

Database Design for Work Order Application

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Abstract- *The absence of a database of research results in a good company, resulting in the possibility of duplication or misuse of data. The method applied in making this database is done by making class diagram design, then the database design process is carried out. So the Work Order application can retrieve data with excellent performance in the database. The results of this study in the form of a web-based database system to monitor work projects so that data input can be done, edit data, or view work order data in summary or detailed data. Therefore, an application that is needed later can be used to monitor the entry and exit of projects in a company, so that the project can be done easily, quickly and precisely. In this case, we will try to solve problems that occur using the work order application in monitoring projects that exist in a company.*

Indexed Terms- *Application, Class Diagram, Database, and Monitoring, Work Order.*

I. INTRODUCTION

Web-based project monitoring information service is one way for a company to control the entry and exit of projects, and in conveying project information to divisions that play a role in the company quickly and easily [1]. Also, the division that plays a role in the company can provide or receive information to management with fast and accurate data. The application of information services is very beneficial for employees at the company in gathering data completeness and documenting all documents properly so that it impacts on the performance of a company's management to serve projects quickly and easily [2]. One problem that is happening right now is that with many projects coming in, and there is still no system to provide a platform for these projects, the project data is often lost [3]. Many projects are not done well, so that the system is needed to provide a place for the project to be monitored and comfortable in the management process [4].

II. MATERIALS AND METHOD

A. Work Order

Work Orders are software-based information systems that can facilitate repair order management within a company [5][6]. WOMS allows companies to change, cancel, and update orders quickly [7]. WOMS also allows companies to access information on orders entered into the system, including details on all work order requests. And there are experts who say Work Order is a system used to handle work orders or service requests from parts of the organization to work units that provide repair services from those work orders [8]. Work Order or Job Order is a work order in the form of a document that provides essential details regarding goods and services desired by the first division with other divisions in a company [9][10].

B. UML (Unified Modeling Language)

The design method in this study uses UML, so According to Dennis, et al. (2015), UML (Unified Modeling Language) is a diagramming technique that can model every system development project from design analysis [11]. In some cases, the same diagramming technology is used throughout the development process. In this case, the diagram starts as very conceptual and abstract [12]. When the system was developed, charts evolved to include details, which ultimately led to the creation and development of code. In other words, the diagram moves from documenting the requirements to laying out the design. Overall, consistent notation, integration between diagramming techniques, and application of sketches throughout the development process make UML a powerful and flexible language for analysts and developers [13].

Uml (Unified Modeling Language) is not just a diagram but also tells the context. UML is applied for specific purposes, generally including:

1. Designing software.
2. Means of communication between software and business processes.

3. Describe the system in detail for analysis and look for what the system needs.
4. Documenting the existing system, processes, and organizations.

UML has been applied in the fields of investment banking, health institutions, defense departments, distributed systems, work equipment support systems, retail, sales, and suppliers [14].

C. Research Method

In conducting this research, systematic steps are taken so that what is desired can be achieved. Following are the proposed research steps:

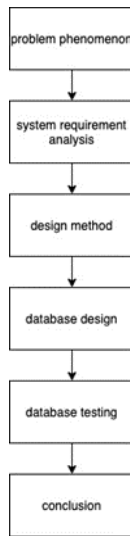


Figure 1: Flow Research

In figure 2, it is explained that the writer does the steps below:

The first step is to determine the topic that you want to do research by looking for the phenomenon of problems that exist in the field and have not been resolved. The second step is to determine the system requirements used to create work order applications. The third step is to design the work order application design using UML. The fourth step is to create a database design that will be integrated into the work order application. The fifth step is to test the work order database by simulating the project created using the work order application. The final step is to make conclusions and suggestions for the research conducted

III. RESULTS

A. System Design

This research resulted in web-based database design to provide project information to companies. Following is the database design:

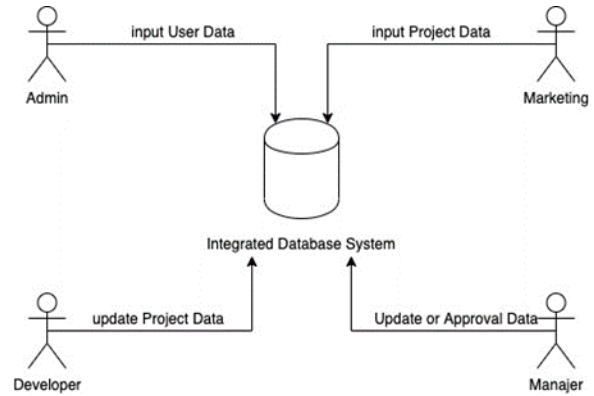


Figure 2: Design System Database

Figure 2 explains the System Database design in a work order application. There are four actors who interact with the work order database, where each actor has their respective roles in managing the project.

B. System Functional Requirements

Functional Requirements The system used in designing work order applications:

Table 1: System Functional Requirements

No	Module	Description
1	Login	For Needs to the Work Order application
2	Work Order Management	Approve projects that will be circulated towards the development Create, edit and delete work order data by role managers Perform project status updates by role development
3	Overtime Management	Perform Overt Approval made by role development To make an overtime request

4	Channel Management	Channel management needs that are used in Work Order data
5	Product Management	For product management needs that are used in Work Order data
6	User Management	For Applications Management
7	Group User Management	To determine the Role of an application user
8	Report Management	For the need to make a Pdf report which will later be a report to management

Table 1 explains the functional requirements of the system in the work order application. There are eight modules that will be designed in the application. And in each module has their respective duties

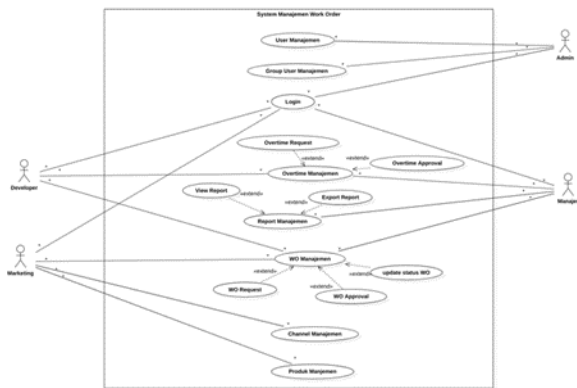


Figure 3: Use Case Diagram

Figure 3 is the use of case design in a work order application where there are four actors in the work order application, namely Admin, Manager, Marketing, and Developer. What is focused on the design is the WO Management. Where WO management is interrelated with product management and channel management, and what will be designed is the Work Order Management module, where work order management is used to manage work project activities in the company.

C. Database Design

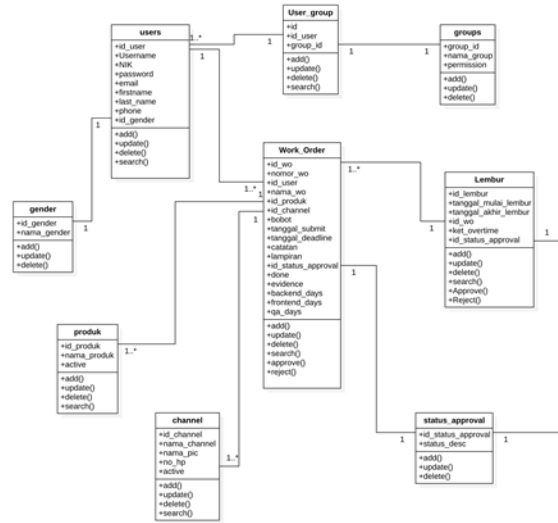


Figure 4: Class Diagram

In figure 4 is the class diagram design in the work order application. Where in the class diagram, there are nine classes that relate to one another. relationships between classes, among others is one User group has many users, one user has many work orders, one work order has many channels, one work order has many products, one overtime has many work orders and one overtime has one status approval.

D. Data Structure

Table 4: Work Order

Work_order		
Field Name	Data Type	Length
Id_wo (PK)	int	5
Nomor_wo	Int	10
Wo_name	Varchar	100
Channel_name	Varchar	50
Produk_name	Varchar	100
Marketing_name	Varchar	50
Botot	Int	3
input_date	Varchar	10
Deadline	Varchar	10
Catatan	Varchar	100
Lampiran	Text	
Id_status	Int	1
Evidence	Text	

Backend_days	Int	3
Frontend_days	Int	3
Qa_days	int	3

In the Work Order Table describes the work order data created by marketing where work order is the number, name, channel name, name of the product concerned, the name of the marketing that made the project, the weight of the project, and the date of the project input and the project deadline date.

Table 5: Product

Produk		
Field Name	Data Type	Length
Id_produk	Int	11
Name	Varchar	50
Active	int	11

In the Product Table, describes the product data information that will be used for making work orders.

Table 6: Channel

Channel		
Field Name	Data Type	Length
Id_channel	Int	5
Name	Varchar	50
Nama_pic	Varchar	25
No_hp	Int	20
Active	int	1

The Channel Table describes the channel data information that will be used to create work orders.

Table 8: Status Approval

Status_approval		
Field Name	Data Type	Length
Id_status	Int	1

Status_desc	varchar	20
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In the approval status table describes a status information. Where this status is used as an indicator of a work order.

Table 11: Report Count

Report_count		
Field Name	Data Type	Length
Id_report	Int	5
Report_wo	Int	5
Report_ot	int	5
Report_karyawan	int	5
Report_channel	Int	5
Report_produk	Int	5
Report_group	Int	5
Report_cwo	Int	5
Report_cot	Int	5
Report_cmix	int	5

The Report count table is used to hold data for the need to calculate the project summary where a summary of the project will be joined in the work order table and approval status to be displayed on the work order application dashboard chart.

E. Query for Report Work Order

```
SELECT a.* status_desc FROM marketing a
INNER JOIN status_approval b on
a.status_approval = b.id WHERE input_date
LIKE ? ORDER BY id DESC IV. UNITS
```

The query above shows the project data and is sorted by the date of the manufacture of the project.

```
SELECT a.id, case WHEN done = 1 then 'Done'
else b.status_desc end status FROM marketing a
LEFT JOIN status_approval b on
a.status_approval = b.id group by a.id
```

The query above is used to create a summary that will be displayed on the application dashboard — the data generated in the form of a summary work order with status done and pending.

F. Work Order Application Implementation

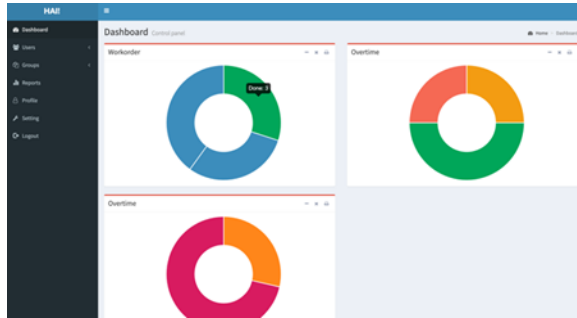


Figure 5: Dashboard Application

Figure 5 shows the results of the summary work orders with various statuses. The displayed status includes: done, pending, and approval has not been done by the role manager.

Name	Role	Status	Action
123456789	Admin	Done	View
987654321	User	Pending	View
11111	User	Approval has not been done by the role manager	View

Figure 6: Data Project

In figure 6 is an example of the output work order data that enters the company. The data can be input, update, and delete by roles that play a role in the work order application.

IV. CONCLUSION

Based on this research, it can be concluded that a research database program has been produced that can be accessed and edited at a particular company. This application can be used to monitor work projects in individual companies and can be used to print reports as an output rather than the Work Order application. The weakness in our study is that there are still no applications that run on the mobile platform, namely Android and IOS. And for the future, we will develop research and develop applications that can be used on various platforms.

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