Aptisi Transactions on Technopreneurship (ATT)
Vol. 4 No. 2 September 2022

p-ISSN: 2655-8807
e-ISSN: 2656-8888

Web-Based Employee Work Scheduling Information System Design at PT Trafoindo Power Indonesia

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Author Notification
10 January 2022
Final Revised
28 January 2022
Published
31 January 2022

Setiadi, A. ., Effendy, Y., Hidayat, N. R., Syamsi, N., & Rachellya, L. G. R. . (2022). Web-Based Employee Work Scheduling Information System Design at PT Trafoindo Power Indonesia. *Aptisi Transactions on Technopreneurship (ATT)*, *4*(2), 1–13.

DOI: https://doi.org/10.34306/att.v4i2.232

Abstract

This study aims to assist PT Trafoindo Power Indonesia in improving the description of the employee work scheduling website. So far, several departments of PT Trafoindo Power Indonesia use an application called Microsoft Excel to process employee work schedules and save a file on a public server where each employee has access to open and perform data engineering. The solution to the indication of the problem is to create a new system design that functions to process data in the form of employee work schedules with a one-way input system. The website is one of the choices that companies need if they want to present information both internal and external. A website would be better if there is a database or what is commonly known as a data warehouse, for the basis of reference for decision-makers tomorrow.

In this case, the design of an employee work scheduling information system using Bootstrap as its platform. To obtain the data needed in conducting research, several methods were used, including interviews, observation, and literature study. The data obtained were then analyzed and described using the UML (Unified Modeling Language) method. The final result of the research is the design of a Bootstrap-based employee work scheduling information system using Visual Studio Code as the code editor.

Keywords: *Work Schedule, Website, Information System, PT Trafoindo Power Indonesia*

1. Introduction

The development of technology is now very sophisticated in any field, people's daily lives are always associated with technology. The utilization of technology and information systems in the industrial world has a very important role in advancing and supporting industrial activities [1]. Technology helps many things, especially in terms of delivering data or

information which is now the main function of technology itself. Along with technological advances, data security system problems become a serious problem if they are not developed [2]. The website is one of the things that every company needs, therefore PT Trafoindo Power Indonesia provides an opportunity to create an overview of the staff work schedule website with the one-way input method.

Design is the first step to making the website design itself, and of course, the website that will be created will be useful for delivering the work schedule of staff at PT Trafoindo Power Indonesia [3]. Indirect observation and interviews were conducted, to input the work schedule of PT Trafoindo Power Indonesia staff in the digital world it is still less secure, as for the problem of staff work scheduling activities using excel stored on a local server owned by PT Trafoindo Power Indonesia where staff can easily If you open the file, it is possible that the data can be changed and the file can be deleted by an irresponsible party [4].

Therefore, it is necessary to create an official website according to the internal needs of PT Trafoindo Power Indonesia in terms of delivering the work schedule made by the manager. With the aim of knowing the staff scheduling system currently running at PT Trafoindo Power Indonesia, knowing the constraints faced in relation to the staff scheduling system at PT Trafoindo Power Indonesia, knowing the design of the information system needed for staff scheduling at PT Trafoindo Power Indonesia [5]. So that to be effective and efficient from the current system, make it easier for engineering managers to create, view, modify, and delete engineering staff work schedules, make it easier for engineering staff to see their respective work schedules neatly arranged [6].

2. Research Method

1. Method of collecting data

Data collection techniques in qualitative research is by conducting observations, interviews, and literature studies.

1. Observation, namely making direct observations to PT Trafoindo Power Indonesia in order to get access and information from PT Trafoindo Power Indonesia's activities.
2. Interview, which is where a question and answer session is held with resource persons at the company location with Mrs. Mega as the Head of Person in Charge at PT Trafoindo Power Indonesia.
3. Literature study, is a method in which to collect several journals or literature, as additional information needed.

2. System Analysis Method

In solving problems that occur, researchers use the PIECES (Performance, Information, Economic, Control, Efficiency, and Service) method by collecting and analyzing data and problems that occur and then identifying and then analyzing the problem.

3. System Design Method

The design method in this study uses the SDLC (Software Development Life Cycle) method with the waterfall model [7]. Then to provide an overview and design of the system development to be made, using the UML (Unified Modeling Language) model using the draw.io website which consists of Use Case Diagrams, Activity Diagrams, Sequence Diagrams, and Class Diagrams [8]. This design also uses the Javascript programming language with the help of the Microsoft Visual Studio Code application as a code editor [9]. In addition, it also uses Codeigniter as a PHP framework and Bootstrap as a CSS framework to support the appearance and performance of the website to make it more attractive and dynamic [10]. For database design, we will use MariaDB as the DBMS to help manage the database which will be used in the proposed application [11].

4. Testing Method

In this thesis report, I use the Black Box testing method where this testing method focuses on software functionality so that it can develop better software in testing the functions

of the proposed system [12]. Black Box testing can also find errors in several aspects such as errors, missing, or display errors, and also output errors.

3. Results

After analyzing some of the problems that occur in the current Engineering division employee work scheduling system. There are several alternative solutions to the problems encountered. Among others are:

1. The required system is able to save the work schedule of the Engineering division employees into the database.
2. The required system is able to provide different access rights, between staff and managers.
3. The required system is capable of displaying reports on the work schedule of Engineering division employees and easily downloading pdf file formats.

After analyzing the running system and seeing the problems caused by the running system, it is necessary to design an information system that can be used as a solution to overcome these problems [13]. The proposed system design is made as a stage to prepare the system implementation process [14]. There are several proposed procedures that aim to improve and refine the work scheduling system of the engineering division staff that is currently running, namely by creating a web-based information system that functions for scheduling engineering division staff which is currently still being done semi-computerized, making it easier to make schedules. engineering division staff work and reduce human error [15].

Based on changes in the engineering division staff scheduling system that is running and after the new system requirements have been determined [16], the next steps are the design or design of a proposed system that aims to improve the old system by providing a clear picture or view according to the system design process from the beginning to the end of the study [17]. In this case, we will use the Visual Paradigm to describe Use Case Diagrams, Class Diagrams, and Activity Diagrams [18].
The following is the proposed system procedure:

1. Admin can access:

A. Login page, on this page, the admin is required to login using a registered account.
B. Dashboard menu, on this page the admin can see the progress of the project, the total number of projects, & the total number of tasks.
C. Project menu, on this page the admin can add new projects, and see a list of projects that have been successfully added to the database.
D. Task menu, on this page the admin can add new tasks to projects that have been successfully added previously.
E. Report menu, on this page the admin can see the status of a project and download the report file in the form of PDF (Portable Document Format).
F. Members menu, on this page admin, can add, view, change, and delete members.
G. Manage menu accounts, on this page, the admin can change/update personal data.

2. Managers can access:

A. Login page
B. Dashboard menu
C. Project menu
D. Task menu

E. Menu report
F. Manage account menu

3. Staff can access:

A. Login Page
B. Dashboard menu
C. Project menu
D. Task menu

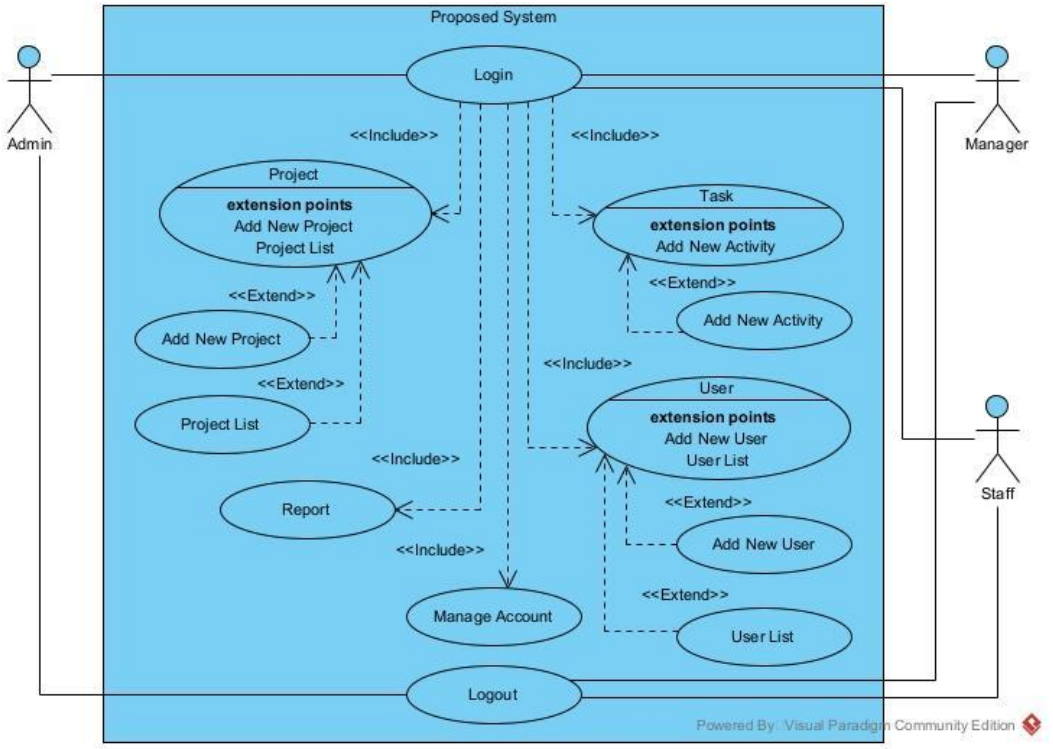

Figure 1. Use Case Diagram of The Proposed System

In Figure 1. Use Case Diagram proposed above, there are:
A. There are 3 actors, namely Admin, Manager, Staff.
B. There are 5 included.
C. There are 7 use cases.

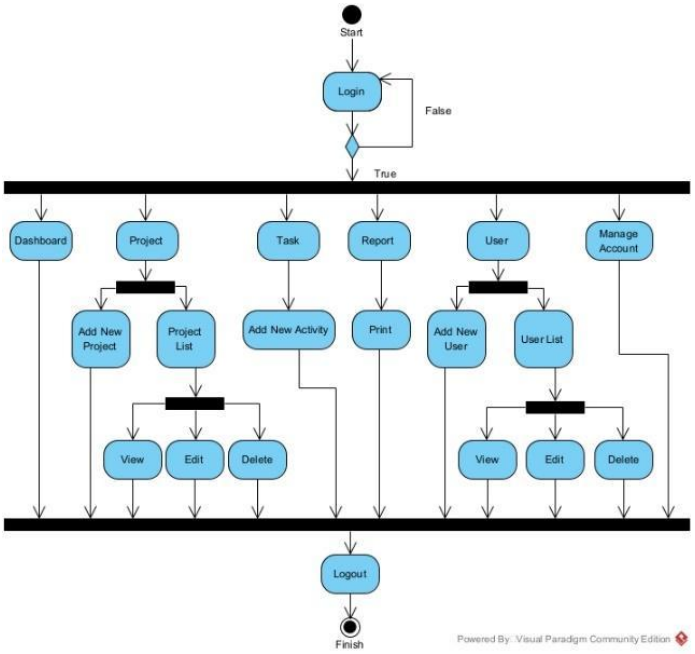

Figure 2. The Proposed Admin Activity Diagram

In Figure 2 the Admin Activity Diagram proposed above,
there is:

A. 1 (one) Initial Node, the object that is started.
B. 20 (twenty) Action States, starting from logging in, if it fails, it will return to login, if true, it will enter the dashboard containing projects, activities, reports, members, manage accounts, and logout.
C. 1 (one) Final Node, terminated object.

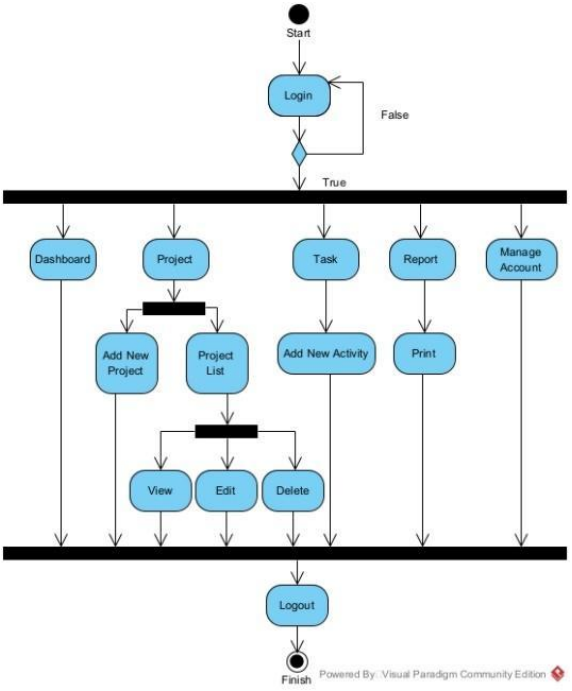

Figure 3. The Proposed Manager Activity Diagram

In Figure 3 the Manager Activity Diagram proposed above,
there is:

A. 1 (one) Initial Node, the object that is started.
B. 14 (fourteen) Action States, starting with login, if it fails, it will return to login, if true, it will enter the dashboard containing projects, activities, reports, manage accounts, and logout.
C. 1 (one) Final Node, terminated object.

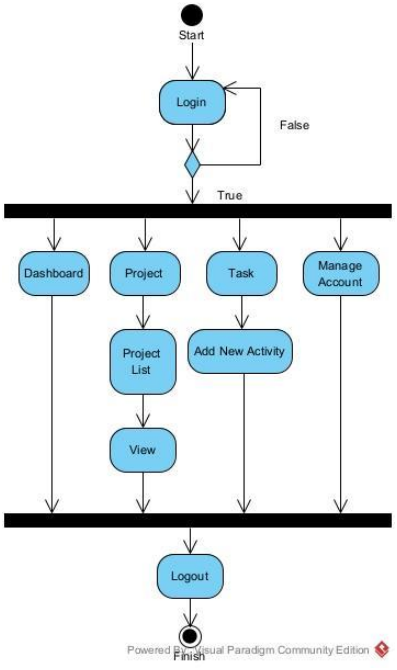

Figure 4. Activity Diagram of The Proposed Staff

P-ISSN: 2655-8807
E-ISSN: 2656-8888

In Figure 4. Activity Diagram of the proposed staff above, there are:

A. 1 (one) Initial Node, the object that is started.
B. 9 (nine) Action States, starting with login, if it fails, it will return to login, if true, it will enter the dashboard containing projects, activities, manage accounts, and logout.
C. 1 (one) Final Node, terminated object.

The proposed program designs that have been made are as follows:

Proposed Program Design

1. Login Page View

Figure 5. Login Page View

2. Dashboard Page View

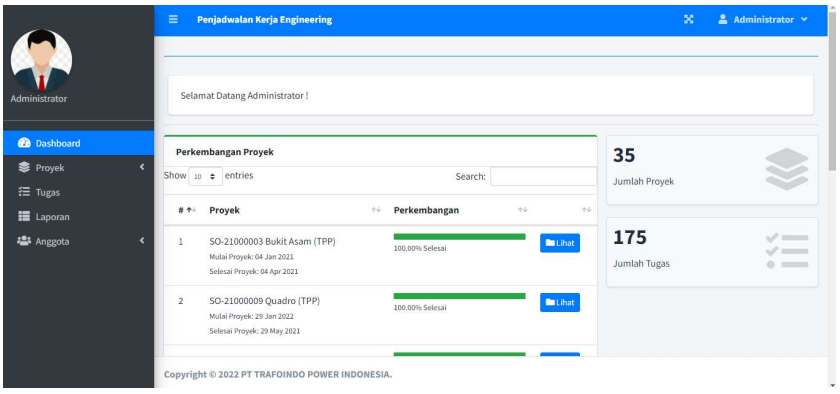

Figure 6. Dashboard Page View

3. Project Page View - Add New Project

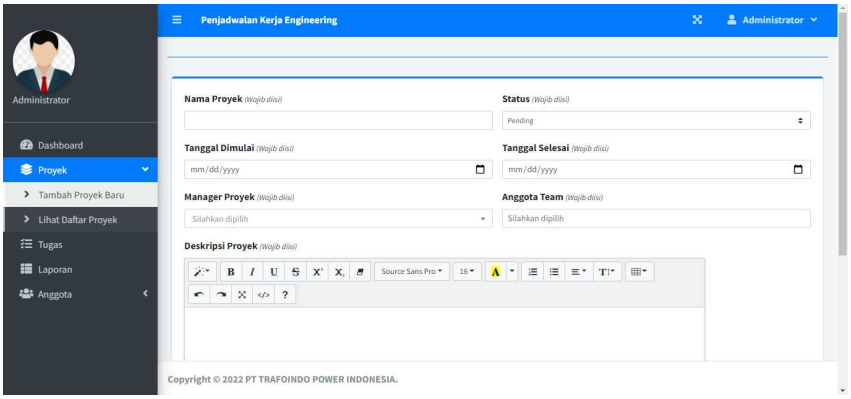

Figure 7. Project Page View - Add New Project

4. Project Page View - View Project List

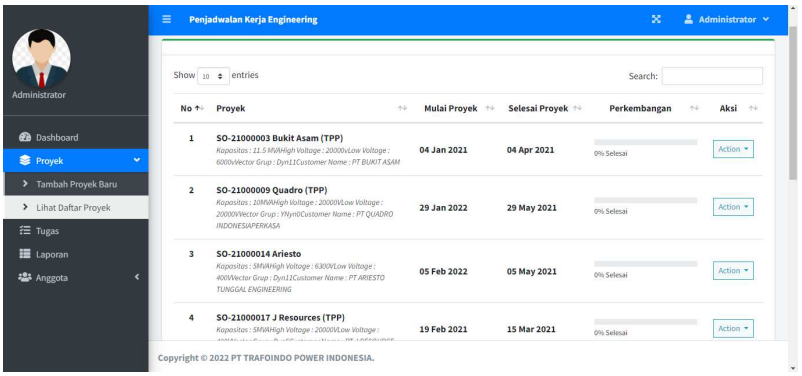

Figure 8. Project Page View - View Project List

5. Activity Page View

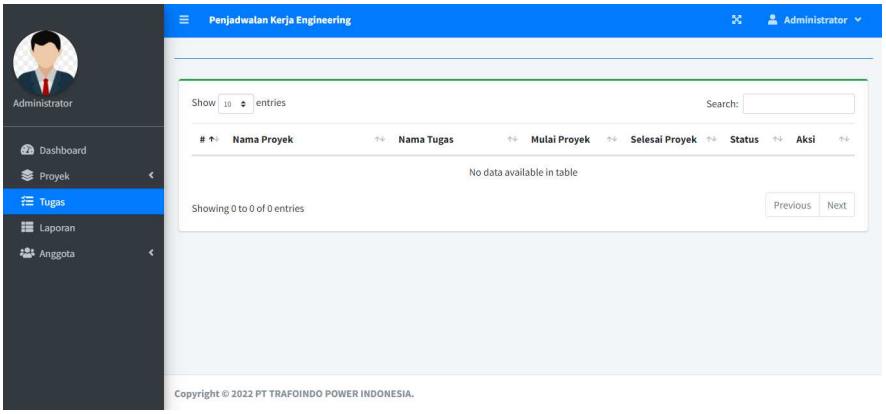

Figure 9. Activity Page View

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E-ISSN: 2656-8888

6. Report Page View

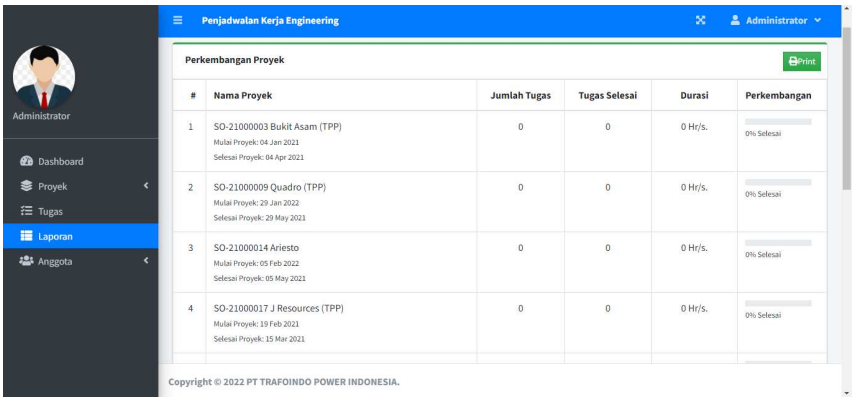

Figure 10. Report Page View

7. Member Page View - Add New Member

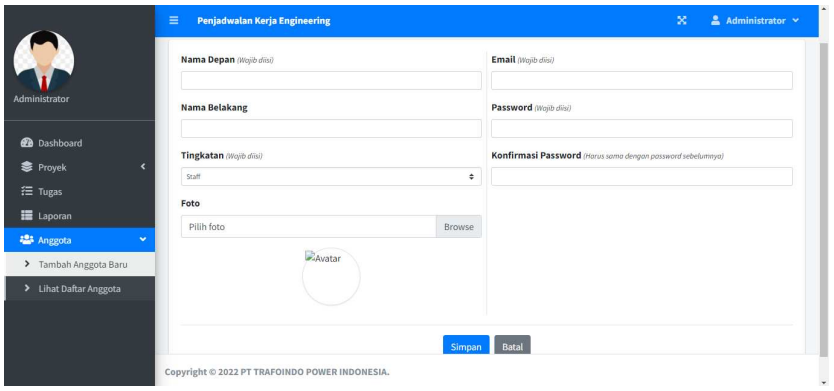

Figure 11. Member Page View - Add New Member

8. Member Page View - View Member List

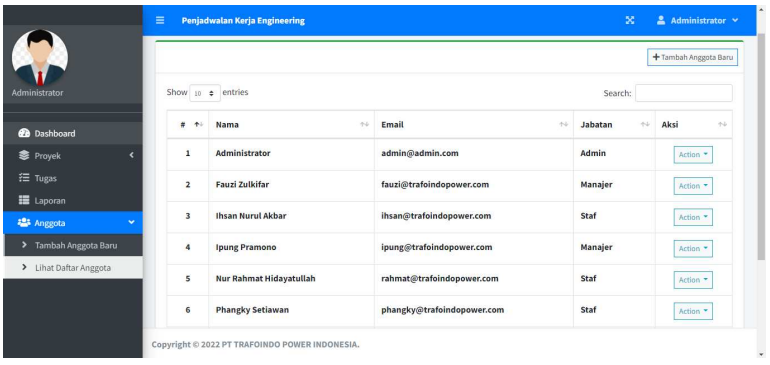

Figure 12. Member Page View - View Member List

9. Page View

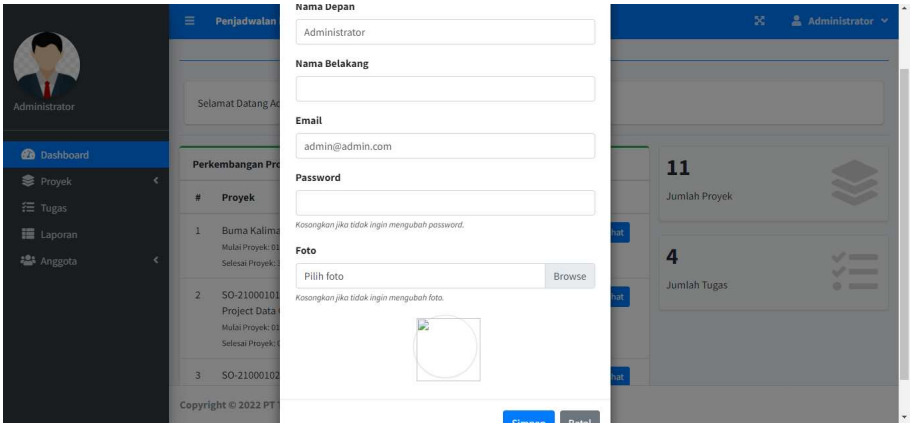

Figure 13. Manage Account Page View

After testing the system using the Black Box Testing method with the control structure of the procedural program design [19]. Of the several tests that have been carried out using the Black Box Testing method [20], all of them show valid or successful tests and run the correct program on a 100% percentage basis. The process to create the proposed system took approximately four months.

4. Conclusion

Based on the analysis that has been carried out on problems and problem solving by implementing a web-based engineering division staff scheduling information system to facilitate managers and staff in managing work schedules at PT Trafoindo Power Indonesia, there is a conclusion that the engineering division staff work scheduling system is currently running. at PT Trafoindo Power Indonesia, which is done semi-computerized, using excel format, each project received, the details will be recorded in an excel file stored on a local server, the problem faced by the current system is that the schedule cannot be saved directly because the file excel is stored on a local server causing the excel type to change to read-only, besides that there is no access right to make changes to the contents of the work schedule, which means that any user who knows the location of the file can open and change the contents of the data without permission, even the worst file The excel can be lost, knowing the design of the information system needed for staff scheduling at PT Trafoindo Power Indonesia so that it becomes effective and efficient from the current system, the analysis of the web-based staff scheduling application design is described using the Unified Modeling Language (UML) which consists of Use Case Diagrams, Activity Diagrams, and also the appearance of applications that have been made. The application has gone through the testing stage using the Black Box Testing method.

5. Suggestion

Based on the results of the analysis and discussion that has been carried out at PT Trafoindo Power Indonesia, especially regarding the design of a web-based engineering division scheduling information system, there are several suggestions that might be considered as follows:

1. There needs to be socialization to all members of the engineering division of PT Trafoindo Power Indonesia on how to use and benefit from this web-based work scheduling application. It is also necessary to carry out further documentation of the weaknesses that may still exist in this application system so that further

improvements and improvements can be made in the future.
2. It is necessary to carry out routine database backup activities.
3. Further development is needed, namely adding application features if there are changes in the staff work scheduling process.

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