DESIGNING A WORK PERMIT REPORTING INFORMATION SYSTEM ON HIBA GROUP

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A R T I C L E I N F O	ABSTRACT
	In 1949 the HIBA Group was here to meet the transportation needs of the community. The company's commitment is to provide increased customer satisfaction through professional management and operational team support to the demands of the changing times. HIBA Group offers complete, professional, modern, and integrated transportation services. In addition to providing comprehensive, professional, current, and integrated transportation services, the HIBA Group also provides work comfort to employees, especially for maintenance, construction, and bus bodybuilding. In the construction or maintenance process, each activity must report a work permit or Permit to Work (PTW), whose function is to monitor and analyze the work to be carried out. The analysis is carried out from the workers' health, difficulty, the environment, and work tools (PPE). The reporting process is still manual form or conventional system to slow down the work being done if the work is essential for a tender. The PTW must also be analyzed and reported on the related circumstances so that PTW work tends to be slow. An online-based PTW information system Website design was made to simplify and speed up the PTW reporting to solve this problem. The method used for developing information systems uses the Prototype Model with an object-oriented system approach modeled using the Unified Modeling Language (UML). This research is the design of the PTW information system Website used in the HIBA Group.
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INTRODUCTION

The activities are parts of a particular job, must have a high risk, and require reasonable control. Under certain conditions, it is necessary to implement a work permit system or Permit to Work (PTW) [1]. The procedure in a work permit or PTW system is a written (formal) entitlement system used to control certain types of work that have a high-risk potential [2]. With the PTW system, communication between plant/site management, plant supervisors, operators, and those doing the work can be established [3].

Essential things from the PTW system, namely [4]; (1) Identify in detail and firmly the authority for a job (and there are limits to the source) and the person in charge (PIC) precisely to determine preventive actions if needed. (2) Training and instructions on issues and the use of work permits or Permit to Work in detail and procedures must be adhered to concerning the published PTW system. (3) Monitoring and auditing is needed to ensure the system is working correctly. The PTW system aims to ensure that the planning considers the risks involved in a particular job [5]. In addition, an improvement in VM performance can be obtained by installing network and server monitoring tools [6].

HIBA Group was founded in 1949 to provide complete transportation that is comfortable, safe, and quality. HIBA Group offers comprehensive, professional, modern, and integrated transportation services [7]. As for its activities, the HIBA Group has worked in hot areas, working in cold regions, working in confined spaces, and many more. They must report to the Occupational Health and Environment (K3LH) department for safety validation according to the work to be carried out.

This research was motivated by standard and document reports and prior research employing [8] which a safe system work is needed. One of cleaning and maintenance operations is that employees working away from the base or working alone can not be physically eliminated, and some elements of inherent risk remain. Therefore, about safe work systems becomes planning of permit to work. Good practices of the initial phases of maintenance and repair work to safeguard operators in routine activities and become the most suitable kind of safe work system. A permit to work (PTW) aims to monitor the kind of job occupation which likelihood treacherous from human errors with standardized plant analysis risk-human (SPAR-H) methods to predict of human error probability. The average probability of human error in this system is estimated to be 0.11 in a flammable gas test, i.e., 50.7 percent of the permit to work on human error rate. The Permit to Work System (PTWS) identified early is of system non-conformance. Therefore, it is proposed to audit the PTWS procedure in South Pars Gas Complex (SPGC), which one corporation of Bushehr Province located, Southern of Iran, utilizing a structured Delphi method. Furthermore, the study recommends the PTW system to identify forecasted HSE risks that can be eliminated or minimized using appropriate control measures [9]. The Permit to Work (PTW) identified that the flowchart and document flow diagram is running ineffectively. Therefore, it is proposed to expand knowledge of the PTW management for a system to accomplish a solution utilizing an SDLC phase. Furthermore, the study recommends the Visual Basic application obtain to build up the PTW system further [10]. The design of information systems of the research permit with Agile dan Laravel framework method for product recommendations thru website design for solve problems. The design and analysis results have the function of research permit management utilize of Unified Modelling Language (UML) dan testing of the application with White Box Testing [11].

Several issues observed, i.e., the person in charge (PJ) of work must inspect the employees who will work, work area, target time, facilities used, budgeting for work, and personal protective equipment accompanied by filling out the inspection K3LH department. Then the PJ of work offers the report results to the K3LH department and must wait for approval from the relevant department before doing the work. Finally, K3LH Department validates the statement by checking all of the details from the completeness and approval form provided.

The K3LH Department documents and collects reports received and then submits reports to superiors for PTW signing. After the PTW is approved, the K3LH Department gives the PTW form to the PJ of work, and then the work can be completed. As for the approval and validation of PTW, it can take days to get approved, for that the submission of PTW is done h-7 or no later than h-3 from the time it should be

Current technological developments are considered to be able to help complete the work. The design of the Permit to Work information system can assist in the approval and validation of PTW forms within 1x24 hours. Furthermore, relevant departments and superiors can access PTW's information system anywhere without having to meet face-to-face. According to the things described, that the study specifically will design a website for the Permit to Work information system at the HIBA Group.
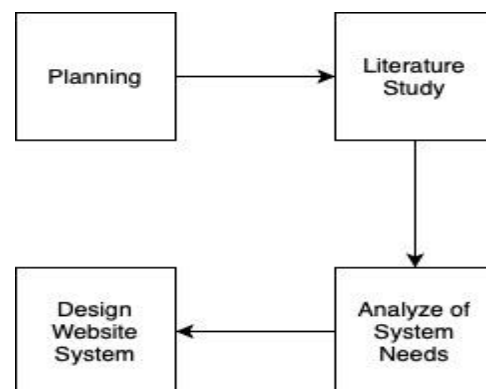
RESEARCH METHOD

Figure 1. Research Method [12]

Figure 1 display the flow of the research methodology where this research is carried out in several stages. These designs are important for measuring properties and detecting errors in the use of measurements at an initial stage [13]. These stages were adopted from the Prototype Model. It consists of 4 (four) sets. First of all, (1), the researcher plans to collect and collect data (observations and interviews) [14]. They were followed by (2 and 3) by analyzing the existing problems and making a problem-solving plan for the system requirements related to the users involved and its business processes. The final stage (4) research makes the design and interfaces as a design system is created. This research was only carried out up to the Design

System stage, not yet at the Implementation and Maintenance System stage [15].

RESULTS AND DISCUSSION
Analysis of Problems and Solutions

The results of observations and interviews were conducted to analyze the problems that occur in the company. The results of the problem analysis and solutions to these problems are described in table 1 below.

Table 1. Analysis of Problems and Solutions

No	Object	Factor	Problem	Solution
1.	Report	The report generated is still in manual form	Difficulty in summarizing all the reports.	Making this report support software can help report recording so that the delivery of information becomes effective
2.	Data of Workers	Paper-based Reported PTW data	Difficulty when searching for data and paper forms are easily damaged	Making PTW supporting software into a database so that it is accessible to search
3.	Validation and Verification Result	Provision of information that must be accompanied by validation and verification from the person in charge (Face-to-face)	The person in charge of the job sometimes cannot come for some reason	Creating supporting software that will facilitate the provision of accessible information

Design of Systems

In system design, the author describes the observations in a flowchart. The flow describes how the processes that occur in the system are shown in Figure 2.
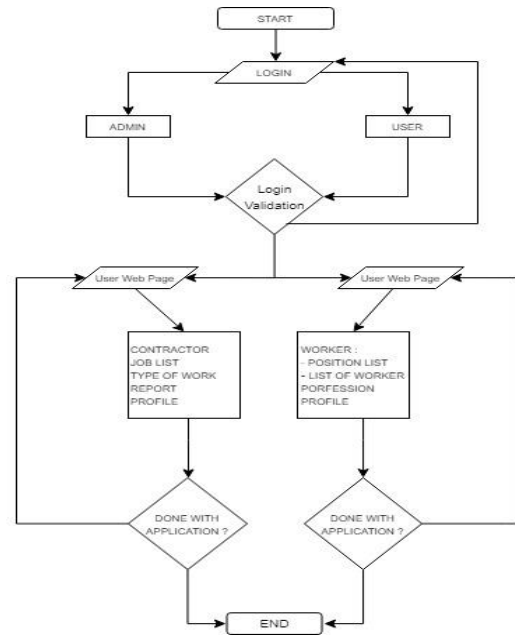

Figure 2. Flowchart System

After knowing the system's process flow, use case diagrams, activity diagrams, and system database designs. Figure 3 uses Case Diagram in a system consisting of 3 (three) actors and 12 Use Case used. Furthermore, based on the use case diagram, an activity diagram is made. The design of the Activity diagram is shown in Figure 4, which is used to find out how actors can relate to the system and the behavior carried out by actors in the system.
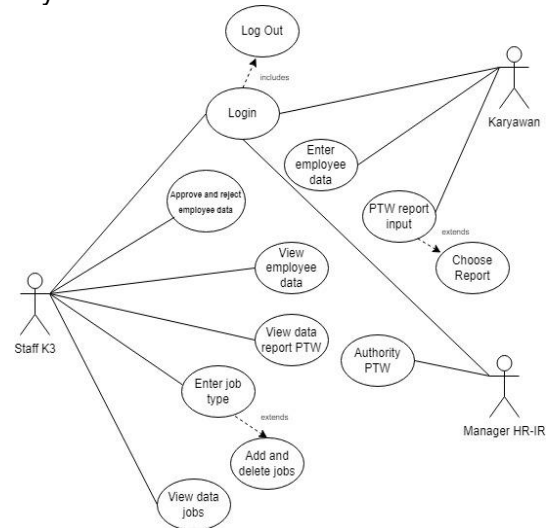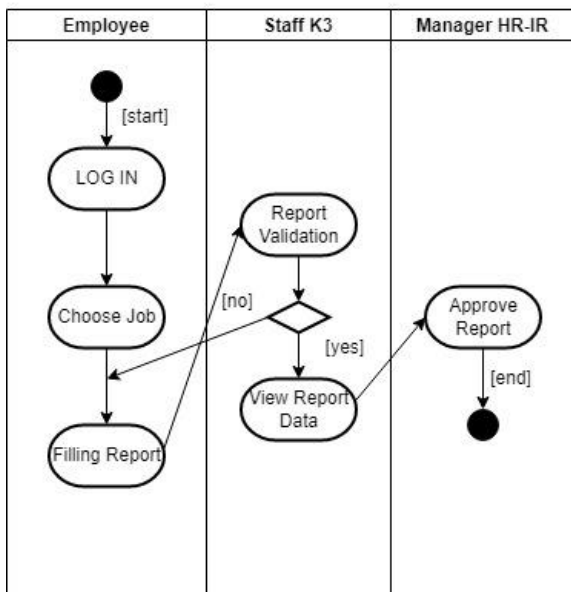

Figure 3. Use Case Diagram

Figure 4. Activity Diagram

The next step in the design of this system is the design of the database used in the system. Figure 5 below is used to describe the database that will be created and used in the system. The database consists of 8 tables. These tables are connected so that transactions between data can occur.
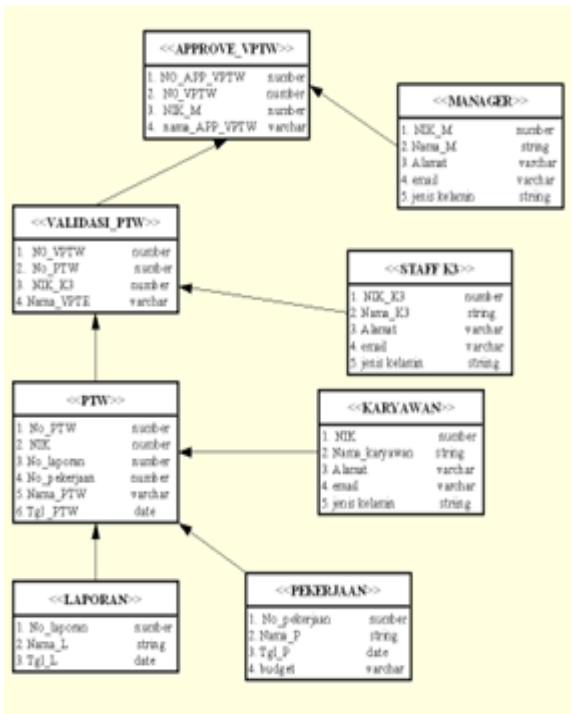

Figure 5. Database Design

DESIGN OF INTERFACE
Log In Interface

The login page is the initial page that will appear when the system is running in a web browser. The login page design is presented in Figure 6 below.
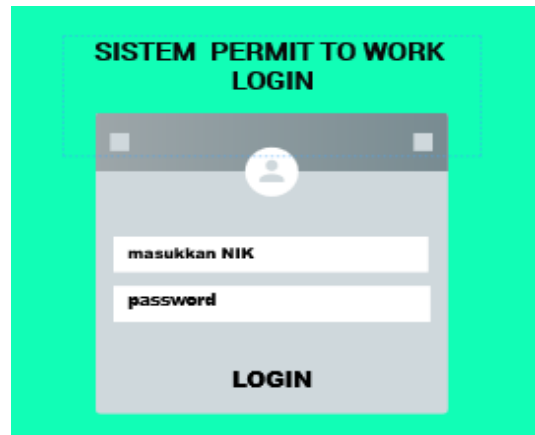

Figure 6. Log in Interface

Home Interface

The main page interface (Home Page), shown in Figure 7, will appear when the K3 employee/manager successfully logs in and on the main view attach history about members, jobs, PTW reports.
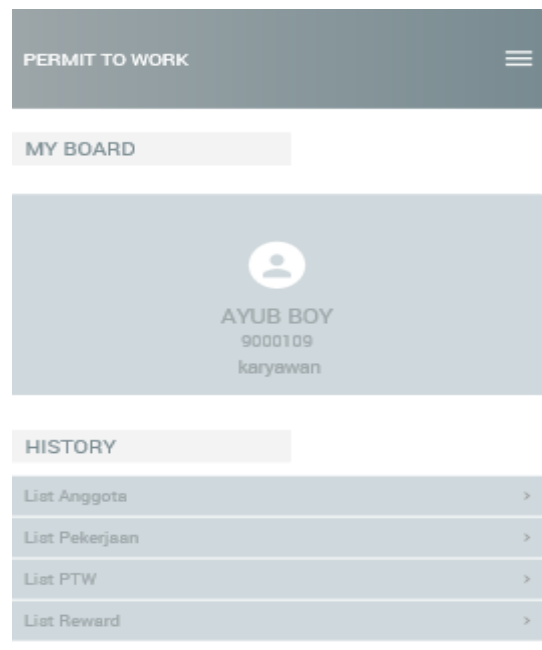

Figure 7. Home Page

User Menu Interface

The menu display appears when the employee clicks on the menu (right corner of the application). The employee can fill in the PTW report, update profile data, and log out from the application on this page. The user menu interface is shown in Figure 8. While Figure 9 shows the staff menu interface. The menu display appears when the K3 staff clicks the menu (right corner of the application). On this page, K3 staff can view PTW reports, job reports, add users, and Logout.

Figure 8. User Menu Interface

Figure 9. Staff Menu Interface

PTW Report Interface

Figure 10 is the PTW report page interface for employees, and this page appears when the employee selects the PTW report content menu. Here the employee will input or fill out the form that has been done regarding the Permit to Work report, then click submit to forward to the K3 staff or remove the report.

Figure 11 is a staff report page interface. On this page, staff and managers validate user reports that have been submitted through the PTW reporting system application. Then click comment if the report has deficiencies, then click update on the report, then click print to forward it to the HR/IR manager. On this page, the HR/IR manager can view the PTW employee report that has been submitted and updated by the K3 staff. Then the manager can click approve if the report is valid, and then it can be done by the employee or click reject if the HR. IR manager still states that the report is not valid.
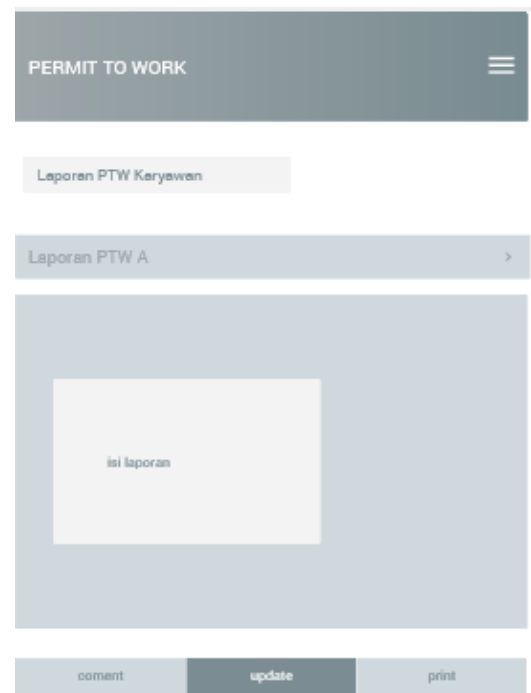

Figure10. Interface o PTW Report as User

Figure 11. The interface of PTW Report as Staff

CONCLUSION

The Permit to Work Information System Web design was carried out by adopting the Prototype Model, explicitly designed by the HIBA Group. The Permit to Work Information System web application is created using cases and activity diagrams based on the results of problem analysis. This Permit to Work Information System web application makes it easier to manage mechanical, body, and construction work permits because every information needed is stored in a database.

Future Works for this research can be developed with an Implementation and Maintenance System and add a Security System to run optimally and is safe for various online transactions.

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