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Entrepreneurship Information System Design with ICONIX Process for a Student Business Unit Marketplace

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Abstract. Indonesia consistently encourage youth generation to become entrepreneurs who have high competitiveness. University plays a role in developing the entrepreneurial spirit and activities of each student as a representative of the youth generation. University provides entrepreneurship courses that are expected to foster interest and encourage the entrepreneurial spirit of students in creating business units. Student business units can create products or services needed by the community and can employ others. This study aims to design student entrepreneurship information systems. The student entrepreneurship information system is a web application-based marketplace to accommodate and promote all products and services of each student business unit. The results of research in the form of UML design with the ICONIX Process approach can provide an overview development of student entrepreneurship information systems in determining the specifications of user requirements, system requirements specifications, and system design.

Keywords— *entrepreneurship information systems, student business units, marketplace, UML, ICONIX Process*

1. Introduction

Indonesia consistently foster a spirit of entrepreneurship in the youth generation. University plays a role in developing the entrepreneurial spirit and activities of each student as a representative of the youth generation. University provides entrepreneurship courses that are expected to foster interest and encourage the entrepreneurial spirit of students in creating business units. The process of growing entrepreunership interest in students need some stimulations. So later, they can think and act like real entrepreneurs [1,2,3].

The entrepreneurial activities of students in developing business units must ceaselessly be improved, so students can create products or services needed by the community and can employ others [4]. Currently, most students have mindset as job seekers when they graduate, not job creators. Universities only produce a large number of graduates who rely solely on academic skills, but do not make them creative and independent graduates. Student entrepreneurship activities needs to be trained and supported during the learning process in university. Students tend to have no willingness for starting their own "company" because of an excuse that being an enterpreneur need a lot of money. On the other hand, parents are more likely to encourage their children to find work or become employees when completing their education in college [5].

University needs to create a campus environment that supports entrepreneurship so that it will motivate students and foster entrepreneurship student interest. Entrepreneurship courses in higher education becomes one of the solutions to provide knowledge and experience for attracting its students's entrepreunership interest [6,7,8]. Teaching entrepreneurship courses can encourage and facilitate the potential spirit of entrepreneurship in students so they can create business units in the form of products and services that are in accordance with the needs of the community and have economic value. The success of student business units is expected to create products or services needed by the community and can employ others. Universities must provide facilities to accommodate and promote all products and services of each student's business unit.

Based on these descriptions, this study aims to design student entrepreneurship information systems. The student entrepreneurship information system is a web application-based marketplace to accommodate and promote all products

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and services of each student business unit. The results of UML design with the ICONIX Process approach can provide an overview development of entrepreneurshipl information systems in determining the criteria for user requirements specifications, system requirements specifications, and system design.

2. Literature Review

2.1 Entrepreneurship Information System

The entrepreneurship information system is an entrepreneurial management system that can encourage its members to seize business opportunities with available resources and act appropriately in bringing creative ideas into the real world creatively [9]. The entrepreneurship information system can also be called an e-marketplace which is a concept of utilizing Information and Communication Technology as a forum that brings together buyers and sellers to accommodate and promote all products and services [10].

2.2 Unified Modeling Language

Utilization and development of information systems in an organization is essential and must be implemented so that each organization can compete globally with each other. The initial stage in developing information systems is modeling. The use of models in the development of an information system is expected to meet user needs appropriately. The use of the model aims to minimize the cost of changes before the information system is implemented [11].

Unified Modeling Language (UML) is a visual modeling that describes, builds and records the development of information systems that have an object-oriented paradigm. UML provides several diagrams that can be used to facilitate each party in modeling the system to be developed [12,13].

2.3 ICONIX Process

ICONIX Process is a process that uses case driven. In the Iconix process, the use case that has been designed is the basis for determining the model and behavior of the system being built. The Iconix Process provides a minimalist and efficient approach to the use of UML because it only consists of a number of steps that are deemed necessary and sufficient to carry out an object-based analysis.

ICONIX Process focuses on model design as system architecture. This model consists of dynamic models that will describe the behavior of the system and static models that will be coding. In the dynamic model there are use case diagrams, robustness diagrams, and sequence diagrams. Whereas in the static model there are domain models, domain model updates, and class diagrams.

- Use case diagrams are representations of interactions between users and the system. Use case diagrams illustrate the expected functionality of the system [14,15,16].
- Robustness diagrams are detailed representations of object designs from use cases (and then to code). Robustness diagrams help bridge the analysis gap with the design that has been created. Robustness diagrams are used to double-check that all possible actions have been discussed. Writing robustness diagrams are divided into a basic course (successful scenario) and alternate course (failed scenario) [17,18].
- Sequence diagram of interactions between objects that will be arranged in the system with a sequence or time series. Sequence diagrams are used to illustrate scenarios or a series of steps that are performed in response to an event to produce a specific output [19,20,21].
- Class diagram illustrates the relationship between classes and a detailed explanation of each class in the design model of a system and shows the rules and responsibilities of the entities that determine the behavior of the system. Class diagrams also show the attributes and operations of a class and constraints related to the object being connected [22,23].

3. Research Method

This stage discusses the methods used in research. This study went through the stages of data collection and analysis methods.

3.1 Data collection

The stages of data collection are done by interview and literature study. The stage of the interview aims to obtain information related to problems and needs in the design of entrepreneurshipl information systems. The literature study stage aims to get references or descriptions related to student entrepreneurship information systems.

3.2 Analysis Method

The analytical method is the stage of managing information that has been obtained from the data collection process. Information processing is carried out with the following steps:

- Analysis of needs problems are needed in designing student entrepreneurship information systems.
- Designing student entrepreneurship information system in accordance to the objectives.
- Designing a student entrepreneurship information system database.

4. Result and Discussion

Stages of results and discussion explain the results of UML design with the Iconix Process approach consisting of use cases, robustness diagrams, sequence diagrams and class diagrams.

4.1 Use Case Diagram

Users of student entrepreneurship information systems consist of admin, seller, and buyer. Each user has their own access rights in the student entrepreneurship information system in accordance with the arrows. Admins have access to be able to manage admin profiles, verify seller data, verify product data, process comment data, and view reports. Sellers have access to manage products, manage seller profiles, and provide ratings and comments. Whereas Customers have access to manage buyer profiles, view products, select products, give ratings and comments, and can register as sellers if they are students as shown in Figure 1.

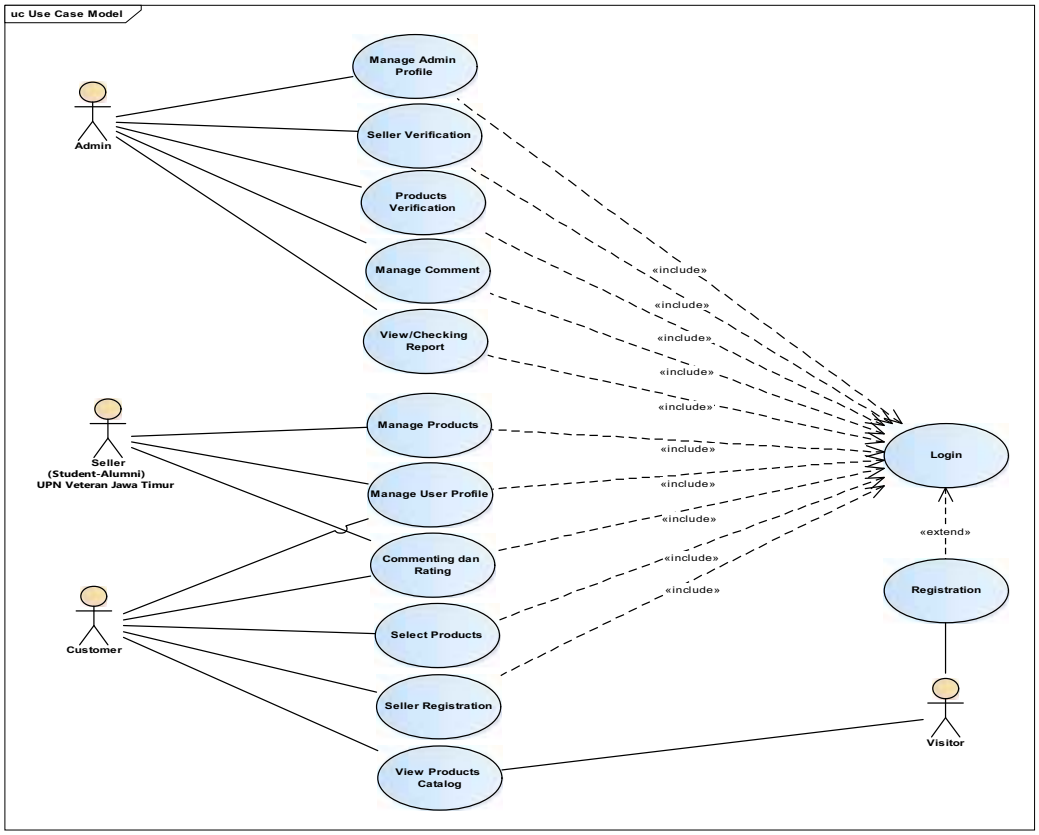

Figure 1. Use Case of Student Entrepreneurship Information System

4.2 Robustness Diagram

Robustness diagram on the process of managing student entrepreneurship information system products, the seller opens a product added page to enter a new product. The new product will be validated by the admin before it is displayed on the website. New products that have been validated by the admin will be displayed on the product catalog page. While the new product is not validated, the system will send a notification to the seller that the new product does not meet the criteria as shown in Figure 2.

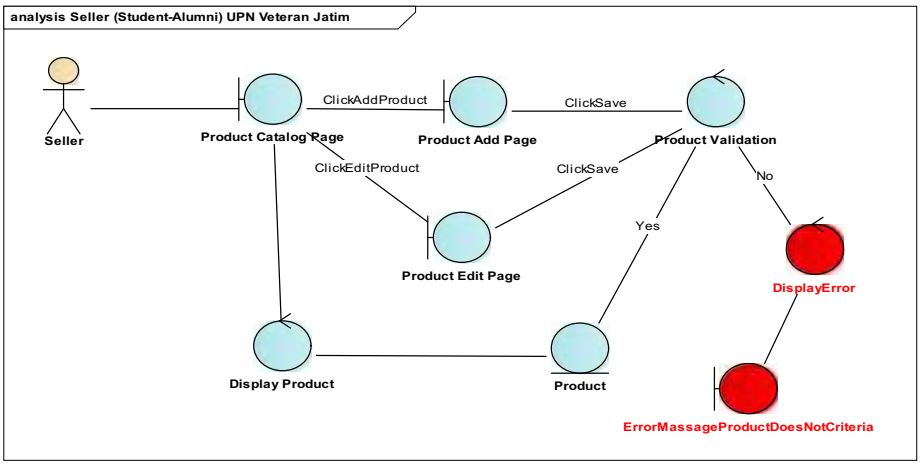

Figure 2. Robustness Diagram Manage Product Student Entrepreneurship Information System

4.3 Sequence Diagram

Sequence Diagram in the process of managing student entrepreneurship information system products, the seller can manage the product in the form of adding products, editing products, and removing products. Add products can be done by the seller opening the product page then opening the product add a page to add new products. New products that have been added will await validation from the admin before being displayed on the website. New products that have been validated will then be displayed on the product catalog page as shown in Figure 3.

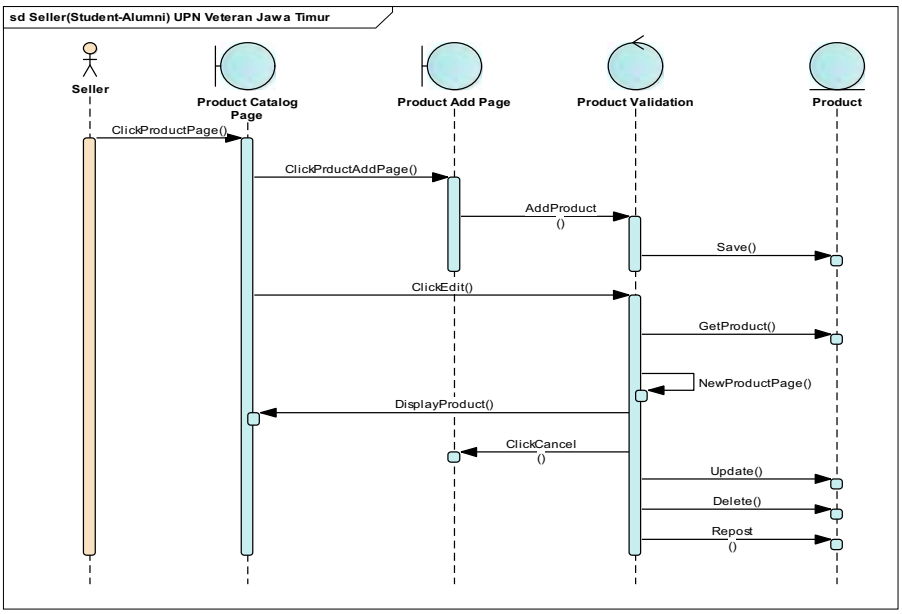

Figure 3. Sequence Diagram Manage Product Student Entrepreneurship Information System

4.4 Class Diagram

Class diagrams on student entrepreneurship information systems there are 23 interconnected classes consisting of users, wishlist, level, detail level, faculty, study program, type users, product, type product, product condition, product category, image product, rating, rating point, report, type report, report seller, notification, nota, detail nota, transaction, track transaction, track status. Each class also has attributes and operations that are interconnected as in Figure 4.

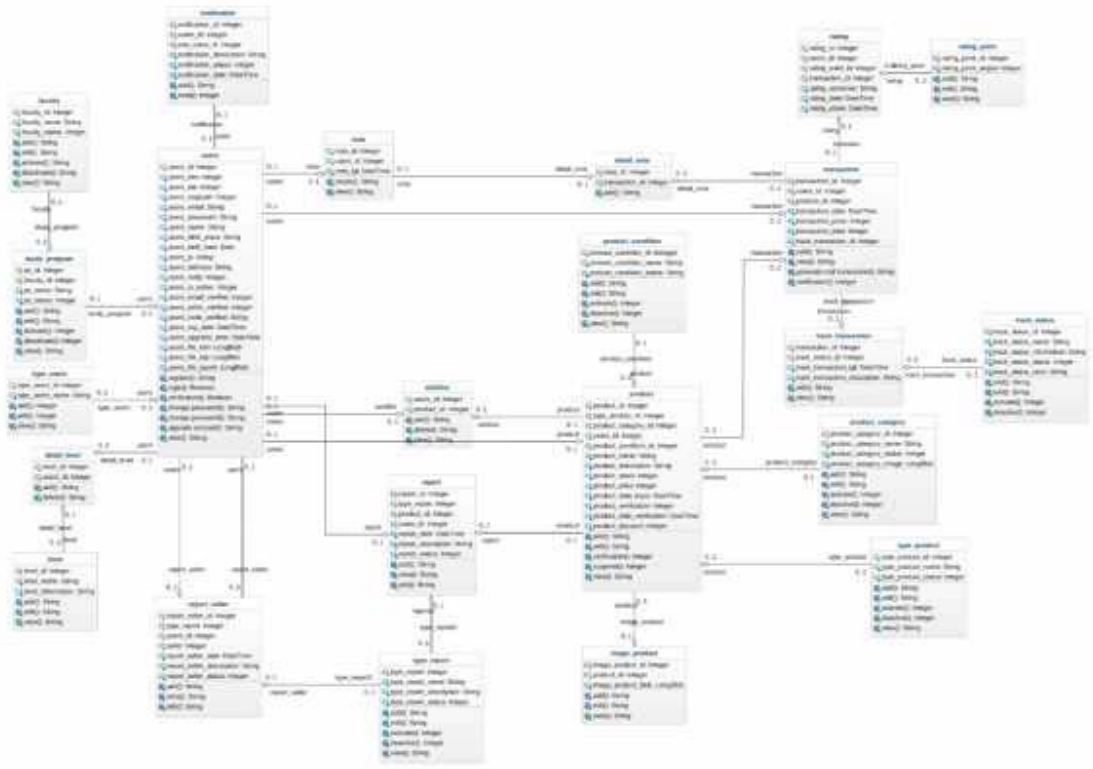

Figure 4. Class Diagram of Student Entrepreneurship Information System

5. Conclusion

Based on the results and discussion above, the conclusions in this study are as follows:

1. Each university plays a role in developing entrepreneurial spirit and activities for each student to create a business unit.
2. Modeling using the Unified Modeling Language (UML) with the ICONIX Process approach can provide an overview of assisting the development of student entrepreneurship information systems in determining the criteria of user requirements specifications, system requirements specifications, and system design.
3. The results of the UML design with the ICONIX Process approach can develop the student entrepreneurship information system to accommodate and promote all products and services of each student business unit.

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