

## Development of QR Code Labeling Application for Fixed Asset Accounting Information System in Mangimbali Group with Minimalist Development Techniques

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### ABSTRACT

**Keywords:** accounting information system, fixed assets, QR code.

Mangimbali Group is a distributor company engaged in the retail of lubricants for Pertamina and supports construction work and the procurement of equipment for Pertamina Geothermal. Mangimbali Group has several entities, namely PT. Mangimbali Peluas Jaya and PT. Cipta Jaya Perkasa. The opening of two entities certainly requires a large flow of capital, so one of the management policies is to make one office building for two entities but all assets are still separated. This requires a good Fixed Asset Management Accounting System for the distribution of Fixed Assets. Fixed Assets that have been purchased if the inventory system is not properly regulated can cause losses for the company in the form of loss of Fixed Assets. Also for easy tracking of assets in the same building with the ownership of different entities. The purpose of this study is to design a fixed asset accounting information system application using QR codes to improve the efficiency and accuracy of bookkeeping inventory and being able to store more comprehensive data on fixed asset data in each entity. The research method applied is a software development method by Prototyping where the software creation process will be carried out module by module with testing, starting from tagging and creating a unique QR code for each fixed asset on each existing entity. In addition, the development process is taken with minimalist techniques. Especially in the creation of models and the number of databases and tables.



### Introduction

Asset management is a part or component of a company or department that empowers fixed assets owned by their functions and uses (Ariska & Jazman, 2016). Currently, the use of digital-based information systems in asset management is a natural thing and almost a must, so that financial reports will later be synchronized with the existence of all existing fixed assets. (Mandala & Susanto, 2023).

Correct disclosure of fixed assets will affect depreciation costs, calculation of the economic life of fixed assets, minimizing loss rates, rejuvenation of fixed assets, capital allocation in the purchase of fixed assets, and integration into the asset system. (Astuti et al., 2024).

Mangimbali Group is a company that is a vendor of SOEs, in this case, PT. Pertamina and PT. Pertamina Geothermal, every year is always audited by the SOE itself. Therefore, financial statements must be managed correctly and systematically based on financial accounting standards. (Widyastuti, 2017). Financial statements based on financial accounting standards will provide information properly and efficiently to internal and external parties of the company. (Shohabatussa'adah, 2021).

PT. Mangimbali Peluas Jaya under the umbrella of the Mangimbali Group, is a vendor of PT. Pertamina with its activities as an oil distributor to the community has distribution coverage to Central Sulawesi, precisely in the city of Morowali. As for PT. Cipta Jaya Celebes is a company that is a vendor of PT. Pertamina Geothermal to support construction activities in several existing projects (Darwis, 2019). This is what causes asset management control in fixed assets to experience obstacles. The whereabouts of the assets are less obvious because many mobilizations are moved for each different project. Not to mention the placement of assets in one office with the listing of two different entities (Setiawan, 2017). Therefore, good asset management is needed so that all these assets can be recorded, recorded, and stored by the correct asset ownership so that there is no misinterpretation which greatly affects the information needs of stakeholders. (Rasjid, 2022).

### **QR Code as a Labeling Technique**

QR Code is a development of traditional barcodes in the form of stripes of different heights and thicknesses. QR Codes have several advantages over barcodes that have been commonly used for some time. (Rukmana et al., 2024).

Some of the advantages of QR Codes over ordinary barcodes include:

It can store all data encrypted or not, in just one symbol.

QR Codes can save up to 1/10 of the code information data of ordinary barcodes.

1. QR Codes can be read from all directions at a planar angle, in this case, a total of 360o.



**Figure 1. Example image of QR Code**

### **Asset Management Accounting Information System**

An accounting information system is a system used to process accounting data that coordinates people, equipment, and methods that synergize in a structured organization

so that financial accounting information and structured management accounting information are produced (Putri, 2020).

Information Systems are computer system systems in a company or organization that connect the needs of daily transaction management, which are managerial, which also support operations, and support strategic activities. (Mahartini et al., 2021). The estuary of this information system is a report that is useful for the organization and related external parties.

Asset management is a process to plan, organize, and supervise the entire process of procurement, utilization, maintenance, repair, and disposal of assets when the asset has reached the end of its life. The goal is to optimize good service and minimize risks or costs related to the life of the asset.

## **Method**

### **Data Collection Methods**

The data collection process is carried out by processing the primary data of the Mangimbali Group company related to accounting reports and more specifically fixed assets.

Several obstacles are faced by researchers in terms of the availability of data that is compatible with the system so some adjustments are needed so that the data becomes uniform to be processed in the developed application.

### **Software Development Methods**

The method applied is preceded by the stages of the accounting process where the process starts from collecting fixed asset data and verifying fixed asset information that is by the financial statements. Furthermore, the system tracks and checks the condition of fixed assets in terms of ownership, up to the economic life of the asset. In this case, accounting information system software is created that stores a list of assets that will later be accessed with QR codes on commonly used mobile gadgets, such as mobile phones or tablets. Software development is carried out using the Prototyping method where the software creation process is carried out module by module with testing, then combined with other modules and tested, until the stage of refinement.

Broadly speaking, the stages in this process are as follows:

Planning Stages.

At this stage, the process of collecting fixed asset data and verifying fixed asset data at the Mangimbali Group company is carried out to then make fields as initial entry data. Initial system modeling begins at this stage.

Implementation Stage.

During the implementation, several steps are carried out which include:

#### 1. System Analysis

At this stage, an analysis of the flow chart is carried out in the entire fixed asset inventory process, including the tagging process. The results of the analysis are then made a list of the main features called class objects. All processes in the company are analyzed,

both manual processes and processes that are carried out by utilizing process technology and information technology.

## 2. System Design

At this stage, conceptual modeling and conceptual database design are made based on the results of the system analysis in the previous process. From the conceptual database design, a physical database is created that will be accessed from the front-end system, the system interface (website or application pages).

## 3. Coding

The final system design that has been completed is made by logical modeling to then be transformed into program codes. During the creation of program codes, synergy between science from researchers and companies is needed so that solid and comprehensive program codes will be produced to carry out the desired functions.

## 4. Prototyping

The program code is then compiled function-by-function, and tested offline so that bugs (problems) are found in the program until finally one part of the program's function can run as desired. Prototyping is then extended to a wider scale by combining several related functions until the entire system is completed as desired.

## Implementation

At this stage, the web application is run fully online, involving the Mangimbali Group company and the research team. Troubleshooting can be solved properly because some of the errors experienced are not logic errors, but syntax errors.

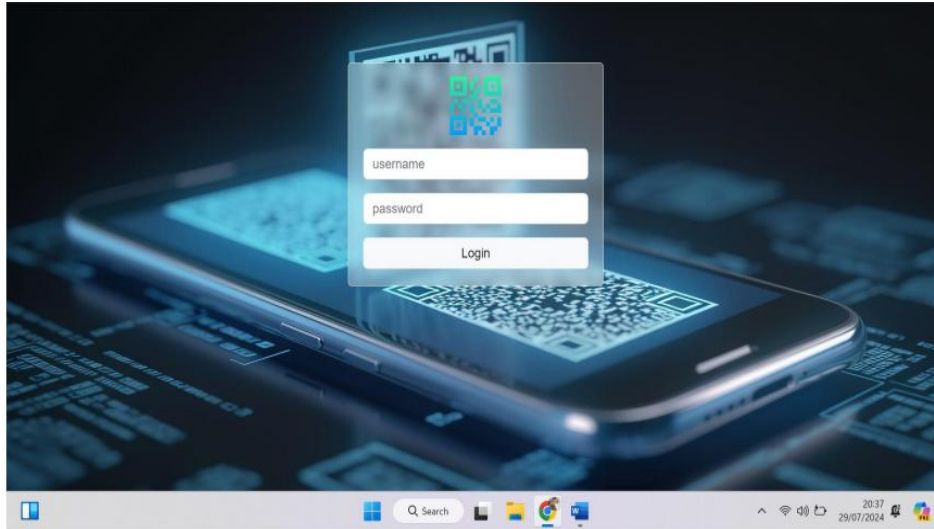
## 5. Maintenance

This stage is for system maintenance and always check the system if there is an anomaly. This work is necessary for the operational continuity of the application that has been created.

# Results and Discussion

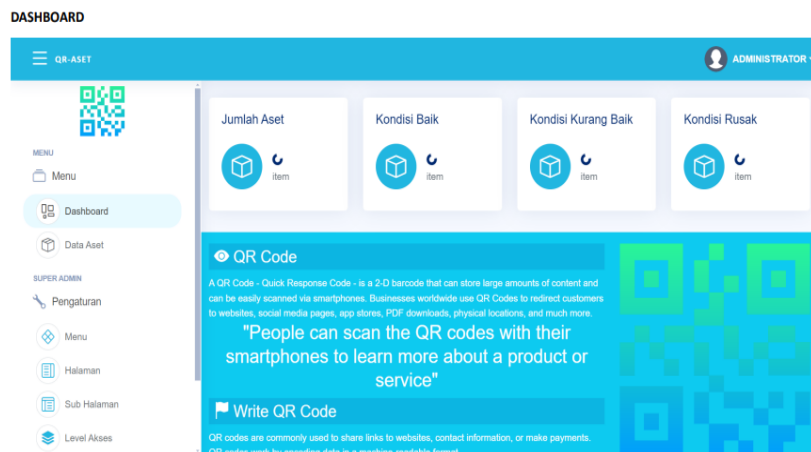
## User Interface / Website and Application Display

After going through a series of stages that are generally in the form of analysis, design, and coding stage, the application developed with minimalist techniques and functions for the fixed asset accounting system is completed. Here is the initial view of the app, in this case, the page for the login process.



**Figure 2. Login Page**

The main display (dashboard) is the main information of the fixed asset accounting information system that informs the number of assets, and asset conditions and has sub-menus for specific information of each fixed asset.



**Figure 3 Application Dashboard**

On the asset data page, users can view the information of each fixed asset, and the main functions for input and tracking of fixed assets with QR code information (figure 4). Detailed information on the asset can also be brought up, as seen in Figure 4.

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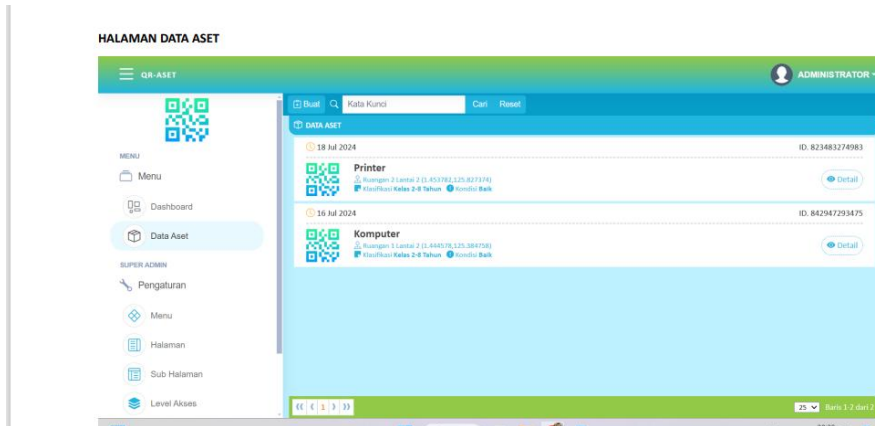


Figure 4. Asset Data Page

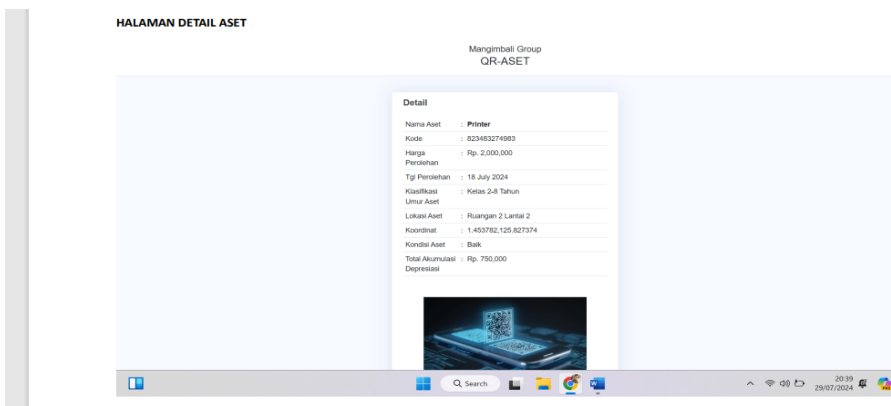


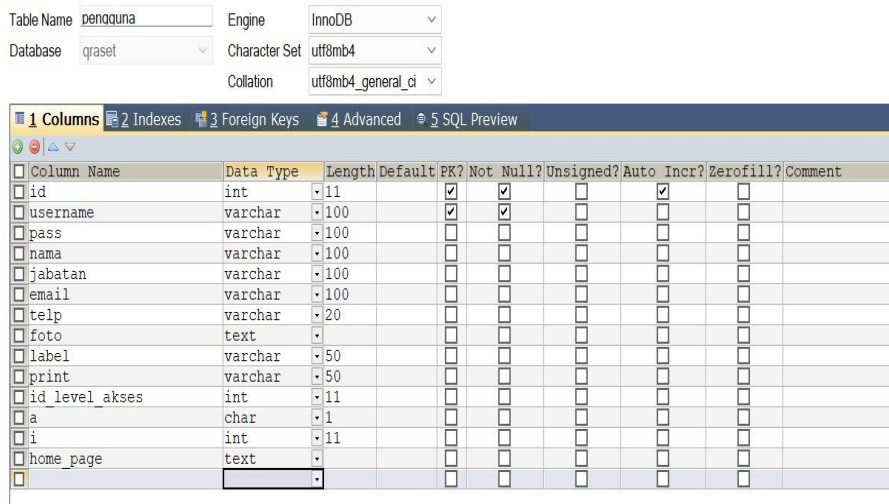
Figure 5. Asset Details Page

The database of the system is according to the principle of development with minimalist techniques, so only 3 tables are used. The first table is the assets table (Figure 6), which contains all the data of the fixed assets that exist. The second table in Figure 7 is a user table that contains all users from the system, including *top management*, based on the access rights granted according to Figure 8. The table in Figure 8 is the last table that serves for page settings and menu access. So, in this application, 3 tables are qualified to be able to accommodate and function in the fixed asset accounting information system.

Table Name:  Engine:   
 Database:  Character Set:   
 Collation:

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
<input type="checkbox"/> id	int	11		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> kode	varchar	100		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> nama	varchar	100		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> harga_perolehan	int	11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> tgl_perolehan	date			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> klasifikasi	varchar	50		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> lokasi	text			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> lat	text			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> lng	text			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> kondisi	varchar	50		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> total akumulasi depresiasi	int	11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> foto	text			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Figure 6. Asset Database**



**Figure 7. User Database**



**Figure 8. Tables for page settings and menu access**

During the application development stage, prototypes were made in only 2 versions. Version 2 is the final version and has been approved for use by the Mangimbali Group company. Its development takes a relatively short time compared to making applications using the traditional SDLC (System Development Life Cycle) method, where development is carried out in iterations based on the needs of system use.

**Efficiency in the use of QR Code-based applications**

With the QR code system above, the asset inventory process is faster because assets can be identified and recorded more quickly just by scanning the code. This reduces the waiting time required compared to manual methods. The system also allows for automation in asset recording and reporting, reducing manual workload and allowing staff to focus on other strategic tasks. Besides that, the use of this system can also reduce the burden. Recording the assets below will create a QR Code.

Kelompok / Nama Harta	Bulan / Tahun Perolehan	Harga Perolehan	Nama Perusahaan
<b>Kelompok I</b>			
Kursi	Feb-20	1.000.000	Mpj

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Printer	Agu-20	2.136.364	Mpj
Laptop	Feb-20	5.100.000	Mpj
Laptop	Agu-20	3.635.454	Mpj
Ac	Jul-21	4.700.000	Mpj
Laptop	April-23	5.854.955,	Ccc
Brankas	April-23	617.900,	Ccc
Kursi Meeting	Juni-23	9.050.000,	Ccc
Laptop	Mei-23	10.330.000,	Ebl
Meja Kerja	Agust-23	5.465.460	Ebl
Kursi Kerja	Agust-23	2.547.020	Ebl
Kursi Kerja	Agust-23	1.175.020	Ebl

<b>Kelompok Ii</b>			
Mobil Box	Feb-20	125.000.000	Mpj
Mobil L300	Feb-20	70.000.000	Mpj
Mobil Truck	Feb-20	135.000.000	Mpj
Mobil Pickup			
Morowali	Apr-23	147.900.000	Mpj
Mobil Dumptruk	Maret-23	490.000.000	Ebl
Alat Excavator	Maret-23	1.465.200.000	Ebl
Alat Backhoe loader	Juni-23	960.150.000	Ebl

**Conclusion**

The application of the QR Code Labeling Technique in the Management Information System can make it easier to identify inventory items in the field where it is found that time efficiency and effectiveness in terms of accuracy in fixed asset management in the company have increased. Also, asset security can help in preventing the loss or theft of assets in the faithful movement of assets that can be monitored and recorded. The use of an integrated system between the database, geolocation, and the company's inventory system will facilitate the company's asset inventory process. In addition, development with minimalist techniques is very helpful when instant application development with concise and functional results is needed.

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