APPLICATION FOR DISTRIBUTING THESIS SUPERVISORS BASED ON WEB-BASED CRITERIA FOR FIELD OF EXPERTISE FORWARD CHAINING METHOD

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Abstract: A quality thesis requires a supervisor who is competent in their field. A problem that often occurs in higher education is the distribution of thesis supervisors. The thesis supervisor sometimes does not suit the field of research taken so that the resulting thesis is still less focused. This problem occurs due to a lack of information on the area of expertise for each lecturer. The problems that occur can be resolved with the Application System for Dividing Thesis Supervisors Based on Web-Based Expertise Field Criteria. The thesis supervisor is usually determined by the university. The Web-Based Application for Dividing Thesis Supervisors Based on Field of Expertise Criteria can improve and simplify the process of distributing thesis supervisors, so that the process of distributing thesis supervisors can be more effective and efficient. so as to produce a quality thesis.

INTRODUCTION

When preparing a thesis, students need a supervisor as a place for consultation. A quality thesis requires a supervisor who is competent in their field. A problem that often occurs in higher education is the distribution of thesis supervisors. The thesis supervisor sometimes does not suit the field of research taken so that the resulting thesis is still less focused. This problem occurs due to a lack of information on the area of expertise for each lecturer. The thesis supervisor is usually determined by the university. The determination process usually relies on personal knowledge about the required lecturer specifications. This responsibility requires an analysis of lecturer competencies in accordance with the thesis topic. This gives rise to less than optimal decisions, where the lecturers appointed are sometimes not suited to the research field even though there are many other lecturers who have more optimal competencies. This can affect the quality of students' scientific work. To solve this problem, a solution is needed that can help

determine the thesis supervisor according to their field of expertise using the forward chaining method, where this system can track the facts that the supervisor has. So an application for distributing thesis supervisors based on Web-based Expertise Field Criteria using the forward chaining method is needed. The application can improve and simplify the process of distributing thesis supervisors, so that the process of distributing supervisors can be more effective and efficient.

RESEARCH METHODS

1. Running System Analysis

    a. The selection process is carried out by an expert who makes the selection based on knowledge of the supervisor's abilities and determines without valid data. This allows human error to occur among these experts for example, the supervisor's lack of competence in guiding the thesis submitted to him.

    b. The supervisory lecturer's abilities are not recorded regarding certain abilities needed to guide the thesis which results in human error being made by the expert in determining the supervisory lecturer.

The system for distributing thesis supervisors by an expert is currently running well and normally (Hariyanto et al., 2019). However, due to the possibility of human error that can be experienced by experts and the lack of valid data regarding the abilities of supervisors(Supiyandi et al., 2022), this can result in students not being guided by appropriate supervisors (Wahyuni & Wadly, 2023). Due to this, it is hoped that the use of this supervisory lecturer distribution system can help the assignment of thesis supervisors to be more effective. and efficient (Muttaqin et al., 2023).

Inference is the process of generating information from known or assumed facts (Khaliq & Sari, 2022)(Wahyuni et al., 2019). Inference is a logical conclusion or implication based on available information (Lubis et al., 2022). In an expert system, the inference process is carried out in a module called an inference engine (Supiyandi & Zen, 2019). Forward Chaning means using a set of condition-action rules (Wahyuni et al., 2022)(Sitompul & Nababan, 2018). In this method, data is used to determine which rules to run, then those rules are executed (Wahyuni, 2018)(Wadly & Fitriani, 2023).

How the Forward Chaining Algorithm Works (Wahyuni, 2018)

Picture 1. Forward Chaining Algoritm

1. IF Category A THEN Skills Required 1, 2, 3 and Supervisor Recommended 1, 2.

2. IF Category B THEN Skills Required 1, 4, 5 and Supervisor Recommended 3, 4.

3. IF Category C THEN Skills Required2, 3, 5 and Supervisor Recommended5, 6.

4. IF Category D THEN Skills Required 2, 3, 4 and Supervisor Recommended 7, 8.

Context Diagram

Context diagrams function to describe the process of analyzing the system as a whole (Wahyuni et al., 2018)(Wahyuni et al., 2021). In this case, the context diagram functions as a medium, which consists of a process and several external entities. The context diagram for the Thesis Supervisor Dividing System can be seen in the picture :
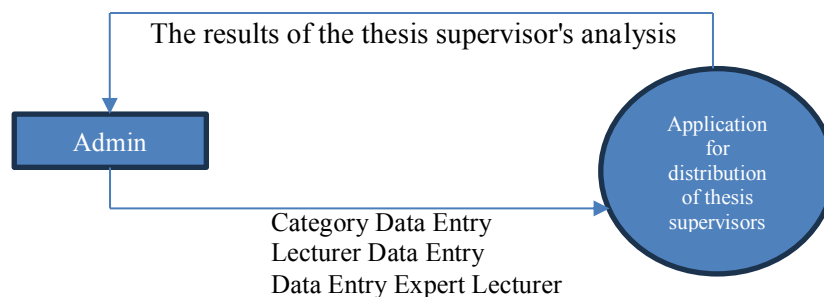

Picture 2. Context Diagram

RESULTS AND DISCUSSION

Students who have fulfilled the academic and administrative requirements can submit the topic and title of their thesis to the head of the department. In this stage, the department head plays a role in determining the student's supervisor. The title that has been chosen will be determined by the supervisor through several stages. In this system, the system is divided into several pages, namely:

Login Page

When a user wants to use this application, the first thing they have to do is log in to the system on the login page which requires a username and password. Users must fill in their username in the username textbox and password in the password textbox and continue by pressing the Enter button or clicking the System Login button. As seen in the

image below:
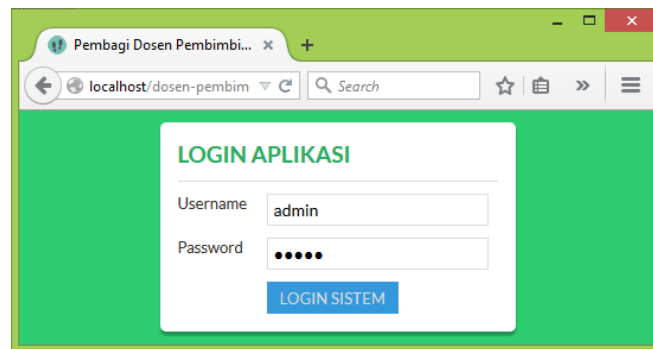
Picture 3. Login Page

Application Page

After the user logs into the system, the user is forwarded to the Application Page which functions to analyze the thesis title to find supervisor one and supervisor two. What must be done is that the user must fill in the Thesis Title text area with the title to be analyzed then press the Search for Supervisor button. If found, search results will be displayed in search results. The thesis category functions to show which category the title falls into, Required Ability functions to display the abilities needed to guide the input thesis title and Supervisor functions to display the recommended supervisor to be the thesis supervisor for the input title. As a comparison, two examples of searches with different thesis titles will be displayed, namely:

1. By filling in the Thesis Title with "Thesis Supervisor Lecturer Dividing System based on WEB-Based Areas of Expertise (Faculty of Computer Science, Panca Budi Development University)", the following image will be produced:
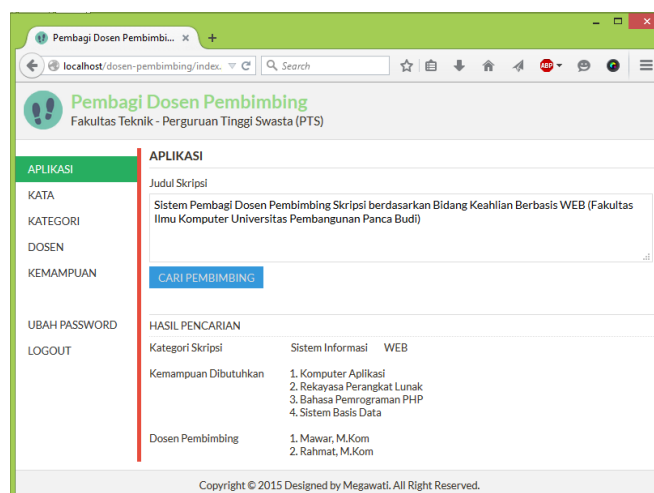

Picture 4. Application Page (Experiment 1)

2. By filling in the thesis title "Mobile-based Sales and Payroll Data Processing Information System on CV. Gunung Mas Plastik", is produced as shown in the following image :
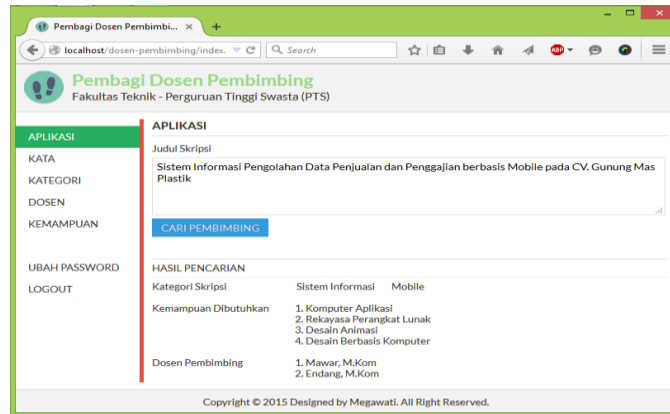

Picture 5. Application Page (Experiment 2)

3. The Category page can be accessed in the category menu. This page serves to analyze the title of the thesis. On this page, users can search by word then click the show button. To display all data stored in the database the user can click the show all data button. As seen in the following image:
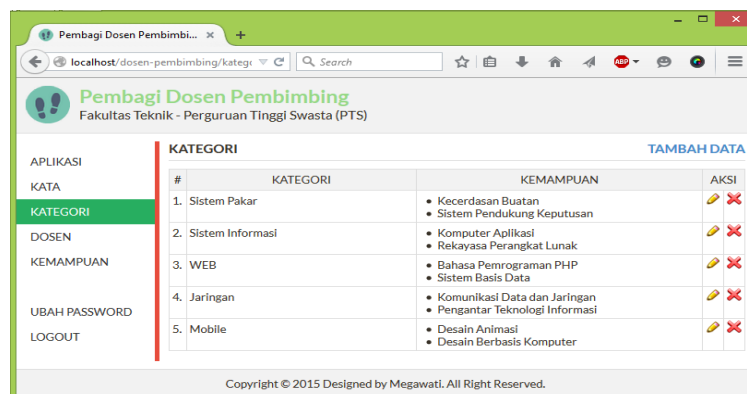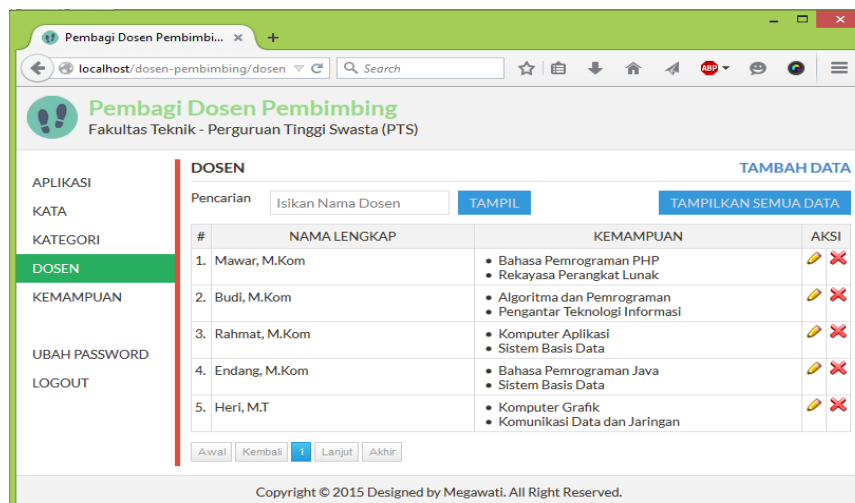

Picture 6. Category Page

4. To add category data, users can click the add data link which will open the Category Entry Page and fill in the form according to the required data then save it by clicking the save button. As seen in the following image :
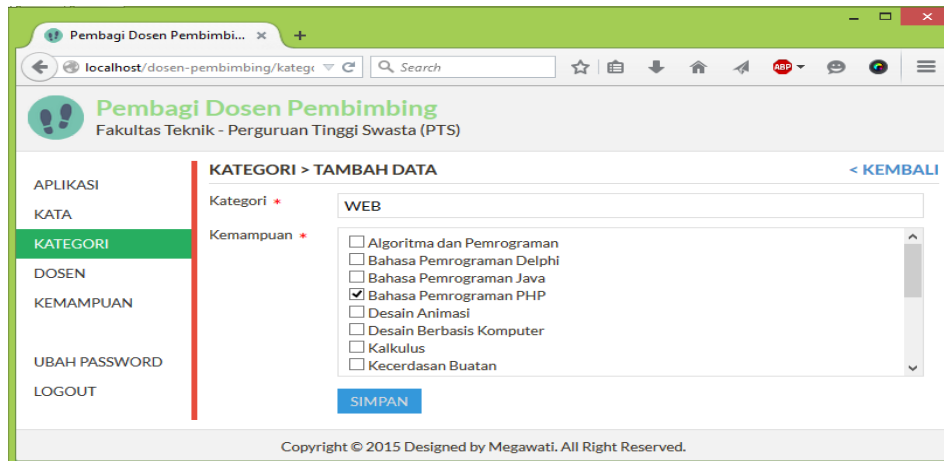
Picture 6. Category Entry Page

5. The Lecturer page can be accessed on the lecturer menu. This page functions to display data on lecturers used as first and second supervisors. On this page, users can search by Name then click the show button. To display all data stored in the database the user can click the show all data button. As seen in the following image:


Picture 7. Lecturer Page

6. To add lecturer data, users can click the add data link which will open the Lecturer Entry Page and fill in the form according to the required data then save it by clicking the save button. As seen in the following image :
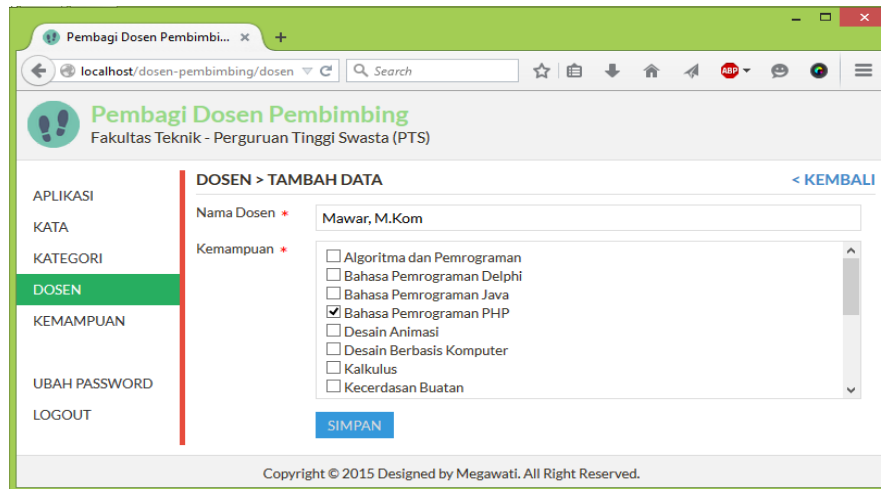
Picture 8. Lecturer Page

7. The Words page can be readily reached by navigating to the Competency menu. The purpose of this webpage is to present data about the abilities of lecturers, which serves as a point of reference for identifying suitable candidates to serve as thesis supervisors. Users have the ability to search by Capabilities on this webpage and can then proceed to click the show button. In order to get and present all the data stored within the database, the user may initiate the process by clicking on the designated button labeled as show all data. As depicted in the accompanying visual representation :
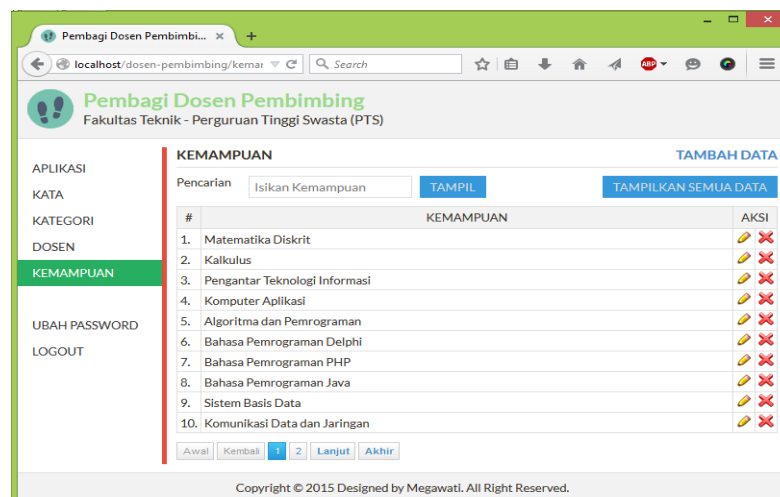
Picture 9. Capabilities Page

CONCLUSION

This research succeeded in developing a web-based application that can help academic staff, students and academic lecturers in determining final assignment

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supervisors. This application is based on the Forward Chaining method, which allows processing based on predefined rules and facts. This application uses web-based criteria, which can be easily accessed by students and academic staff via the internet. This makes it easier to determine the supervisor without the need for direct interaction.

Field of Expertise: This application relates to the lecturer's field of expertise and other criteria in determining the most suitable supervisor for students. This can improve the quality of guidance and harmony between students and supervisors. The Forward Chaining method allows this application to make determinations automatically based on predetermined rules. This can save time and effort in the determination process.

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