

ITB AAS Indonesia Informatics Study Program Value Information System

1st Nendy Akbar Rozaq Rais

¹Institut Teknologi Bisnis AAS Indonesia

¹Jl. Slamet Riyadi No. 361 Windan, Makamhaji, Kartasura, Sukoharjo, Indonesia

¹ab.terate@gmail.com

Abstract—*The Grade Management Information System (SIPAN) is a web-based grade information system in the ITB AAS Indonesia informatics study program which is used to support the activities of lecturers in conveying the grades of the courses taught, administrative officers in terms of grade recapitulation, student grade information which is private, and supports activities of the study program coordinator in monitoring the development of academic activities in terms of grades. The aim and objective of developing SIPAN is to assist higher education institutions in managing student grades. With web-based software, lecturers can submit student grades at any time within a predetermined time period and have an internet connection. Likewise with students, they can see their own grades anytime, anywhere, as long as they have an internet connection. The study program coordinator can monitor the extent to which lecturers at their home base match their grades. The expected final result will be the realization of a well-integrated information technology-based student grades management process, neat record keeping, and integration with the Attendance Information System.*

Keywords: information systems, websites, grades, universities.

I. INTRODUCTION

The Grade Management Information System (SIPAN) is a web-based information system that is used to support the activities of lecturers in conveying grades for courses taught, administrative officers in terms of grade recapitulation, student grade information which is private, and supports the activities of study program coordinators in monitoring development of academic activities in terms of values.

The aim and objective of developing SIPAN is to assist higher education institutions in managing student grades. With web-based software, lecturers can submit student grades at any time within a predetermined time period and have an internet connection. Likewise with students, they can see their own grades anytime, anywhere, as long as they have an internet connection. The study program coordinator can monitor the extent to which lecturers at their home base match their grades.

Tino Ferry Efendi previously carried out application creation in the education sector in

2021 with the title E-Learning Application Design at SMK Pelita Bangsa during the Covid-19 Pandemic. The research explains that the importance of technology in the field of education, in this case, is the application of learning during the Covid era. By holding the e-learning design, it is hoped that it can help the teaching and learning process between teachers and students so that the learning process runs effectively and efficiently.

The expected final result will be the realization of a student grade management process based on information technology that is well integrated, neatly recorded, and integrated with the Attendance Information System. In this way, the management of student grades becomes more clear and transparent for every university party who needs this information, including students and executive staff. Apart from that, the system is also expected to have a responsive feature where the system will adjust the content display according to the device used by the user.

II. RESEARCH METHODS

The research method used in this research is a prototype method to make it easier to apply to users. The Prototype Method is a software development method that allows interaction between system developers and system users, so that it can overcome incompatibility between developers and users (Pressman, 2012: 50). An image of the prototype method is shown in Figure 2.1 below:

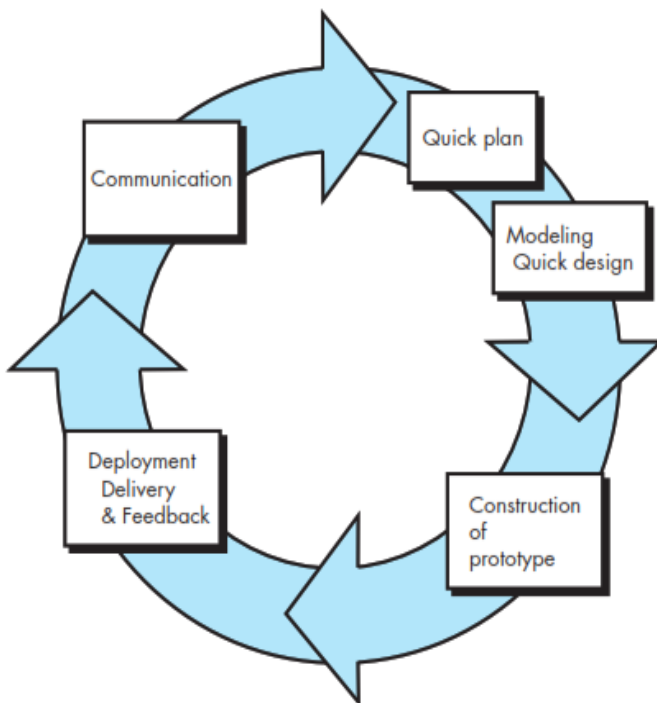


Figure 2.2 Prototype Methode

III. RESULT AND ANALYSIS

The value management information system will be modeled using the UML approach so that in this chapter we will explain Usecase diagrams, Activity diagrams, Sequence diagrams and class diagrams. Furthermore, this chapter will also explain database design using the ER Model along with its table structure and user interface design for the value management system.

3.1 UML (Unified Modeling Language)

In this value information system project there are 4 users who use the system, in accordance with the previous system requirements identification report. Users who use the system are

Administrative Officers, Students, Lecturers and Study Program Coordinators who will later be connected to the internet to be interconnected with the Value Information System. Following is the System Architecture shown in the figure 1.3

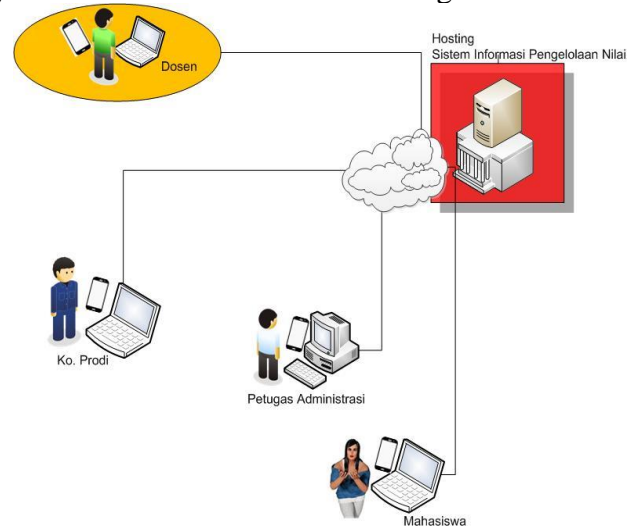


Figure 3.1 System Architecture

3.2 UseCase

Usecase is a technique used in the development of software or information systems to capture the functional requirements of the system in question. Usecase describes the interactions that occur between 'actors'—initiators of the interaction of the system itself with the existing system. A usecase is represented by a sequence of steps. simple. From the results of the needs analysis carried out in the previous report, the Usecase system diagram is shown in Figure 3.2:

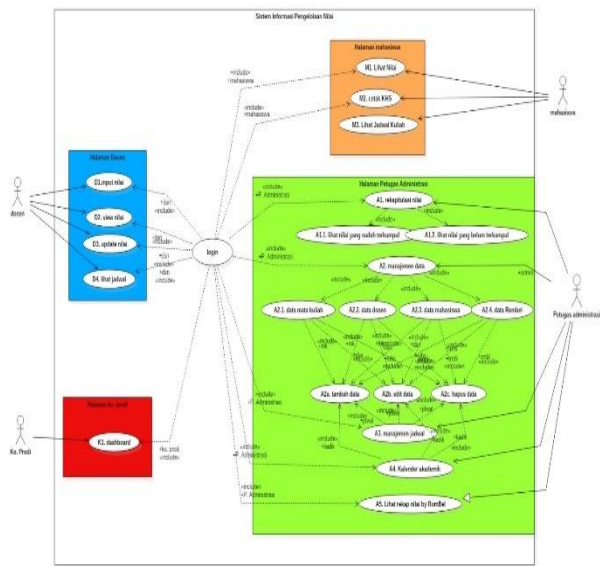


Figure 3.2 Usecase System

3.3 Activity Diagram

An Activity Diagram is a diagram that depicts the workflow or activities of a system or business process. Activity diagrams describe system activities not what actors do, so what activities will be carried out by the system. The following is the Activity login diagram in the value information system and can be seen in Figure 3.3 and figure 3.4. Student activity diagram see grades:

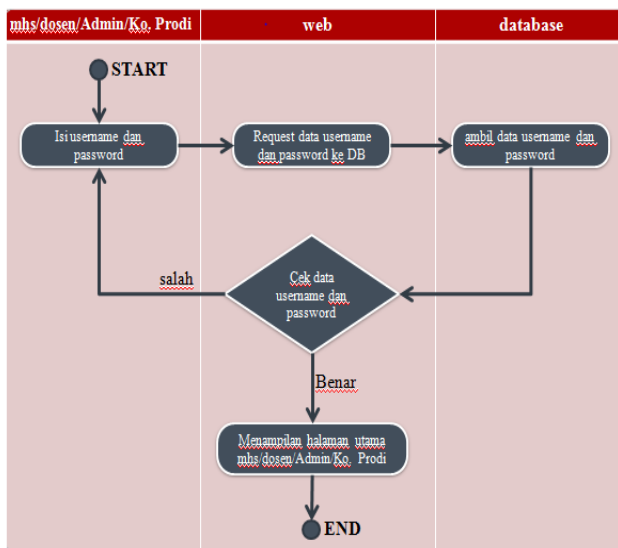


Figure 3.3 Activity Diagram Login User

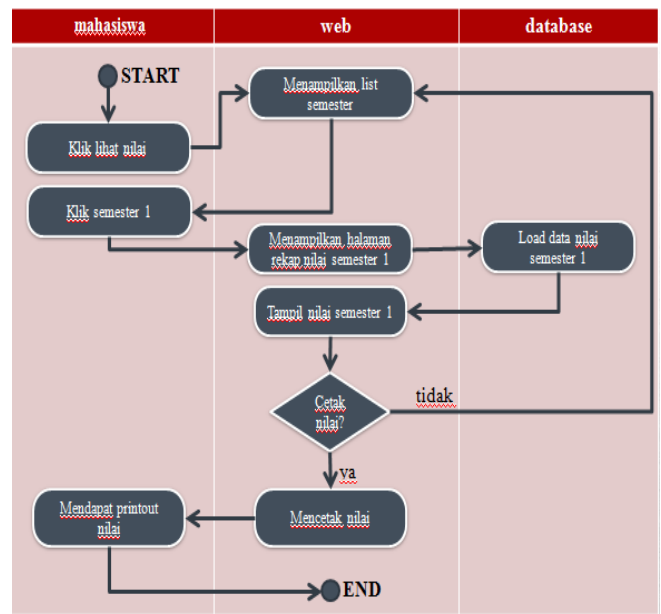


Figure 3.4 Student activity diagram see grades

3.5 Sequence Diagram

A sequence diagram is a diagram that shows or displays interactions between objects in a system that are arranged in a sequence or time series. Sequence Diagrams are used to describe a scenario or series of steps taken as a response to an event to produce a certain output. The following is a system sequence diagram created based on the use case discussed in the previous sub-chapter, which can be seen in Figure 3.5 and figure 3.6:

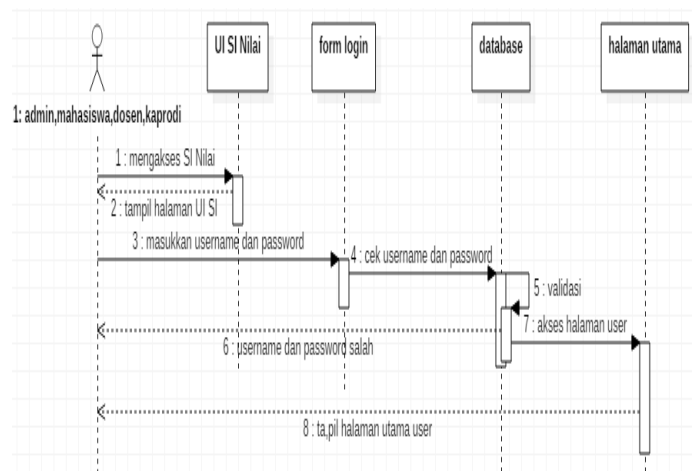


Figure 3.5 Sequence Diagram User Login

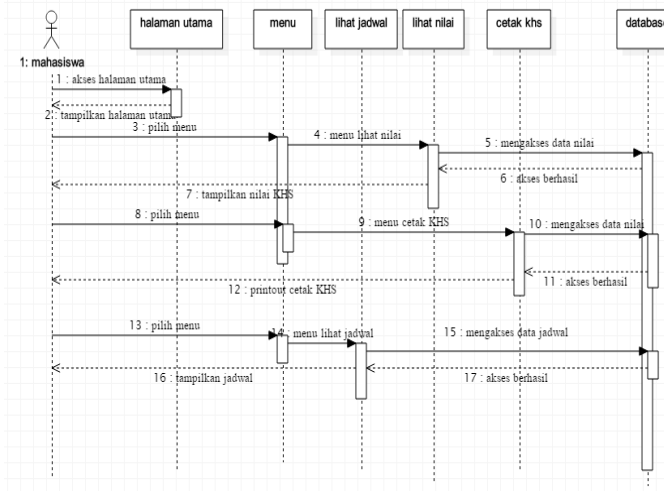


Figure 3.6 Sequence Diagram Student

The explanation in Figures 3.5 and 3.6 is that after students have successfully logged in, students will be faced with the main page, then students can choose several menus to access.

3.6 Class Diagram

A Class Diagram is a diagram that shows or displays the structure of a system. The system will display the class system, attributes and relationships between entities, which can be seen in Figure 3.7 below:

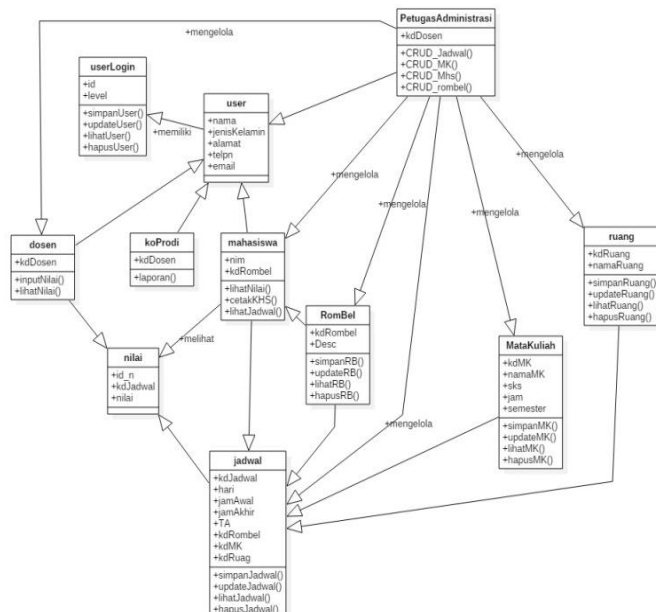


Figure 3.7 Calss Diagram System

Based on the picture above, it can be explained that there are four users of the system that runs on the value information system, namely the student administration officer, lecturer and the Head of Study Program. there are other classes such as course groups and rooms whose data will later be used to become reference data for classes and schedules which will later become reference data for inputting grades

3.7 Entity-Relationship Diagram (ERD)

Entity-Relationship Diagram (ERD) is a database modeling method used to produce a conceptual schema for a system's semantic data types/models. Based on the Usecase, Activity diagram, Sequence diagram and class diagram described in the previous subchapter, the ERD for the value management information system has identified entities, attributes and relationships which can be seen in Figure 3.8 below:

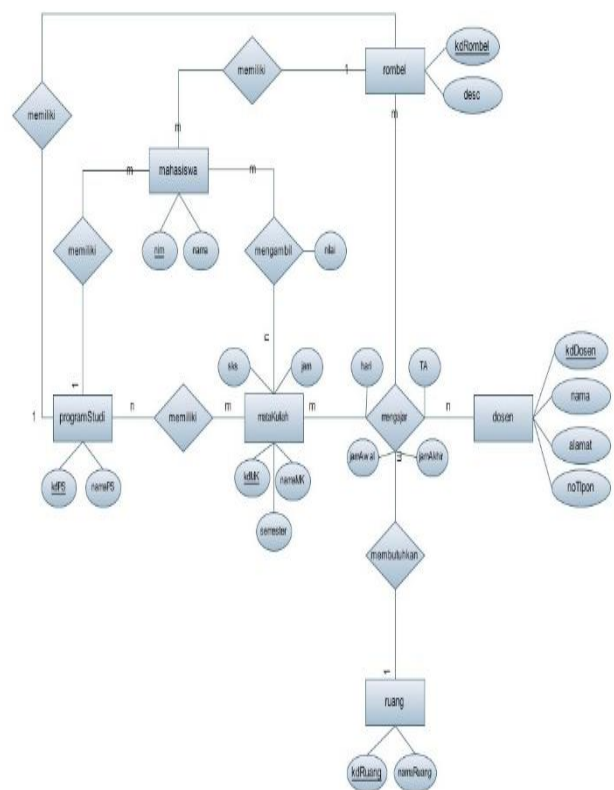


Figure 3.8 Entity-Relationship Diagram (ERD)

In the image above, several attributes are explained, namely:

- a. Students with ID and name attributes

- b. Study program with kdPS attributes and PS name
- c. Courses with the attributes kdMK, credits, hours, MK name and semester
- d. Space with attributes kdRoom and nameRoom
- e. Lecturer with kdLecturer attributes, name, address and telephone number
- f. Rombel with kdRombel and desc attributes

3.8 User Interface Design

A mockup is a visual or preview of a "flat" concept that is given a visual effect so that the result really looks like a real thing, a mockup can provide a real picture of a design concept, how the concept will look later if it has been applied to or into a real object, is it visible? good or not so good.

Mockups can also add visual value to a design concept, for example, if a design is made in a flat version, the design will look ordinary, but by using a mockup, the design will look more attractive and attract the client's attention, of course in a project environment. Mockups are usually used for presentation purposes by designers to clients to later be given to programmers to be converted into a real form, an HTML web version for example.

The Grade Management Information System in the informatics study program at ITB AAS Indonesia is an information system that manages student grade data which will later be used by administrative users, lecturers, students and study program co. In this system, it is hoped that it will provide convenience to each user, of course with different access rights according to their needs. An analysis of both functional and non-functional system requirements has been presented in the previous chapter.

3.9 Administrative Officer User Interface

Administrative officer users are users who manage all data in the academic environment, including student, lecturer, schedule and recapitulation score management. The user interface can be seen in Figure 3.9 to Figure 3.13 below:

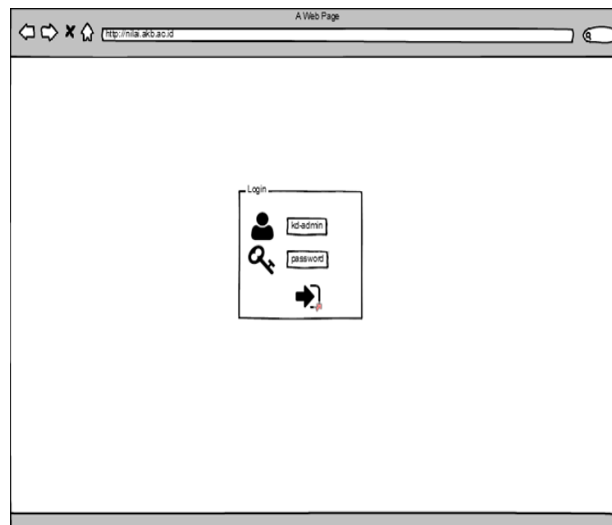


Figure 3.9 Login Administreator

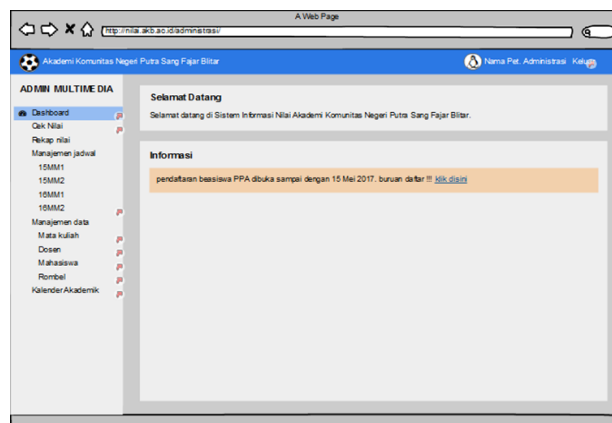


Figure 3.10 Main admin page

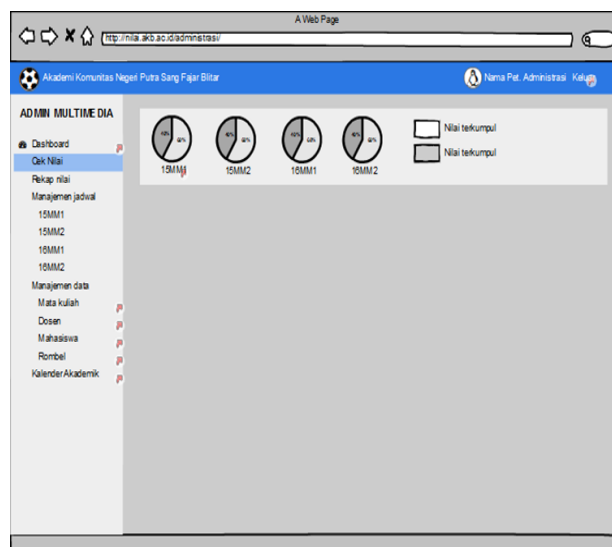


Figure 3.11 Accumulated value page

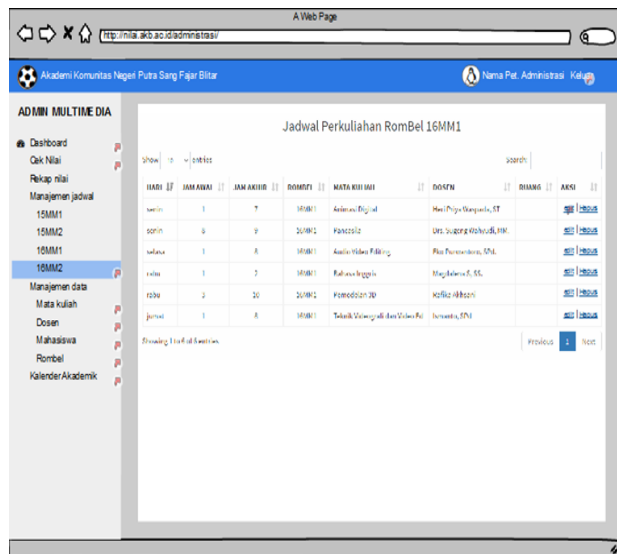


Figure 3.12 Schedule Page

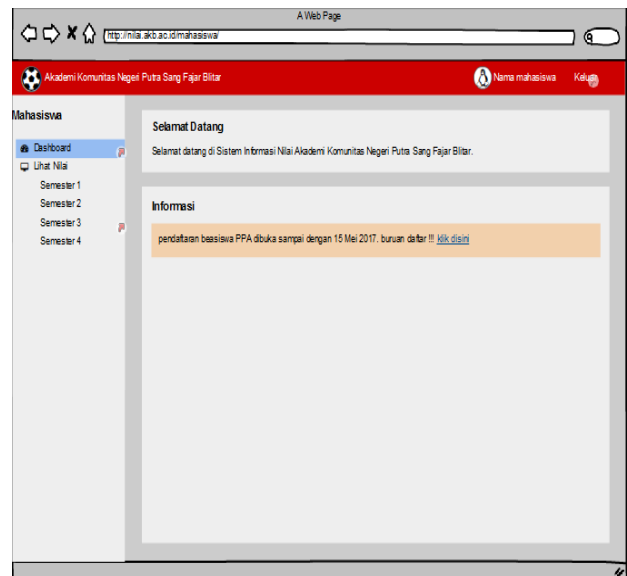


Figure 3.14 Student home page

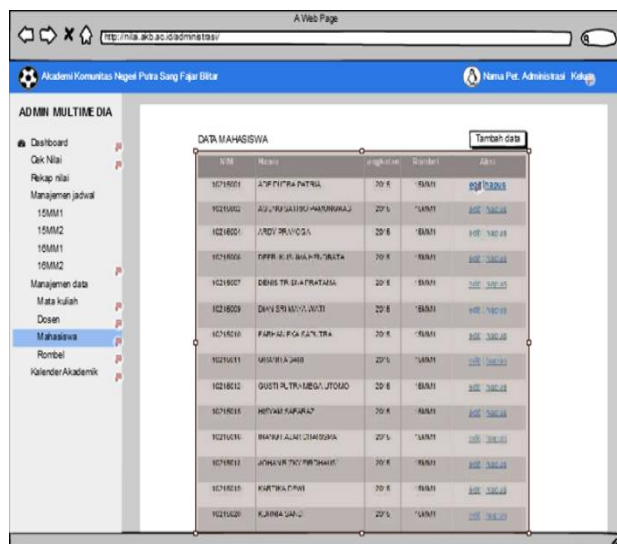


Figure 3.13 Students Page

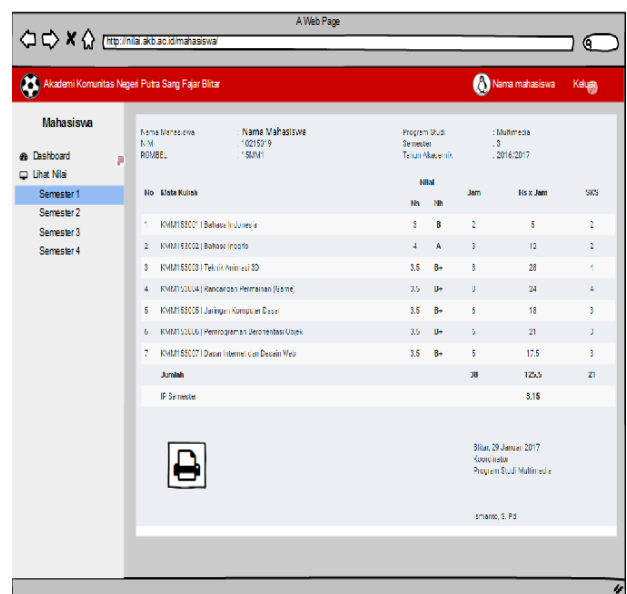


Figure 3.15 Page to view student grades

3.10 Students User Interface

Students are users studying in the ITB AAS Indonesia informatics study program. In this system, students are given access rights to see the grades entered by the lecturer.

After students have successfully logged in, the system will display the main page for students as in Figure 3.14 to 3.15 below:

3.11 Teacher User Interface

Lecturers in this system can manage (insert and update) grades for courses taught in the current semester. The lecturer's main page if you log in successfully is as shown in Figure 3.16 to 3.18 below:

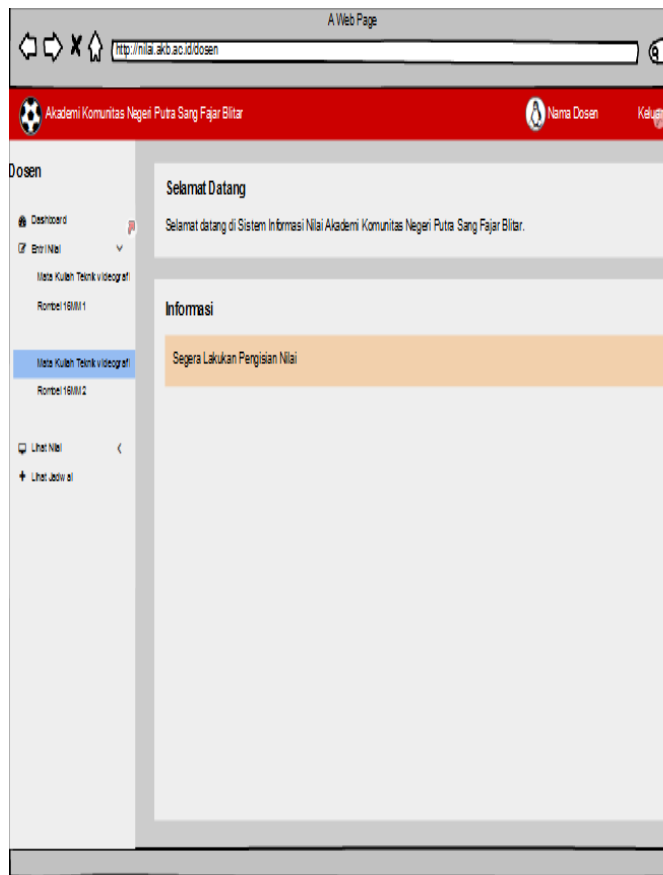
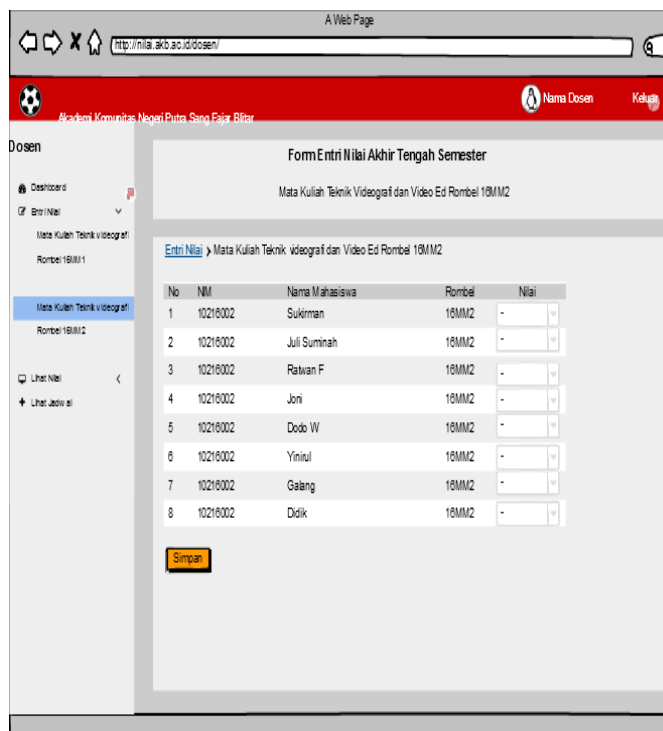


Figure 3.16 Teacher Home Page



3.17 Value input page

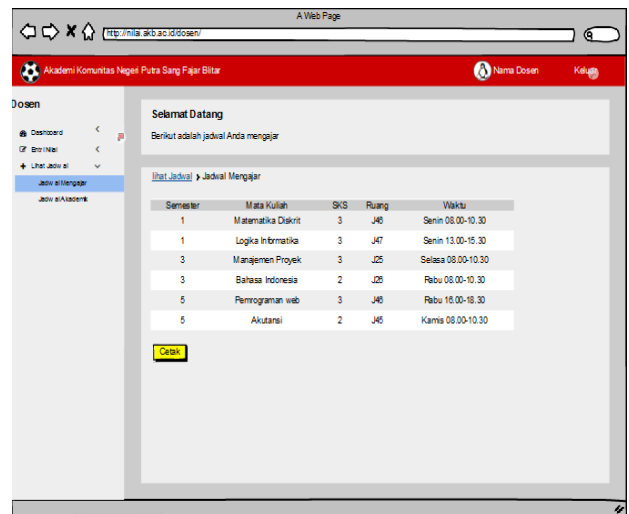


Figure 3.18 Schedule viewing page

3.12 Head of Study Program user interface

The study program coordinator in this system is only given access rights to see the summary of grades presented in a dashboard as in Figure 3.19 below:

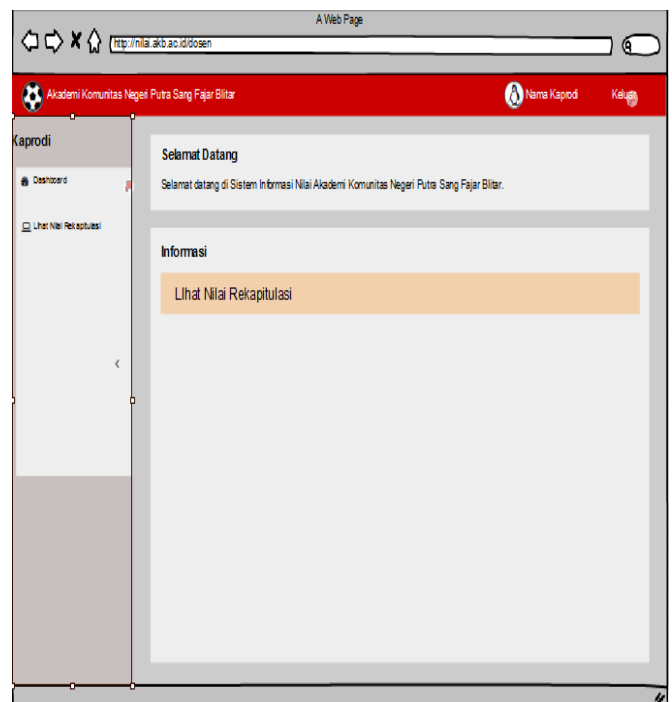


Figure 3.19 Head of Study Program Home Page

3.13 Web System Creation Strategy

The stage of the system creation process is part of information system development where this activity is the activity of obtaining and integrating physical and conceptual resources that produce a

working system. Then the system implementation stage is the stage of placing the system so that it is ready to operate. In carrying out these activities several things need to be done, namely:

- a. Data collection (data gathering). The current system is running but is still based on interrelated files. Therefore, it is necessary to collect data and information generated from the existing system. Collection of reports, print-outs, etc., both existing and expected to be in the new system. Interviews and questionnaires of people involved in the system may also need to be conducted.
- b. System Analysis If the data collection stage is carried out involving clients or information system users, then starting from the analysis stage it is mostly carried out by the developers themselves. Analysis of the system currently running and the system to be developed. Defines the objects involved in the system and system boundaries.
- c. System design based on UML, designing a database using the ER-D concept and creating a physical database. Designing the application input output (interface) and determining the forms of each existing module. Design the application architecture and if necessary also determine the application framework. At this stage or previously, the technology and tools that will be used both during the development stage and during implementation are determined.
- d. Writing PHP-based Scripting (web-based applications). This is just one stage of the system development life cycle. This stage is carried out by one or more programmers. If the system analysis and design stages have been carried out well, then the portion of the coding stage is not large.
- e. Testing/testing. This stage is carried out by Quality Assurance from the developer to ensure that the software being built is running as expected. One method is to input some data into the new system and compare the results with the old system. If

necessary, this stage can be divided into two, namely testing by the developer (alpha testing) and testing by the user (beta testing).

- f. Installation for Client-Server application development (online) and then testing again to see if the system is running well.
- g. Training to users. The developer provides training for users of this information system application program. The material that will be provided is related to system operations including activities to prepare input, process data, operate the system, maintain and maintain the system.
- h. Maintenance/Maintenance. The aim is to ensure that the system used by the user is truly stable and free from errors and bugs. Maintenance will be carried out for six months.

VI. CONCLUSION

From the results of the previous discussion, several conclusions are drawn as follows:

1. The value information system makes it easier for users, namely Lecturers, Students, Admin and Kor.Prodi in processing grades.
2. Can help present system flow to programmers in building an accurate and relevant value processing Information System.
3. Processing good grades will make decision making easier, thereby improving the performance of future higher education institutions.
4. The value information system that the author is designing is expected to minimize weaknesses and provide solutions in building a computerized system for better value data processing activities.

VII. SUGGESTIONS

Suggestions for further research should be carried out to continue this research, namely building a Value Information System based on a website and in the form of a smartphone application.

REFERENCES

- [1] Arihta, Eka Juanda, 2019, Information System for Web-Based Student Grade Data Processing at SMP Negeri 3 Hamparan Perak, Faculty of Science and Technology, Panca Budi Development University, Medan.
- [2] Kasman, Hendra, 2017, Design of a Web-Based Student Grade Information System at SMAN Tunas Bangsa Pulau Burung, Journal of Computer Science and Business, vol 8, no 2, pp. 2001-2013.
- [3] Rais, Nendy Akbar Rozaq, 2021, Designing a School Information System for Promotional Media in the Corona (Covid-19) Pandemic Era Case Study: SMK Pelita Bangsa Sumberlawang, JIKOBIS, Vol 1, No, 1, pp. 032-038.
- [4] Widyastuti, Handini., and Rizat, Sakmir, 2020, Design of a Web-Based Student Score Data Processing Information System, Journal of Industrial Management and Technology, vol 1, no 1, pp. 19-26.
- [5] Muqorobin etc, 2020, Web-Based Krikilan Village Information System, BUDIMAS, vol 2, no 2, Sukoharjo
- [6] Efendi, Tino Feri, etc., 2021, E-Learning Application Design at SMK Pelita Bangsaduring the Covid-19 Pandemic, Turkish Journal of Computer and Mathematics Education (TURCOMAT), vol 12, no 12, pp. 4652-4658
- [7] Rais, Nendy Akbar Rozaq., Kusrini., Eko Pramono., 2018, Evaluasi Implementasi Sistem Informasi Kemahasiswaan di Sekolah Vokasi Universitas Muhammadiyah Surakarta, BISNET, vol 1, no 1, pp. 51-55, <http://p3bmii.org/jurnal/vie>