "+" sign in the upper right corner then it can be filled in according to technician data.
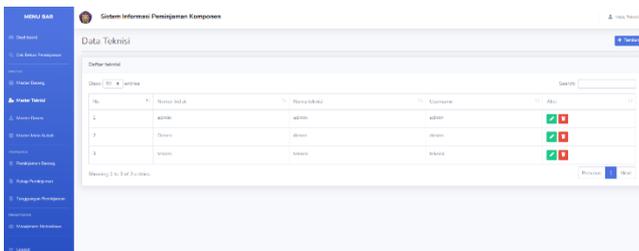

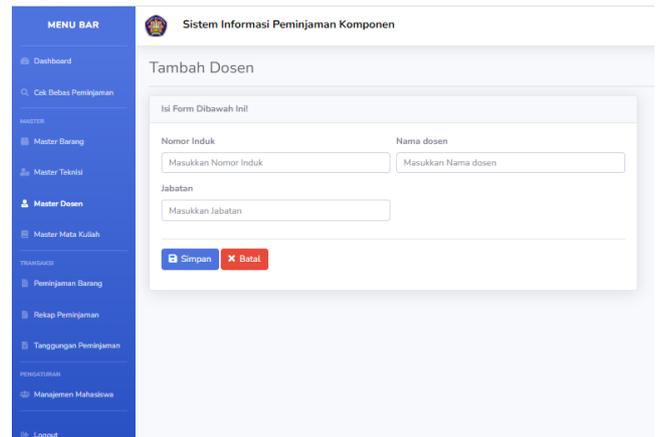Figure 22. Technician Data Input Results

The input result will be like this.

Figure 23. Lecturer Input Page

To add lecturer data, click the "+" sign in the upper right corner and then fill in according to the lecturer data.
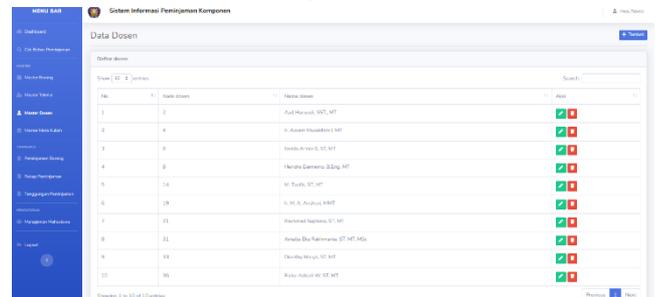
Figure 24. Lecturer Data Input Results

The input result will be like this.

Figure 25. Course Input Page

To add course data, click the "+" sign in the upper right corner then it can be filled in according to the course data.
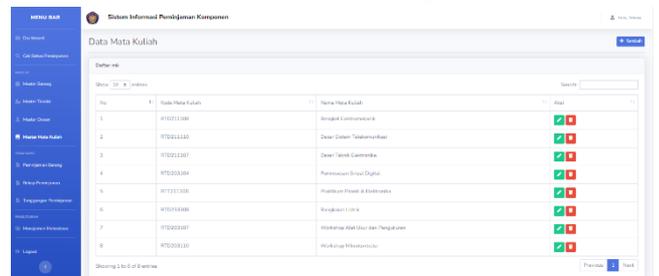

Figure 26. Course Data Input Results
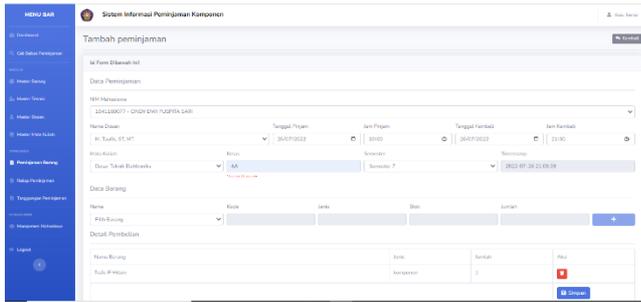
The input result will be like this.

Figure 27. Component Loan Filling

If students have problems, students can ask for help to make loans to technicians. Select the item borrowing menu then click the "+" sign in the upper right corner then fill in all the existing data then click save.
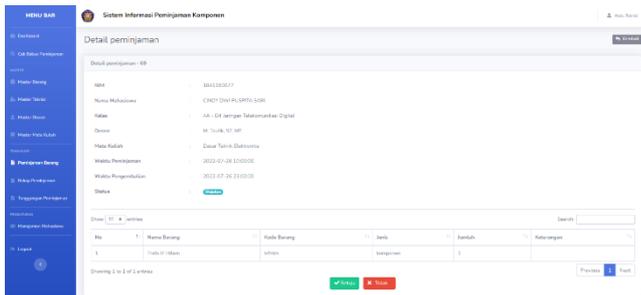

Figure 28. Return Check Display

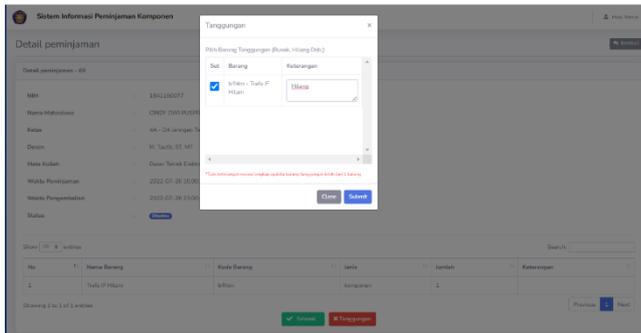Technicians can approve or reject student loan applications.

Figure 29. Display Of Dependents

After completing the loan, the student returns the component and is checked by the technician whether the component is in good condition or not, if not, the technician fills in the dependents statement of what component needs to be replaced and a description.
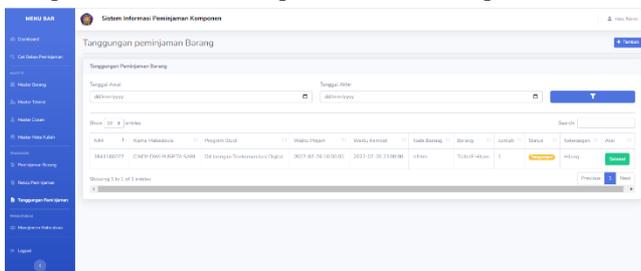

Figure 30. Loan Dependent Display

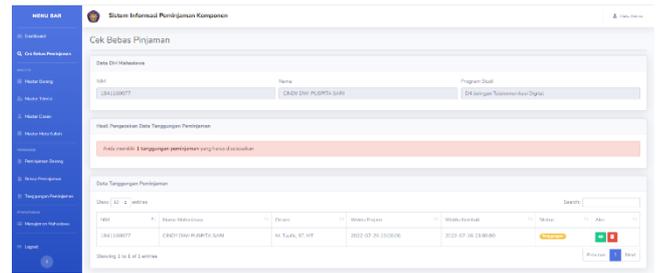To check dependents, you can directly click the dependents menu.

Figure 31. Display on dependents-free checks for students who have loan dependents

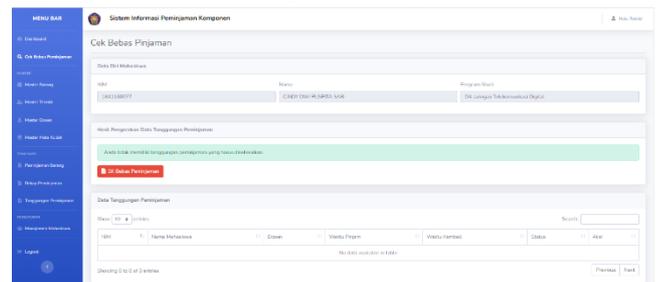If you have dependents, the student cannot print the dependents and must complete the dependents.

Figure 32. Printing page for students who have no dependents

For students who do not have dependents, they can directly download for free fiber borrowing.
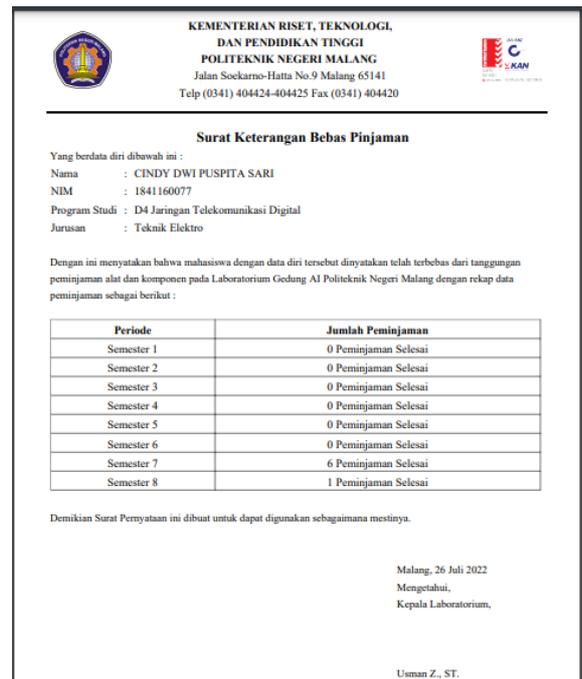

Figure 33. The result of the download of the certificate of being free of responsibility

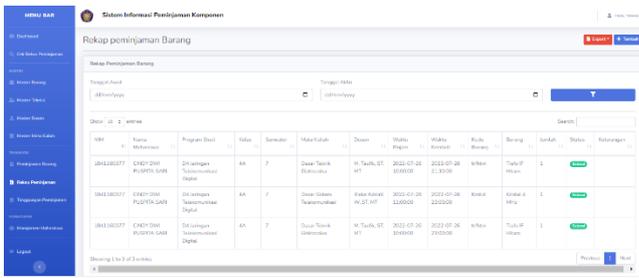This is the result of the download of the certificate of free of responsibility.

Figure 34. Loan Recap View

The loan recap menu is a history of loans that have been made. At the top right there is an export menu to download the results of the loan recap where the technician can choose to download all loan recaps or it can also be filtered.
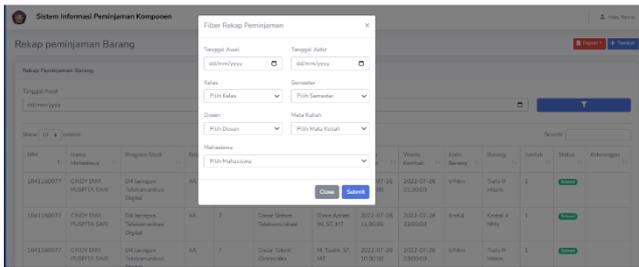

Figure 35. Loan Recap Filtering Page

Filtering can be done by daily, weekly, monthly, yearly, class, semester, lecturer, course, or even by student name.

Figure 36. The Result Of Downloading The Loan Recap
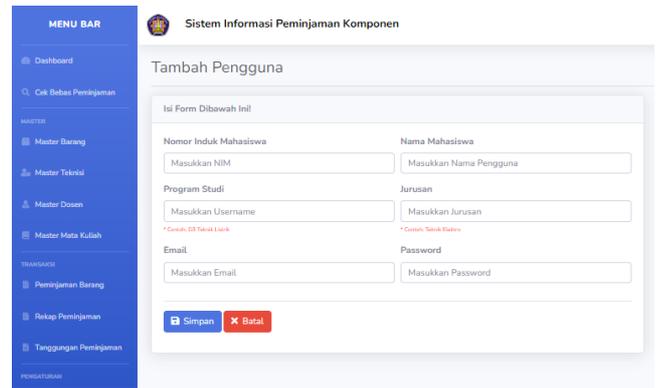
This is the result of downloading the loan recap.

Figure 37. Student Input Page

For student management menu is data for registration of student names. To add student data, click the "+" sign in the upper right corner then fill in according to student data.
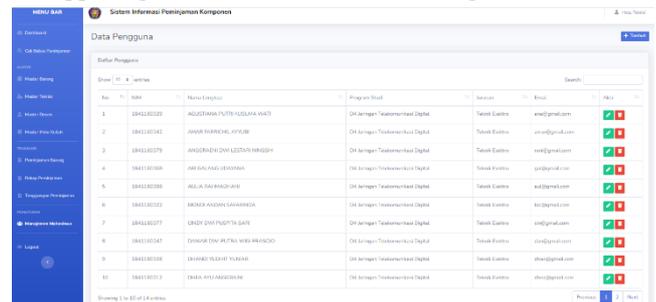

Figure 38. Student Data Input Results

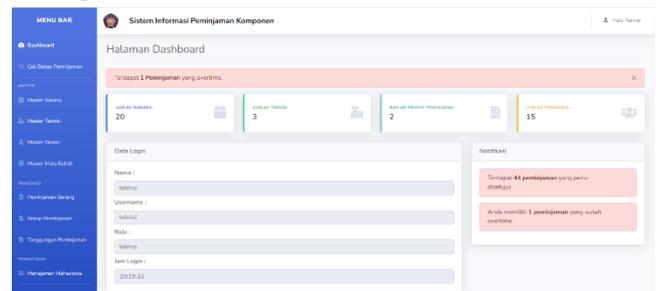The input result will be like this.

Figure 39. Loan overtime notification

On the dashboard, the technician will also get a notification if there are students who borrow more than the loan time with a warning that the borrowing time is overtime.
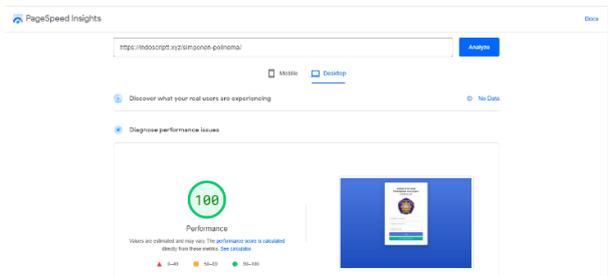
E. *Performance Testing*

Figure 40. Performance Test Results

From the results of the performance tests carried out, the results of the performance are 100, which based on the standard of assessment is included in the very good category.
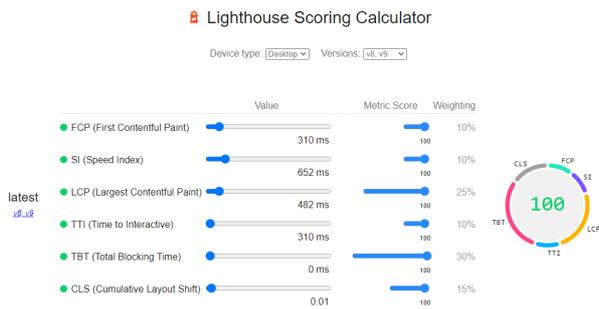

Figure 41. Result Of Performance Calculation

From the performance results, the scores obtained are based on several assessment categories such as FCP (First Contentful Paint) with 10% percentage, SI (Speed Index) with a percentage of 10%, LCP (Largest Fill Paint) with a percentage of 25%, TTI (Time to Interactive) with a percentage of 10%, TBT (Total Blocking Time) with a percentage of 30%, CLS (Cumulative Layout Shift) with 15% percentage

CONCLUSION

Based on the results of the tests that have been carried out, it can be concluded that the system has been running well. The system can provide warnings for students who are overtime when borrowing goods that can be seen on the dashboard, can provide information on loan reports, the number of available component stocks, names of students who have component dependents, a recap of loan history that can only be accessed by the technician on duty and liability-free printing to take care of the dependent-free letter.

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