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CASE BASED REASONING FOR HANDLING FINAL STUDENT GRADUATION PROBLEMS AT STMIK PELITA NUSANTARA

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Abstract

Handling the graduation of problematic final students at STMIK Pelita Nusantara is very much needed during this pandemic considering the problems that were passed in 2020 and many students did not graduate on time due to many problems such as academic problems, study programs and finances. The number of problematic final student problems is caused by quite a number of cases. Examples are students who do not attend lectures according to the curriculum schedule that should be followed, including non-active students for several semesters, students who fail to exceed the minimum standards set by the study program, students do not pay tuition administration fees and students do not know or are not active to get good information academically. and students do not complete the thesis within the stipulated time. The problem is that many students do not graduate on time due to many problems such as academic problems, study programs and finances. This problem is like a student who does not attend lectures for 1 year but can still continue his lectures which happened in the final semester. From the research conducted, it is expected to produce a decision support system that is able to become a medium of information for students and study programs to disseminate information on academic sanctions for students who commit violations..

Keywords: Final Student, Case-Based Reasoning, Problem Handling

1. INTRODUCTION

Information technology that is growing at this time really supports the needs of a campus, especially in providing the best service to students. Both to realize work effectiveness and efficiency as well as in improving services to students and the community. The results of the survey seen from last year's final 2020 student graduation showed that 25.8%-40% of final students did not graduate on time due to many obstacles or problems. The type of problem the final student is problematic is caused by quite a lot of cases. For example, students do not attend lectures according to the curriculum schedule that should be followed including non-active students for several semesters, students have failed to exceed the minimum standards set by the study program, students do not pay the administration of tuition fees and students do not know or are not active to get good information academically and students do not complete the thesis within the stipulated time. Some students do care about the problems experienced when the problems they experience are protracted and arise, but because of the many types of problems experienced, sometimes the continuity of the final student process in working on the thesis is hampered so that there is a problem that the final student graduation does not go well. Whereas each type of problem in several cases that arise has its own solution and handling method according to the standards and policies that have been set. Therefore, the research focuses on case-based reasoning for handling

the graduation of problematic final students at STMIK Pelita. Along with the development of science and information technology, the existence of intelligent systems can be made according to the knowledge that has been discussed and determined according to the policy standards given from the applicable problem cases.

2. METHODS

In building this system, using a case-based reasoning system approach, namely the similarity method. The similarity function is a step used to identify similarities or similarities between cases stored in the case base with new cases. The system is an interactive information system that provides information, modeling, and manipulating data. The system is used to assist decision making in a semi-structured and unstructured situation, where no one knows for sure how decisions should be made (Alter, 2019). So that the system can be applied in the process of providing solutions in handling in order to be able to determine the handling properly and correctly. (Scott et al., 2018). However, the system can work optimally if the case-based reasoning method is used. Case-based system or case-based reasoning is a reasoning model to solve problems using the concept of analogy. Basically, case based reasoning will compare a new case with other cases that have been stored previously. In addition, there will also be marking of existing cases, as well as finding similar cases. Thus it can be said that in case-based reasoning there are two main functions performed, namely the module marking new cases and the activity of retrieving existing cases (Sri Kusumadewi, 2019). case based reasoning will compare a new case with other cases that have been stored previously. In addition, there will also be marking of existing cases, as well as finding similar cases. Thus it can be said that in case-based reasoning there are two main functions performed, namely the module marking new cases and the activity of retrieving existing cases (Sri Kusumadewi, 2019). case based reasoning will compare a new case with other cases that have been stored previously. In addition, there will also be marking of existing cases, as well as finding similar cases. Thus it can be said that in case-based reasoning there are two main functions performed, namely the module marking new cases and the activity of retrieving existing cases (Sri Kusumadewi, 2019).

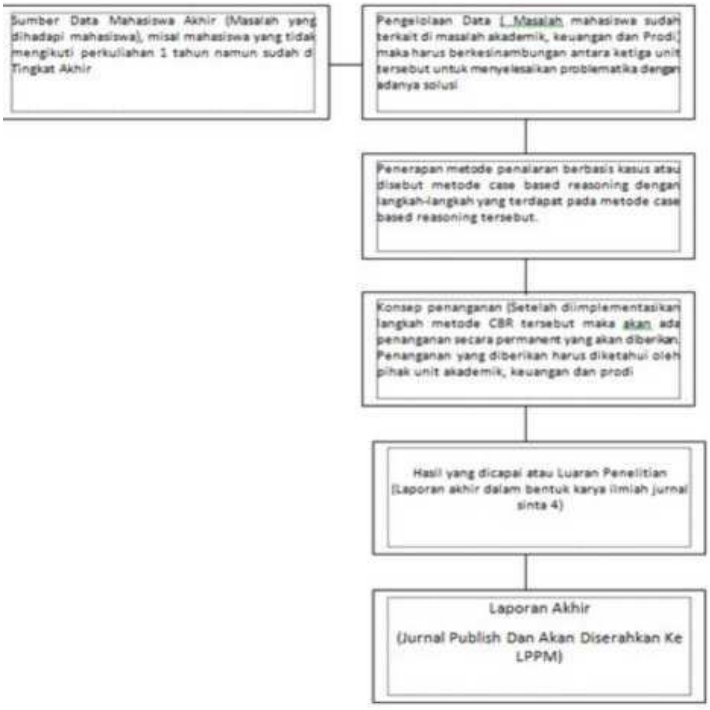

Figure 1: Research Methodology

1. *Retrieve*(retrieving) the most principle case or cases. This process begins by describing one or part of the problem and ends when the most suitable previous case has been found. Its sub-tasks refer to feature identification, initial matching, search, and maintenance.
2. *Reuse* (using) information and knowledge from the case to solve problems.
   The reuse process of case solutions that have been obtained in the context of new cases is focused on two aspects, namely:
   a. The difference between the previous case and the current one.
   b. What part of the acquired case can be transferred into a new case.
3. *Revise* (review or improve) proposed solutions.
   This phase consists of two tasks, namely:
   a. Evaluate case solutions generated by reuse. If successful, then proceed with the retain process.
   b. If not then fix the case solution using domain knowledge specification.
4. *Retain*(store) parts of the experience that may be useful for solving problems in the future. This process consists of choosing what information from the case will be stored, in what form, how the case will be structured to make it easy to define similar problems, and how to integrate new cases into the memory structure.

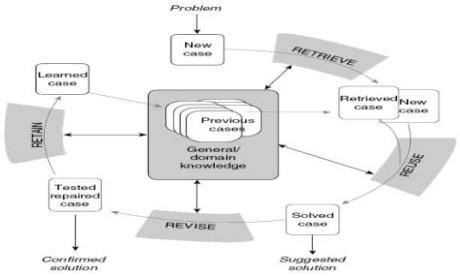

Figure 2: Stages of Providing Solutions with Case-Based Reasoning Model

3. RESULTS AND DISCUSSION

The difficulty experienced by students in completing their thesis is pouring ideas into scientific writing. This is evidenced by the difficulty in writing the background in Chapter I, students do not understand the content of the background problem. The discussion in the background of the problem is to explain why the problem is important to research both in terms of the research profession, scientific development and development interests. Researchers feel restless and anxious if the problem is not investigated as well as the losses that may occur and the benefits obtained after doing the research. The background of the problem is supported by facts found in the field as the rationale for raising problems. Facts can be presented in tabular form, percentage figures or in narrative form. representing the population community to be studied. In the background, it is necessary to explain the position of the problem to be studied in the area of the field of study that the researcher is engaged in. In order to be able to formulate the background in a coherent, clear and sharp way, one needs to understand and read the symptoms that occur

Table 1. Similarity in Cases of Handling Troubled Final Students

Trouble Code	Elements Used				Final Result of Handling
	Problem Description	Category section	Category Problems h	Problem Solution Section	
Ti	Student Not Completed Thesis	Essay	Enough	Enough	Intensively guided
T2	Student Not Submitting Title	Neglect n Obligations as a student wa	Currently	Currently	Limiting the number of credits in one semester is proposed to apply for a title according to the scholarship deadline and other services
T3	Student forged signature	Supervisor	Currently	Currently	Cannot receive a master's scholarship at the Foundation
T4	Students are never mentored	7 times	Currently	Currently	It is suggested that study programs and students must be present on campus
T5	UMH late student	1 time	Heavy	Heavy	Pay UK installments 1
T6	Students Don't Submit Reports	1 time	Heavy	Heavy	No Diploma

Table 2. Results of Problem Handling Cases

Handling Code	Element				The final result	Information
	nx1	nx2	nx3	nx4		
Ti	0	0	0	0	0	No Solution Given
T2	0	0	0	0	0	No Solution Given
T3	0	0	1	1	0.5	No Solution Given
T4	1	1	1	1	1	Best solution
T5	0	0	1	1	0.5	Best solution
T6	1	0	0	0	0.25	Best solution

From these results, the number of comparisons of elements in each case T, has the same number, then the highest similarity value (T^max) is owned by the fourth problem (T4 = 1), so it can be concluded that the solution to the new case that appears is that the Study Program and Students are encouraged must be present on campus.

4. CONCLUSION

Based on the Tests That Have Been Done, From This Research It Can Be Concluded, That The Similarity Method Can Be Used For Case-Based Reasoning For Handling Troubled Final Student Graduations At Stmik Pelita Nusantara With A 100% Validity Level. The Best Solutions Provided Are Integrated With Academic Systems, Student Finances And Study Program Systems So It Can Be Used To Improve The Performance Of A Study Program.

REFERENCES

1. Y. Aditia, H. . Sundanyana, and T. Budiman, “CBR and Problem Solving Ability Development,” vol. VII, no. 1, pp. 180-194, 2013. Aulia Rachma, "The Effect of Case Based Reasoning Learning on Students' Mathematical Critical Thinking Ability," Repository.Uinjkt.Ac.Id, p.
2. 2018,[Online].Available:http://repository.uinjkt.ac.id/dspace/bitstream/123456789/39001/1/Andina Aulia Rachm-FITK.
3. N. Dan, “Info ma tek,” vol. 17, no. 2, 2015.
4. Nurfalinda and N. Nikentari, “Case Based Reasoning for Diagnosis of Malnutrition in Toddlers,” J. Sustain. J. Has. researcher. and Ind. App., vol. 06, no. 02, 2017.
5. MC Reasoning and S. Kosasi, “case-based reasoning ,.”
6. U. Saripudin, YA Gerhana, and C. Slamet, "The Influence of Case Base Reasoning (CBR) on Students' Problem Solving Ability in Indonesian Language Learning," J. Semin. IF, vol. 9, no. 2, pp. 93-94, 2015.
7. Seniwati, S. Information, and JR Utara, “Case Based Reasoning Using Algorithms,” vol. 2, no. 2, pp. 152-156, 2018.
8. P. Soepomo, "Implementation of Case Base Reasoning in Expert Systems in Determining Types of Mental Disorders," J. Sarj. Tech. Inform., vol. 1, no. 1, pp. 69-78, 2013, doi:10.12928/jstie.v1i1.2506.

9. MN Sutoyo and AT Sumpala, "Case Based Reasoning Determining UKT Groups (Study of Nineteen November University Kolaka)," 2017.
10. W. Yulianti, "Case-Based Reasoning-Based Aptitude Testing in an Expert System to Determine Interests and Talents of Elementary School Students," Rabit J. Teknol. and Sis. inf. Univrab, vol. 1, no. 2, pp. 104-118, 2016, doi:10.36341/rabit.v1i2.28.
11. Aribowo, USA (2015). Development of an Intelligent System Using Case Based Reasoning to Diagnose Diseases Due to Exanthema Viruses. Telematics, 7(1).
12. https://doi.org/10.31315/telematika.v7i1.410
13. Hendra, S., & Kusumadewi, S. (2015). Similarity Functions in Case-Based Systems for Solving Student Academic Problems. National Seminar on Medical Informatics (SNIMed), VI(3), 116-123.
14. Belmawa, D. (2021). Student Creativity Program - General Guidelines. 1-289.
15. Hendra, S., & Kusumadewi, S. (2015). Similarity Functions in Case-Based Systems for Solving Student Academic Problems. National Seminar on Medical Informatics (SNIMed), VI(3), 116-123.
16. Kosasi, S. (2018). Application of Case-Based Reasoning to Diagnose Diarrhea in Humans. May 2014.
17. Winiarti, S., Ismail, T., Witriani, W., & Muslihudin, M. (2017). Case-Based Reasoning System For Handling Academic Sanctions. JISKA (Journal of Informatics Sunan Kalijaga), 2(2), 107.
18. https://doi.org/10.14421/jiska.2017.22-06