Use Case Diagram Design For Information System Services To Students At The Faculty Of Engineering Universitas Negeri Medan

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Abstract. Use case diagrams work by describing the interaction between the user and the system through a story about how a system is used. Use case diagrams consist of several elements, namely actor, case, system, association, include, and extend. Use case diagrams are very useful for understanding how the system works and how actors are involved in the system. The sequence of steps that explains the relationship between the user and the system is called a scenario. Each sequence is initialized by a person, another system, hardware, or a time sequence. Apart from that, a use case is also defined as an abstraction of the interaction between the system and actors. Use case diagrams describe the expected functionality of a system. The emphasis is on "what" the system does, and not "how".

Keywords : Usecase Diagram, Information System

1. Introduction

Use case diagrams are one of various types of UML (Unified Modeling Language) diagrams that describe interaction relationships between systems and actors. Use Case can describe the type of interaction between the system user and the system. Of course, use case diagrams are something that is easy to learn. The first step in modeling is of course the need for a diagram that is able to describe the actions of actors and the actions of the system itself, such as those found in use case diagrams.

Meanwhile, the function of the use case diagram is as follows:

- Useful for showing sequential activity processes in the system.
- Able to describe business processes, even displaying the sequence of activities in a process.
- As a bridge between manufacturers and consumers to describe a system.

The benefits of use cases include:

- Use it as a verification requirement.
- Becomes a description of the interface of a system because every system built must have an interface.
- Identify who are the people who can interact with the system, as well as what the system can do.
- Provide certainty regarding system requirements, so there is no confusion.
- Facilitates the communication process between domain experts and end users.

Use Case Diagrams will certainly be very helpful in compiling a system, then communicating the systemized application design to customers. The Use Case Diagram component is also used to design test cases for various features in the system. This use case can be used or applied to other use cases, so that duplication of functionality can be avoided, the way to do this is by pulling out common functionalities.

2. Methods
To create a use case, there are several steps that must be taken into account, including:

- Identifying business people
- Identify use cases as business requirements
- Create diagrams as use case models
- Document narrative use cases as business requirements

The practical guidance that needs to be considered when creating a use case diagram is:

- Set the context for the target system
- Identify all actors
- Identify all use cases
- Defines all associations of each actor and each use case
- Evaluate each actor and also each use case, in order to find possible improvements
- Every use case for include dependencies
- Evaluate each use case to exclude dependencies
- Evaluate each actor and also each use case for generalization.

3. Result and Discussion
After the researcher collected primary and secondary data, the researcher analyzed the system being used and created a diagram using use case diagram tools. Following are the results of this analysis in the following figure
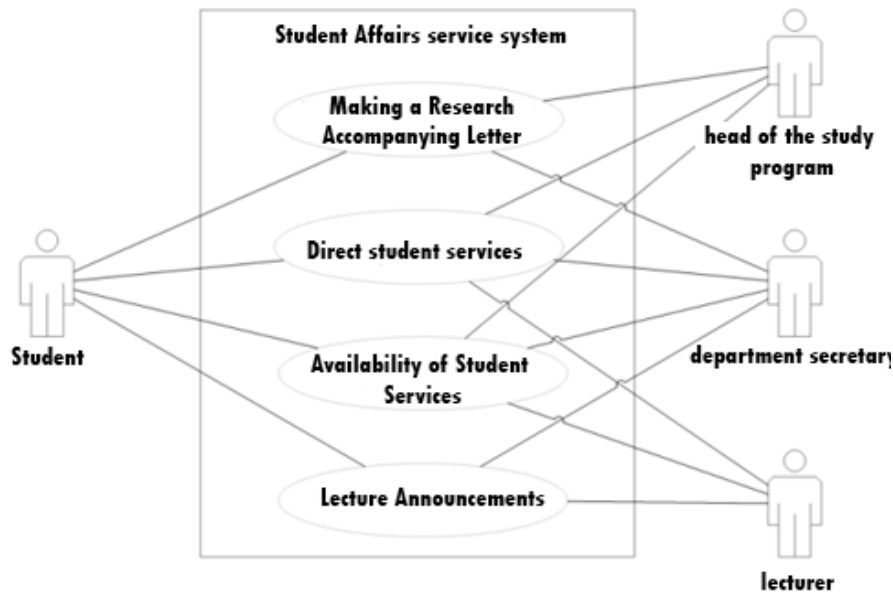
Fig. 1. Usecase Diagram

After the researcher carried out the analysis, the researcher found problems with the running system. The researchers evaluated these problems in the following table.

No	Problem	Solution
1	Lack of information to find out the availability of lecturers or study program secretariats to serve students. Especially when the lecturer or study program secretariat is busy completing urgent assignments and students (in turn) ask about the availability of student services to the busy lecturer or study program secretariat. This results in an increase in the unavailability of student services	Design and develop proposed procedures for the availability of new student services to inform the status of lecturers or study program secretariats in providing student services. You can view the availability of student services by lecturers or study program secretariat online.
2	The process of student services by lecturers/study program secretariat/and study program heads is random; that is,	Design and build proposed new queuing procedures. As with procedures for the availability of student services, queuing can be

	whoever enters the room quickly at the right time (who is willing to serve students) is the one who will be served even though there are students who are waiting in front of the lecturer's room/study program secretariat/and the head of the study program who wants to be met. One of the reasons is because the students who are the last to arrive don't know if there are already people in line before them	done online and the order of the queue can be monitored by students queuing by utilizing information technology.
3	In the service for making research accompanying letters at the study program secretariat, there is still negligence among officers in implementing one of the regulations, namely "you can only make one letter until you get a reply from the intended place of observation". With this negligence, students can sometimes write more than one letter at once. Apart from that, the study program secretariat still uses word processing software (for example Microsoft Word) which manually changes the letter template so it takes quite a long time.	Design and develop proposed procedures for creating accompanying letters for new research. This procedure will utilize information technology which can shorten the preparation of research accompanying letters.
4	When a lecturer is unable to attend the first meeting of the new semester, the lecturer will have difficulty notifying students registered in their class of their absence because they have never met face to face and the class leader for the class has not been determined so there is no valid contact who can be contacted regarding the absence.	Design and build a proposed new lecture announcement procedure that can deliver announcements quickly by utilizing information technology.

The system design that the author carried out in this research is based on the results of analysis and evaluation of the ongoing system with the main focus being the Making of Research Accompanying Letters, Direct Student Services, Availability of Student Services, and Lecture Announcements. The design of this system is depicted in the use case diagram in the following figure.
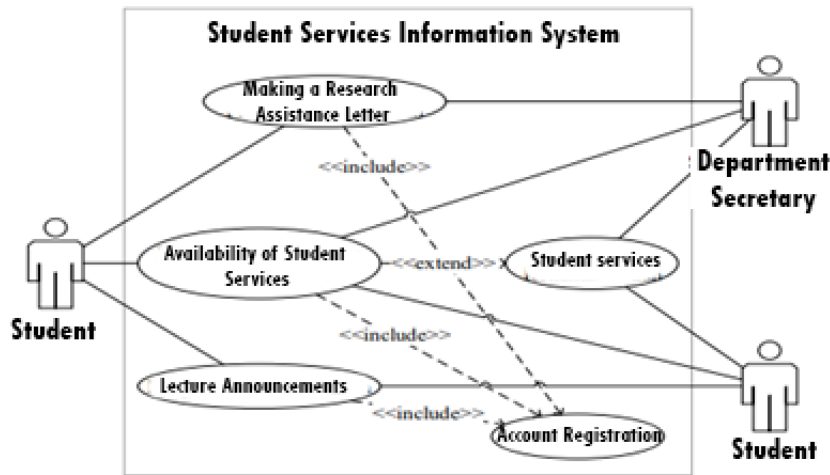
Fig. 2. Use Case Diagram of the Proposed Student Services Information System.

4. Conclusion

Use Case Diagrams are used to describe the system from the perspective of the user of the system, so that making use case diagrams is more focused on the functionality of the system, not based on the flow or sequence of events. A use case diagram represents an interaction between actors and the system.

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