Perancangan Akses Sistem pYes *Automation Tool's Crib* Berbasis Web Server di PT. Astra Otoparts Divisi Winteq

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Abstract—PT. Astra Otoparts Winteq Division is an industry engaged in the manufacture of machines with special purpose. Assembling machines using tools such as pliers, screwdrivers, avometers and so forth. These tools will be stored in a place called Tool's Crib, where the operation is done manually with the presence of administrators who serve transactions and bookkeeping is also written conventionally. Bookkeeping of this type causes the information that employees get about the Tool's Crib a bit. Automation Tool's Crib is a tool designed to help with the operation of the Tool's Crib system more effectively with RFID, PLC, applications, databases and web servers. This system also utilizes the application of the internet of things with a website to get information from the machine. This new system can help the administrator work in automated bookkeeping of transactions, so the data in the database can be processed into information in the form of a list of tools that are available on the cabinet, the transaction history of each employee as well as tools that are still borrowed by employees on the website. The management may supervise the transaction and know the condition of the equipment which is also an asset of the company. Tests carried out as many as 50 transactions (borrowing and return) and indicate that changes in data residing on the database can be displayed on the website correctly. All data displayed on the website in each menu is always in accordance with the conditions of the machine.

Keywords—IoT, Tools crib, Web server, Information.

I. INTRODUCTION

PT Astra Otoparts Winteq Division is an industry that is engaged in machine maker or machine manufacturing. The machines that are made are machines that have special functions (special purpose machines). The production section consists of engineering and field parts. In this part of the field is divided into two tasks, namely the work of electrical and mechanical parts. This field is responsible for assembling the machine. The assembly process requires tools or tools, such as cutting pliers, screwdrivers, avometers, hand drills, digital insulating and so on.

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Tool 's crib is a storage area for assembly tools. These tools include the assets of the company, so they need to be managed properly in order to help the production process. Previously on the tool's crib the transaction process was carried out with the help of an administrator. The transaction process is recorded manually in a book by the administrator. For users who want to do the loan can not know the tools that are still available. Administrators must first check the tools needed by employees are available in the closet or not, missing or not or damaged or not. Data regarding the tools that have been borrowed or returned can only be known by the administrator. In addition, without access to information, the management of the company also has difficulty monitoring routine conditions of equipment and transactions. Monitoring by management regarding transactions and the use of tools every month is needed to increase the number of equipment or replace the equipment that has been damaged. This lack of information occurs because bookkeeping is carried out conventionally (in books).

Based on several problems that exist in the tool 's crib system, this final project develops a tool that is automation tool's crib. This machine is used to help process the savings and loan tools more effectively. In this system, bookkeeping from transaction data that has been done automatically and will be stored in the database. The data that is already available on the database will be processed and displayed in the form of a website through the internet network. In this paper will be discussed about the use of websites to conduct monitoring of transaction data. The discussion will start from the supporting components to access the database such as the web server provider application, the database used. In addition, it will also discuss the process of designing the automation tool's crib with website access.

II. AUTOMATION TOOL'S CRIB MACHINE

A. Tool's Crib

Part of the production line that is tasked with managing the equipment used for assembly assembly by field employees or production employees is Tool's Crib Figure 2(). Processing Tool's Crib is done by the administrative officer. The administrator is in charge of serving loans and returning equipment. For employees who make loans, tools, employees must exchange coins that have been distributed by the company. The coins are distributed as many as 10 pieces each person, with the initials of the name of the

employee. Coins exchanged for tools that want to be borrowed can be taken back if the tool has been returned.

B. *Automation Tool's Crib*

Automation Tool's Crib (Figure 1) is a tool consisting of RFID (Radio Frequency Identification), Programmable Logic Control (PLC) and database. This machine is a development of the Tool's Crib system as one part of the production line and is tasked to store the tools used to perform the assembly process (machine assembly). The Tool's Crib system was previously operated manually with the help of administrators in transaction processing and bookkeeping. This machine can be operated without the help of administrators, as production employees can borrow tools on the machine directly according to the prescribed procedures.

Figure 1. Automation Tool's Crib.

Figure 2. Tool's Crib.

C. *Internet of Things*

According to Thames Lane in his book, Internet of Things (IOT) is a computing and communication technology that is starting to be integrated into many things that we use at home and at work. This starts with giving an identity (an example of an RFID tag) to all components and tracking something around us devices with low-cost sensor technology such as Radio Frequency Identification (RFID) [1].

According to Alasdair Gilchrist in his book, the vertical IoT strategy can be divided into several (See Figure 3), namely companies, commercial, consumers and industries,

these four things have different targets, technical requirements and strategies [2]. In the enterprise sector, business covers both small, medium and large scale. While the use of IoT in commercial parts is used in investment products such as banking, insurance. As in the consumer part of its use in a smart home application, entertainment connected to the monitor device in a private car. The part that uses the most IoT is the industrial sector which includes energy production, manufacturing, agriculture, transportation and so on. In this book will discuss the use of IoT in the industry in monitoring the operation of ongoing machines to get data about the information on the machine.
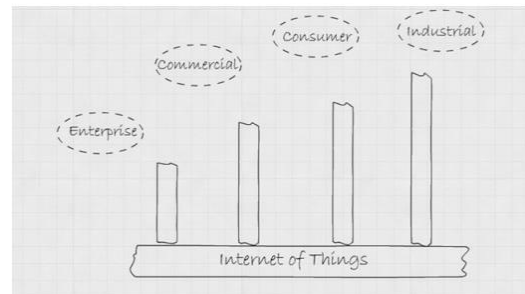

Figure 3. Division of IOT Strategy Vertically.

D. *Database*

Database is a container that is used to store data needed to run the process or place to store data that has been generated by the system. The database used there are two types, namely, the application and website. The application requires a database to recognize RFID tags that are used for tools and also for user IDs and for storing transaction processes carried out by the system. While the website also requires data in the database to be processed by some information. The database used by the application is a temporary Microsoft Access for the database on the website using Microsoft SQL Server.

Microsoft Access is one of the software from Microsoft that is used to create a database. Microsoft Access has several features such as tables, queries, froms and reports. Tables are places for data that you want to store in the database. Queries are statements used to retrieve information about the data available in the table. While forms are worksheets that are used to display data in a saved table [3].

Microsoft SQL server is one example of RDBMS (Rational Database Management System) or applications that are used to manage the database from Microsoft. The main query language is Transact-SQL which is an implementation of the ANSI / ISO SQL standard used by Microsoft and Sybase applications [4].

E. *XAMPP*

Web Server is an internet server that uses HTTP protocol (Hypertext Transfer Protocol) to serve all data transfer process or web data storage. HTTP is a protocol that governs communication between client and server. The server is a proprietor of information that provides itself to provide

services or services, can also be called parties who will receive requests from clients. The client is a web browser or another that can receive and display content sent by the server. This Web Server can serve data requests in the form of text, images (2D or 3D) and sound. One application that can be used to create a web server is Apache [5].

Figure 4. Control Panel XAMPP.

XAMPP (Figure 4) is an abbreviation consisting of X which means that this application can be used for many operating systems such as Windows, Linux, Mac OS, and Solaris. While the letter A is an abbreviation of Apache which is a web server application. Letter M stands for MySQL which is a database server processing application that can be used to manage SQL databases. The first letter P is the abbreviation of the web programming language PHP (Hypertext Preprocessor) which is a programming language that supports Apache. While the second P has a meaning Perl, is a programming language used to create a GUI look.

XAMPP serves as a stand-alone server (localhost) because Apache has default (initial condition) of localhost with IP Address 127.0.0.1. The folder used to run the website with XAMPP is located in C: \ xampp \ htdocs \ XX. The letter XX is the name of the file containing the PHP or HTML script you want to display [6].

F. Website Programming

The website is a page that contains information (in the form of text, images, videos, animations) and is accessed via the internet. The standard programming language used by the website is HTML (Hypertext Markup Language) with included CSS (Cascading Style Sheet). But for dynamic websites use more complex language that is accompanied by the use of PHP language (Hypertext Preprocessor), ASP (Active Server Page), CGI (Common Gateway Interface) and use the database. Dynamic websites are pages whose contents can change at any time due to database usage, the appearance on the server and client is different. Examples of dynamic websites are social networks or news pages. While the static website is a page whose contents can not be changed, it only consists of HTML, the view contained on the server will be the same as the client, the user can only click on links or images to move from one page to another. An example of a static website is a company profile [7].

III. SYSTEM PLANNING

Automation Tool's Crib uses RFID (Radio Frequency Identification) in identifying the user device and identity. The RFID reader will identify the serial number that each tag has on the employee's identification tool and card through an RFID reading program available in Visual Studio 2015 with the Visual Basic .NET programming language.

HMI (Human Machine Interface) in this application is also made through Visual Basic .NET in Visual Studio 2015. The program in this application contains reading commands with the RFID reader to identify the tools to be borrowed or returned and readings to the user ID in order to operate this machine. Besides this application also contains commands for storing transaction data in the database. Through the connection command with the database then the system can run using data on the database and can store transaction data on the database. Data relating to transactions have been prepared in the database, both tool data and user data.

This Microsoft Access database is also connected to a Microsoft SQL Server database through a link process. This database on Microsoft SQL server is the data used by the website. Through this connection data in Microsoft Access can be sent to Mirosoft SQL Server, even if the data obtained by Microsoft SQL Server from the website will also be sent to the application database (Microsoft Access). The process flow of Automation Tool's Crib can be seen in Figure 5.
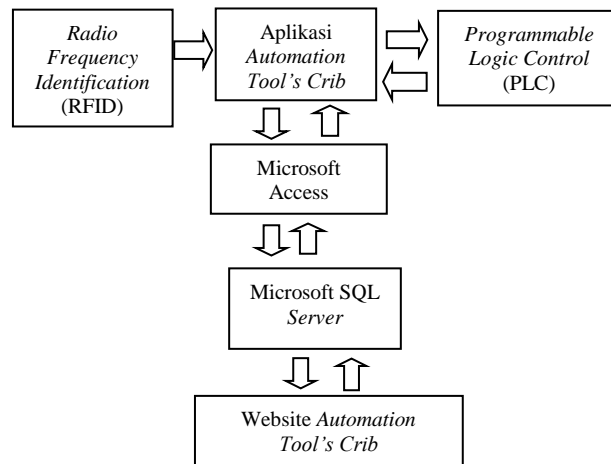

Figure 5. System Flow.

The application also requires input from the sensor to run the system, for example the limit switch to manage the transaction process. In addition this application will also provide action using actuators to maintain system security such as the use of doorlock solenoid. In order for the application to communicate with input and output required PLC. Communication is done by utilizing variable data in the form of numbers to Memory Data (DM) on PLC. The application will send the variable to the PLC and will also read the variable sent by the PLC.

Data needed to run the application obtained from the database, as well as data processed on the website. The database used by the application is data on Microsoft

Access, while the website requires data on Mircrosoft SQL Server. These two parts are interconnected so that the stored transaction data can also be accessed via the website in the same time or in real time.

In order for the data received by Microsoft Access and Microsoft SQL Server to be the same it is necessary to have a connection process between these two types of databases. Through this communication the data generated by the transaction processing that is occurring in Microsoft Access can be accepted by Microsoft SQL Server.
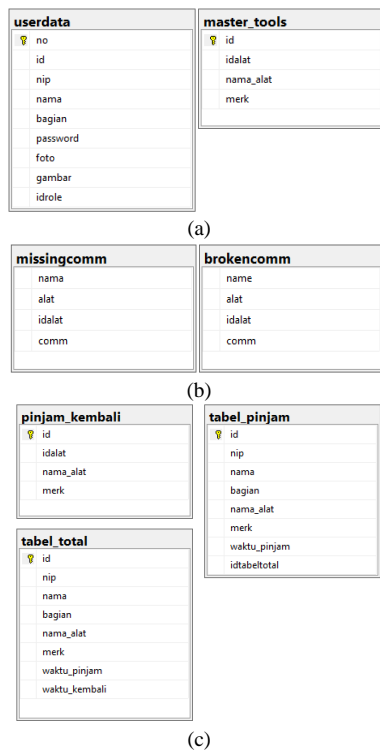

(a)

(b)

(c)

Figure 6. Data from Database (a) Data used to run applications, (b) Data to report the condition of the device, (c) Data to report transactions that occur.

The website is used to monitor or obtain information on the Automation Tool's Crib via the internet network so that it can find out the condition of the machine (available tools, history of borrowing) without having to check directly on the machine. Making a website requires a network that can connect devices with databases on the server. Access that is done on the website is to run a folder containing files in the form of html and php used by the website. The html file that will be accessed is in the htdocs folder provided by the xampp folder on the computer that is used as the server in the website network.

Accessing a website means running a program on files that are in xampp htdocs using HTML programming language, PHP to process data, communicating with databases and managing web pages. The website is closely related to database usage, because the data displayed comes from the database.

The page that will be displayed first is the login page (Figure 7). Employees who want to access the website must log in to the system using the name and password registered in the database. Writing employee identities on website pages utilizes data usage that has been entered when logging in. The login process will match the data entered on the form with the data stored on the database. The username and password entered will be checked with data in the database, if the user is registered, the user can enter the website application. Through the data that has been entered then the user can also be known including the administrator, production employee (user) or management.
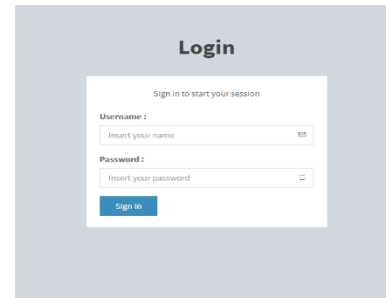

Figure 7. Login Page View.

Employees who access the website are divided into 3 types, namely administrator (admin), management and user (user). Each type has an identifier variable of numbers in the idrole data. Idrole is the name of one column in the dbo.userdata table that contains an identifier in the form of numbers 1, 2 and 3 to identify the type of user. Employees who have access as administrators are employees who are responsible for routine processing of the system and provide information to other employees regarding the condition of the equipment stored on the machine. This employee can access the database on the machine.
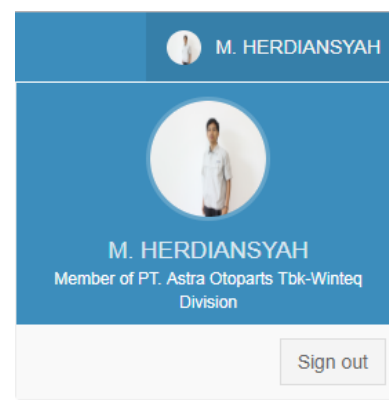

Figure 8. Display User Identity on the website.

The menu that is available to administrators (see Figure 9) is the Automaton Drawer menu, Tools Available, Transaction History, Charts, and the Tool's Crib Report, on the last menu only parties registered as admin can delete or add reports. tedaftar as management, is an employee who is included in the management of the company who want to

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supervise the machine, such as the head of production department, chief engineering, the head of machinery and others. Employees who belong to the management can access the five menus, but in the Tool's Crib Report can not add or delete report data. Management needs to have access to information on the Automation Tool's Crib on accountability of assets owned by the company.

The registered employee of the production department who will use the machine is registered as a user, can access the website to find out what tools are available on the machine and be able to know the condition of the tool before making the loan. In addition, employees can easily know about the tools they have borrowed. This employee does not have access to the Charts menu and can not delete or add data to the Tool's crib Report. Menu displayed on the website page amounted to 4 (Without Charts).
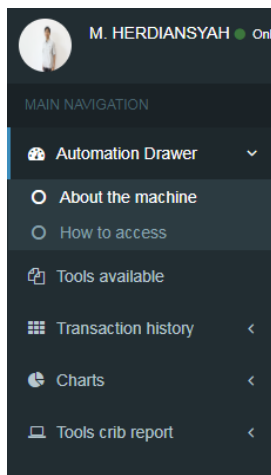

Figure 9. Menu on Website.

The Tools Available menu is the only menu that does not have a submenu. In this menu only displays data in the form of tables containing the tools available in the machine or tool that is not borrowed. This menu uses the command to select data from the table that lists the tools available in the machine ie data on dbo.Borrowed_back and displayed in tabular form. Data that is in the database will be displayed in table form. This page view can be seen in Figure 10.
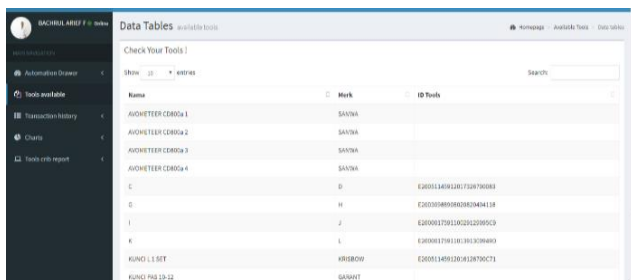

Figure 10. Available Tools Page Views.

Transaction history is a menu that contains borrowing history from employees with 2 submenus in it. One of them contains data on borrowing tools that have not been

returned. The data displayed is in the form of employee data that borrows (employee name, nip and part) along with tool data (name of tool and brand), in addition there is data on borrowing time. Figure 11 is a display of the Borrowed Tools Report submenu. The data processed in this submenu is in the table dbo.tabel_Borrowed, and is displayed in table form.
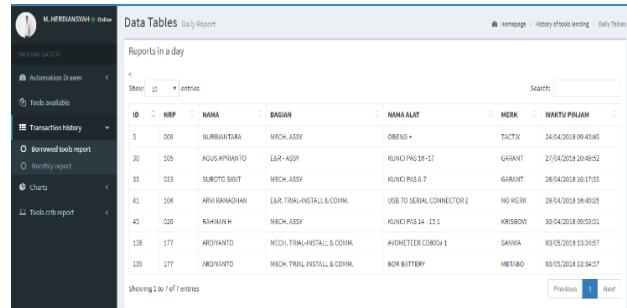

Figure 11. Borrowed Tools Report Page Views.

The website also provides data monitoring using graphics. The displayed graph is the accumulation of transaction data based on date, month, data on available and borrowed equipment and data on the number of frequency of use of each tool. These data are available on the Charts menu. Data used to display the number of usage of each tool, transactions by month, and transaction charts per day using the same data table in the database, namely dbo.tabel_total. Using data derived from the same table can be processed into several types of data display. The use of queries affects the data displayed. One of the pages displayed on this menu is Transaction Charts in a day which contains a graph of the tools that have been borrowed and saved back every day as shown in Figure 12. This submenu calculates the data in dbo.tabel_total according to the date of borrowing done, so the graph displayed is the number of transactions per day.
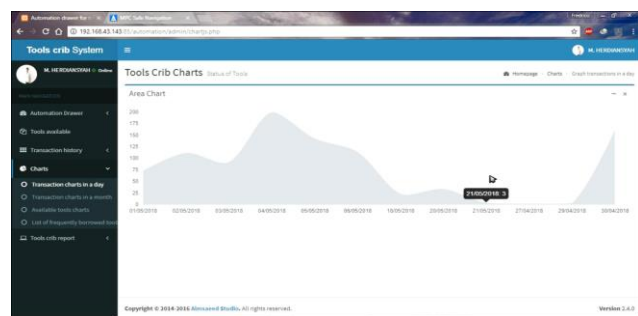
Figure 12. Transaction Charts in a day Page Views.

The website also provides a page that is used to provide reports on the condition of the equipment that has been damaged (Figure 13) and reports of missing equipment. However, on this page only employees who are qualified as admin / administrator (idrole with number 1) can fill out, while employees with idrole as user and management can only read comments provided by the admin without being able to fill in or delete comments.

TABLE 1.
DATA TESTING CONNECTION BETWEEN DATABASES

No	User (jml. Tool)	Transaction	Access			SQL		
			Tabel Borrowed	Tabel Total	Tabel Tool	Tabel Borrowed	Tabel Total	Tabel Tool
1.	M. Ariffin (1)	Borrowed	Yes	No	No	Yes	No	No
2.		Returned	No	Yes	Yes	No	Yes	Yes
3.	M. Ariffin (2)	Borrowed	Yes	No	No	Yes	No	No
4.		Returned	No	Yes	Yes	No	Yes	Yes
5.	M. Ariffin (3)	Borrowed	Yes	No	No	Yes	No	No
6.		Returned	No	Yes	Yes	No	Yes	Yes
7.	M. Herdiansyah (2)	Borrowed	Yes	No	No	Yes	No	No
8.		Returned	No	Yes	Yes	No	Yes	Yes
9.	M. Herdiansyah (2)	Borrowed	Yes	No	No	Yes	No	No
10.		Returned	No	Yes	Yes	No	Yes	Yes

TABLE 2.
ACCESS WEBSITE MENU BASED ON IDROLE

No.	User	ID Role	Missing tools		Broken tools		Charts
			Access (C/D)	SQL Server (C/D)	Access (C/D)	SQL Server (C/D)	
1.	M. Herdiansyah	*Admin*	Yes	Yes	Yes	Yes	Yes
2.	Helmi Wibowo	*Mana gement*	No	No	No	No	Yes
3.	Bayu Anggara	*User*	No	No	No	No	No
4.	Sapari	*User*	No	No	No	No	No
5.	Suroto Sigit	*User*	No	No	No	No	No
6.	Nurbiantara	*User*	No	No	No	No	No
7.	Nasrudin	*User*	No	No	No	No	No
8.	Agus Aprianto	*User*	No	No	No	No	No
9.	M. Arifin	*User*	No	No	No	No	No
10.	Ma Muri	*User*	No	No	No	No	No

TABLE 3.
DATA dbo.BORROWED_RETURNED FOR TOOLS AVAILABLE MENU

No.	*User*	Transaction	Tool	dbo.Borrowed_ Returned	*Tools Available*
1.	M. Ariffin	Borrowed	*Bor Battery*	No	No
2		Returned		Yes	Yes
3.	M. Ariffin	Borrowed	Avo 1, Dig. Kaliper	No	No
4		Returned		Yes	Yes
5.	M. Arifin	Borrowed	Dig. Insulating, Depth Micro, Avo 4	No	No
6.		Returned		Yes	Yes
7.	M. Herdiansyah	Borrowed	Avo 1 , Avo 4	No	No
8.		Returned		Yes	Yes
9.	M. Herdiansyah	Borrowed	Depth Micro, Avo 3	No	No
10		Returned		Yes	Yes

Figure 13. Broken Tools Page Views.

IV. DATA TAKING RESULTS

Data testing is done by taking data regarding the comparison of data contained in the database and website.

A. Testing connections between Microsoft Access and Microsoft SQL Server

This point contains testing about sending data on Microsoft Access databases to Microsoft SQL Server databases which is done by connecting between the two. This connection occurs through the link process, using ODBC (Open Database Conectivity). So the data provided by the application to Microsoft Access will also be included in Microsoft SQL Server. (Table 1)

Description Table 1:

1. Yes:

a. Lending tables: employee data, tools, time borrow entry.

b. Back table: employee data, tools, time borrow, time re-entry.

TABLE 4.
DATA TESTING SUBMENU BORROWED TOOLS

No.	*User*	Transaction	Tool	dbo.tabel_ Borrowed	Borrowed Tools
1.	M. Ariffin	Borrowed	*Bor Battery*	Yes	Yes
2		Returned		No	No
3.	M. Ariffin	Borrowed	Avo 1, Dig. Kaliper	Yes	Yes
4		Returned		No	No
5.	M. Arifin	Borrowed	Dig. Insulating, Depth	Yes	Yes
6.		Returned	Micro, Avo 4	No	No
7.	M. Herdiansyah	Borrowed	Avo 1 , Avo 4	Yes	Yes
8.		Returned		No	No
9.	M. Herdiansyah	Borrowed	Depth Micro, Avo 3	Yes	Yes
10		Returned		No	No

TABLE 5.
TESTING DATA FOR THE MONTHLY REPORT SUBMENU

No.	*User*	Transaction	Tool	dbo.tabel_ total	Monthly Report
1.	M. Ariffin	Borrowed	*Bor Battery*	No	No
2		Returned		Yes	Yes
3.	M. Ariffin	Borrowed	Avo 1, Dig. Kaliper	No	No
4		Returned		Yes	Yes
5.	M. Arifin	Borrowed	Dig. Insulating, Depth	No	No
6.		Returned	Micro, Avo 4	Yes	Yes
7.	M. Herdiansyah	Borrowed	Avo 1, Avo 4	No	No
8.		Returned		Yes	Yes
9.	M. Herdiansyah	Borrowed	Depth Micro, Avo 3	No	No
10		Returned		Yes	Yes

TABLE 6.
DATA TESTING ON TRANSACTION CHARTS IN A DAY AND TRANSACTION CHARTS IN A MONTH

No	Tanggal	Transaction	Tool	dbo.tabel_ total	Daily Charts	Month Charts
1.		Borrowed	Avo 1, Avo 4	No	7	758
2		Returned		Yes	9	760
3.	20/05/2018	Borrowed	Depth Micro, Avo 3	No	9	760
4	M. Herdiansyah	Returned		Yes	11	762
5.		Borrowed	Avo 4, Dig. Kaliper, Dig.	No	11	762
6.		Returned	Insulating	Yes	14	765
7.		Borrowed	Dig. Kaliper	No	14	765
8.		Returned		Yes	15	766
9.	20/05/2018	Borrowed	Avo 3, Depth Micro	No	15	766
10	Bachrul Arief F.	Returned		Yes	17	768
11.		Borrowed	Avo 1, Avo 4, Dig.	No	17	768
12.		Returned	Insulating	Yes	20	771

c. Tool table: borrowed tool has returned.

2. No:

a. Borrower table: employee data, tools, time of borrowing erased.

b. Table return: employee data, tool, time borrow, time back not yet entered.

c. The tool table: borrowed tool has not been returned.

The number shown in parentheses shows the number of tools borrowed.

B. Idrole Testing in Managing Menu Access

1. Yes: Missing tools and Broken tools : users can delete / add data. Charts: can access the menu through the account.
2. No: Missing tools and Broken tools : can not add / delete reports. Charts: there is no menu through the account.
3. C: Create (create a new report).

4. D: Delete (deletes existing report).

This test is in the form of data retrieval regarding access to menu usage on the website. Through these data, it is known that the number of employees registered is 25 people with 2 people as admin, management as many as 2 people, while 21 people are registered as users. The menus arranged by idrole are Tools crib reports and Charts, therefore testing is done by comparing the use of the Missing tools and Broken tools submenu on the Tools crib report menu and the charts menu. (Table 2)

C. Testing Data Tools Available in Cabinets

This test is done by comparing the presence or absence of device data when borrowed and returned. The data in this menu processes the equipment available in the machine. (Table 3)

Description Table 3:

TABLE 7.
DATA TESTING SUBMENU AVAILABLE TOOLS CHARTS

No	User	Transaction	Tool	dbo.Borrowed_ Returned	Tools
1.	M. Ariffin	Borrowed	*Bor Battery*	No	6
2		Returned		Yes	7
3.	M. Ariffin	Borrowed	Avo 1, Dig. Kaliper	No	5
4		Returned		Yes	7
5.	M. Arifin	Borrowed	Dig. Insulating, Depth	No	4
6.		Returned	Micro, Avo 4	Yes	7
7.	M. Herdiansyah	Borrowed	Avo 1 , Avo 4	No	5
8.		Returned		Yes	7
9.	M. Herdiansyah	Borrowed	Depth Micro, Avo 3	No	5
10		Returned		Yes	7

TABLE 8.
TESTING DATA SUBMENU LIST OF FREQUENTLY BORROWED TOOLS

No.	User	Transaction	Tool	dbo.tabel_total	Frequency Tools
1.	M. Ariffin	Borrowed	*Bor Battery*	No	75
2		Returned		Yes	76
3.	M. Ariffin	Borrowed	Avo 1, Dig.	No	57, 155
4		Returned	Kaliper	Yes	58, 156
5.		Borrowed	Dig. Insulating,	No	156, 217, 148
6.	M. Arifin	Returned	Depth Micro, Avo 4	Yes	157, 218, 149
7.	M. Herdiansyah	Borrowed	Avo 1, Avo 4	No	54, 142
8.		Returned		Yes	55, 143
9.	M. Herdiansyah	Borrowed	Depth Micro,	No	24, 134
10		Returned	Avo 3	Yes	25, 135

Yes: the tool is in the list.
No: the tool is not in the list.

D. *Data Testing on the Borrowed Tools submenu*

This section tests the borrowing transactions on the Borrowed Tools menu, by comparing them to the dbo.tabel_Borrowed. (Table 4)
Description Table 4:
Yes: the borrowing data has entered the table.
No: the recording data is deleted.

E. *Data Testing on the Monthly Report Submenu*

This Monthly report menu will display transaction data that has been completed based on the month from the time of borrowing. The transaction that has been completed is a transaction that has returned the item, where the data regarding the completed transaction is in the dbo.tabel_total table. Dbo.tabel_total will save all transactions that have been made on the machine, whether the transaction has been done in the previous month or the previous year (as long as the data has not been deleted by the administrator). (Table 5)
Description Table 5:
Yes: incoming transaction data
No: no transaction data entered

F. *Data Testing on Transaction Charts in a Day Submenu and Transaction Charts in a Month*

The Transaction charts in a day submenu will display the summation data according to the borrowing date in the total table. The submenu will display the lending chart that happens every day. While the Transaction charts in a month

sub menu will perform the accumulation of borrowing that occurs in a month in the form of graphs. (Table 6)
Description Table 6:
Yes: transaction data has been entered into the database.
No: no transaction data entered into the database.

G. *Data Testing on the Available Tools Charts Submenu*

Description Table 7:
Yes: transaction data has been recorded in the database.
No: transaction data has not been recorded in the database.

The data that will be displayed by this menu is in the form of a graph that processes data on dbo.Borrowed_k returned. Tables that contain data about the tools stored in this cabinet will change in number according to the number of tools borrowed. As for the amount of equipment borrowed using the difference from the number of tools in the closet with the whole tool. The Tools column shows the number of tools that are in the closet. The tools used for this test amounted to 7 pieces. (Table 7)

H. *Data Testing on the Submenu List of Frequently Borrowed Tools*

Information Table 8:
Yes: transaction data entered into the table.
No: transaction data has not entered the table.

Table 8 is processed on submenu List of frequently borrowed tools is data terYespat on dbo.tabel_total. This submenu displays data on the usage amount of each tool.

V. CONCLUSION

Based on 50 attempts that have been made it can be seen that the data provided by the application can be accessed by

the website. Connection between Microsoft Access databases in applications with Microsoft SQL Server used by websites can be done by linking between databases. It can be seen that every transaction data carried out by the machine can also be stored in Microsoft SQL Server. The use of databases for applications is not affected by the internet network. If the internet network for the website is interrupted, then the application can still run normally. Data processing carried out by the website can display data according to the function of each menu. The use of data types affects the data processing carried out, one of which is the processing of borrowing time data. Website applications can only be used with local networks, so this website can only be accessed in the area of the company. The party who can access the website as a whole is the administrator (the officer in charge of the machine), while the management can monitor the condition of the machine by comparing data in a certain period of time such as transactions that occur every day or every month. In addition to the management can know the use of tools that have exceeded the ability of the device itself. Whereas for Crib Automation Tool users can find out the availability of tools and find out the tools they have borrowed without having to go to the Tool 's Crib section.

Our advice in the future for this system is that data uses internet network on the cloud so that the machine can be accessed outside the company's area but still pay attention to the security of the data. On the next system, the website can warn the administrator or management regarding the limits for using the device, via email or sms. In the new system, the download process can be done through the website, both in the form of pdf, Microsoft word and so on. In addition, it is expected that the internet can control the work of the machine without being around the machine.

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