THE DESIGN OF AN ONLINE INFORMATION SYSTEM OF NEW STUDENT USING WEB ENGINEERING METHOD

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Abstract - Advances in information technology have been felt in all areas, including the field of education. Information technology can be usefully applied to new admissions. Currently, the new admissions system used by some schools still use a manual system, the prospective students usually come directly to the school in order to enroll as a student and take the entry test. This is, of course, inefficient because it requires students to come directly to school. Thus, this author proposes to create a new student-based design for accepting new students online that can be applied later by both junior high schools and senior high schools with the aim to make recievenig new students more efficient. The method used is "Web Engineering."

Keywords: Information technology, Web Engineering

I. INTRODUCTION

The advancement of information technology today encourages us to be able to create a medium that can access information quickly and accurately. One of the opertunity for existing information services in secondary education institutions is at the time of recieving new students for the new school year. Admissions is an administrative process that occurs every year for the selection of prospective students based on academic grades in order to continue their education at a higher level. During admissions, data processing implemented by the school is still done using conventional means. The problem that occurs in the new admissions process is that prospective students have to come and queue up to register in the data collection process of prospective students.

Because of these problems, schools should build a new online student information system in order to facilitate collecting data from prospective students and facilitate students' registering wherever they are by registering through the website. One method for building an information system for new student admission is using web engineering method. This method is a software based on technology and standards from the World Wide Web Consortium (W3C), for example contents and services in user interface browser web.

This study aims to design an online admissions information system with web engineering methods in order to improve the efficiency of the new admissions process and facilitate students in obtaining information about the intended school and registering without having to come directly to the school.

Of several stages contained in the web engineering methods, this author only performed engineering activities until the design stage, whereas the implementation and testing phases submitted to each school which needed it with the hope that this design can assist the school in establishing a new student information system in accordance with the desire of each school. In this study, the authors conducted data collection by direct observation in some high schools in the city of Palembang which have similarities in terms of data processing for new admissions. Then did a question and answer session with the school to obtain information related to the data that is required in this research.

II. THEORY

2.1. Information Systems

According Jogiyanto (2005) [1], An information system is a system in an organization that brings daily transaction processing needs, support operations, managerial and strategic activities of an organization and provides certain outside parties with the necessary reports.

2.2 Web Engineering

Web Engineering is the application of a systematic and quantitative approach (concepts, methods, techniques, tools) for cost effective needs analysis, design, implementation, testing, operation, and maintenance of web application quality (Kappel, 2004: 7) [2]. Meanwhile, according to Pressman (2001: 769) [4], Web Engineering is a process used to create a high-quality applications. There are a number of activities involved in Web Engineering, namely:

a. Formulation
b. Planning
c. Analysis, which is conducted from 4 sides, namely:
    1. Analysis of the information content
    2. Analysis of interaction
    3. Functional analysis
    4. Analysis of configuration

d. Engeneering: including the information content of the design and architecture of the web design.
e. Implementation and testing

2.3 Unified Modeling Language (UML)

According to Widodo Herlawati Pudjo Prabowo (2011: 6) [3], UML stands for Unified Modeling Language which is a standard modeling language. When we make models using the UML, that must be followed; models must relate to one another in ways that conform to existing standards. UML is not just a diagram, but also tells the context.

There a variety of diagram type in UML. These types are:

a. Use Case Diagram
b. Activity Diagram
c. Class Diagram
d. Statecart Diagram
e. Sequence Diagram
f. Collaboration Diagram
g. Component Diagram
h. Deployment Diagram

III. RESULTS AND DISCUSSION

Based on the existing problems, this author provide a solution by creating a web based new student information system using the PHP programming language and MySQL database using the Web Engineering methodolgy. By applying this methodology, we make it easier for schools in conducting new student data collection and for prospective students who are able to register whereever they are.

The stages of activities for designing this this system are detailed in the following sections:

3.1 Formulation

Formulation is a series of web engineering activities are carried out in schools which include: school information (location, profile, agenda, announcement), application module, album gallery, news (categories, comments), guest books, and teacher and empolyee data (including positions), and student affairs. These formulation activities are done in order to formulate objectives, the size of the Web-based application, as well as the limits of the system. The objective to be achieved is conveying information for new student online. In addition, creating websites that will display the information in the form of new student registration information, school information and profile information, and exam participants list. Thus this system will have a registration input page, student menu page containing exam schedules, information packet completeness, card printing for students who will be tested, and the selection of prospective students.

3.2 Planning

3.2.1 The system is currently running

The current sys for new student admissions can be described in (flowchart) below. (figure 1):

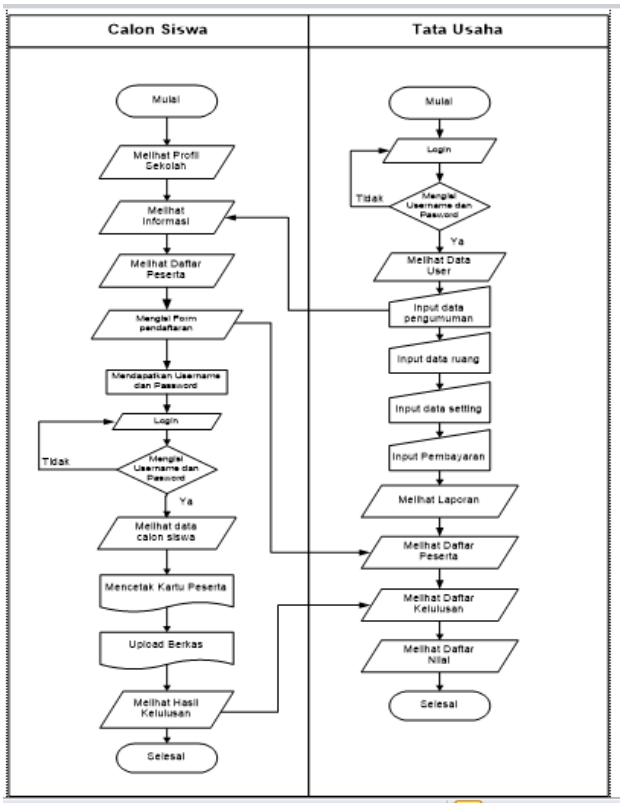


Figure 1. Flowchart of the current new admissions system

The current admissions system has problems that occur in the new admissions process. The data given by prospective students is often incomplete and prospective students must come to the school's campus in order register and they have to wait in long lines.

In order to overcome these problems and schools should build an online admissions system to facilitate the collection and management of new student data and allow prospective students to register wherever they are.

3.2.2 Planning a new system

The plan for an online admissions system for new students can be seen in the flowchart below::

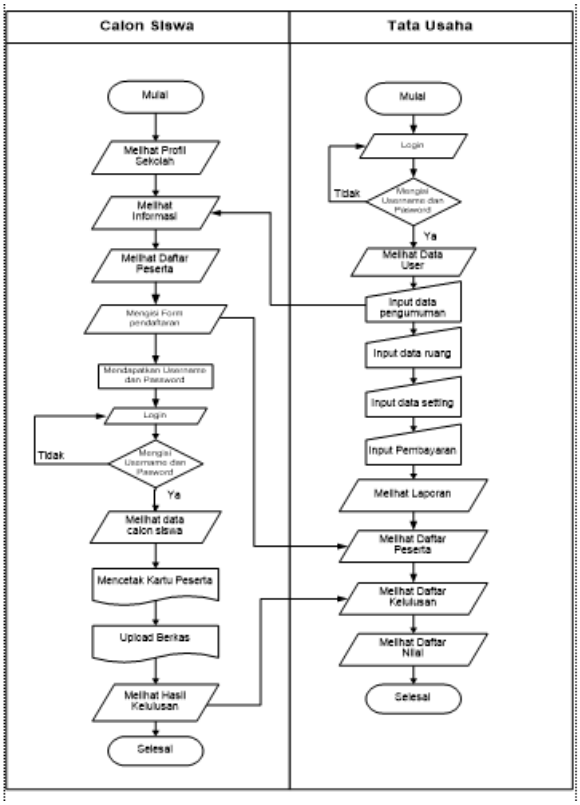


Figure 2. Flowchart For an Online Admission Information System

3.2 Analysis

At the analysis state, the techincal requirements and indentification of information that will be displayed on the web-application must be determined. This information is analyzed in from four angles in Web Enginerring, namely:

1. Analysis of Information Content:
   The content that will be displayed on the Online Admission System includes profile information, registration announcement, online registration, the list of examinees, and the student menu that displays information about the exam schedule, data completeness, and allows examinees to print print exam entrance cards, and announces selection results.
2. Analysis of Interaction:
   User interaction with the online admissions system can be shown through UML usecase, activity, and class diagrams.

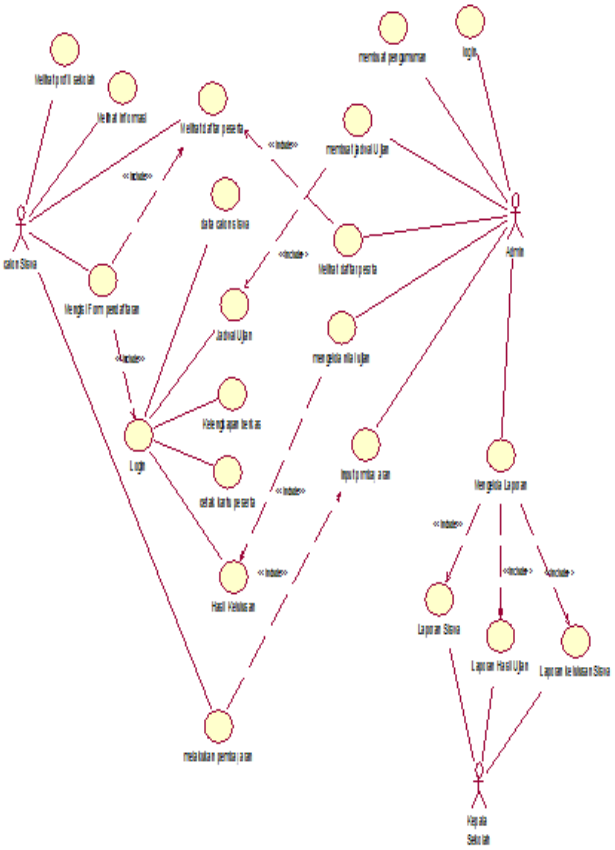


Figure.3. Use Case Diagram

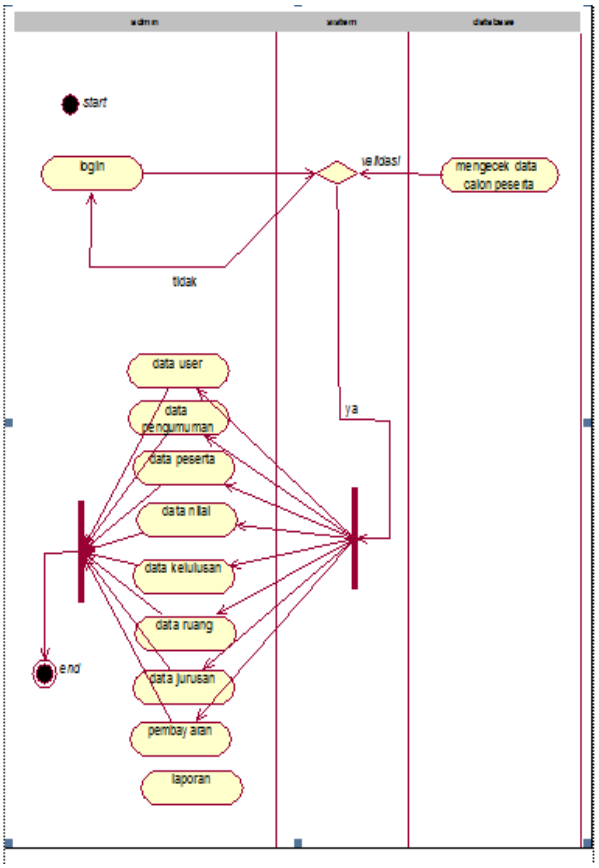


Figure 4. Activity Diagram Admin

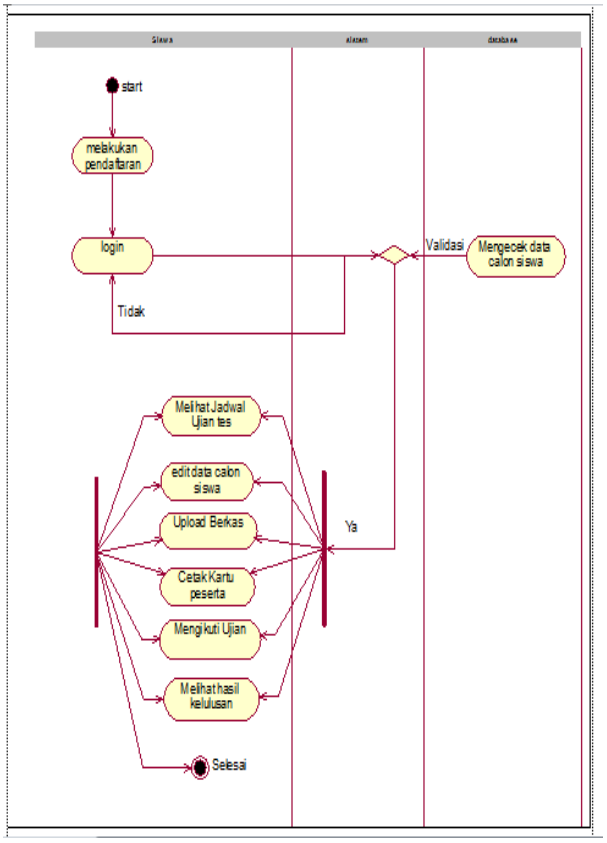


Figure 5. Activity Diagram Siswa

3. Analysis of configuration 3.

Online Admission System will be accessed via the world wide web (www). The course Online Admission System will certainly have a database that stores data to be delivered to the user when accessing the Online Admission System.

3.3 Enginering and system modeling

There are two tasks that have to be done in parallel, that is information conent design and web archetecture design. Enginering and system modeling explain a few of the tasks that have to be done by the online admissions system. Including:

3.3.1 Data Structure Design

Data structure design for this application consists of several tables. This database is composed of tables that are used to design the Online Admission System. Among them:

1. Prospective Student Table: used to store prospective student files,
2. Test Scores Table: used to store test results,
3. Announcement table: used to enter information,
4. Pay table: used to store payment data of prospective students,
5. Classroom table: used to enter classrooms data,
6. Setting table : used to store the school year information, and
7. User table : used to store system access information.

3.3.2 Structure Web Design

1. Website Main Menu Design

The main menu for the new student information system website contains Home, profile, information, registration, list of participants and prospective students.

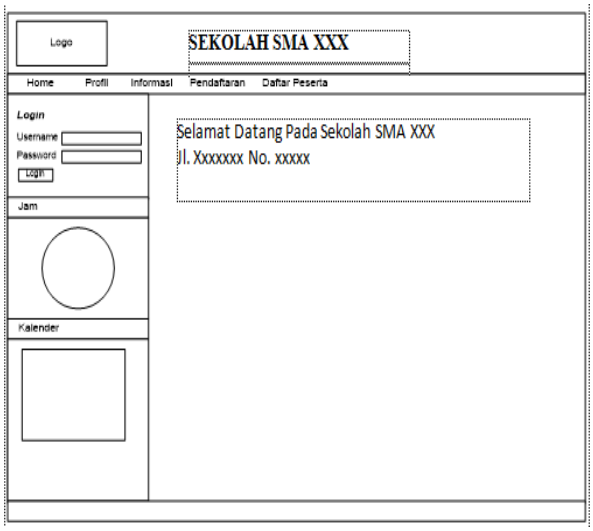


Figure 6. Website Menu Design

2. Information Design

Information displays which will display information such as prospective student registration information

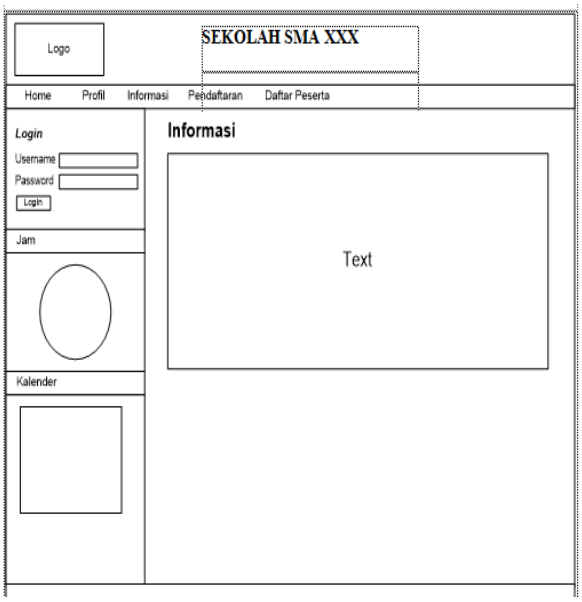


Figure 7. Information design

3. Registration Information Design

Used by prospective students to enter information when registering.

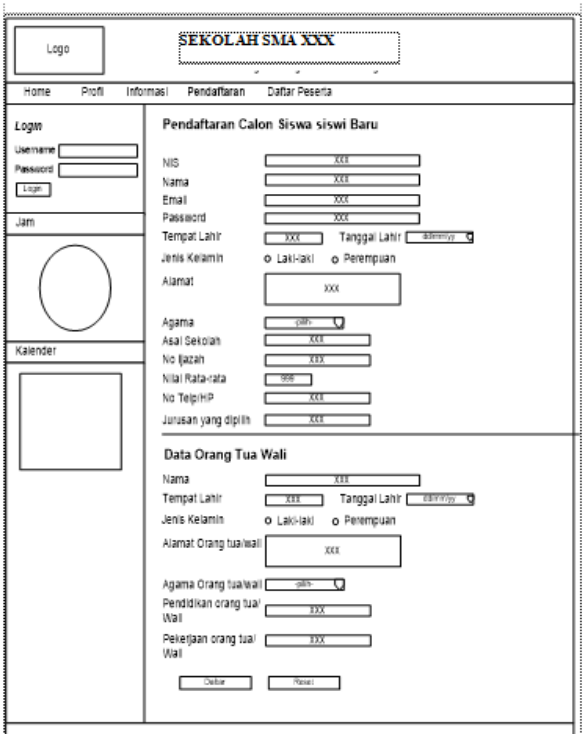


Figure 8. Registration Information Design

4. Thedesign of prospective students form
   This page contains a list of prospective students who have completed the registration

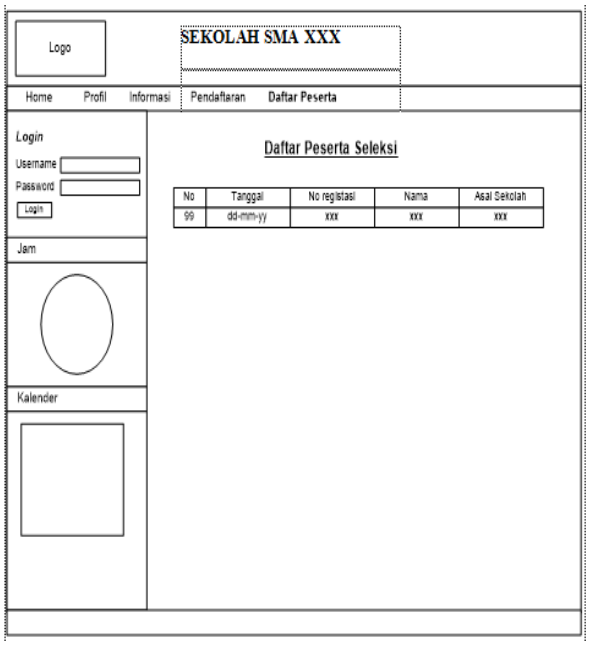


Figure 9. Prospective Students Form Design

5. Exam Schedule Page Design
   This page displays the exam schedule for test participants after registration they have completed registration

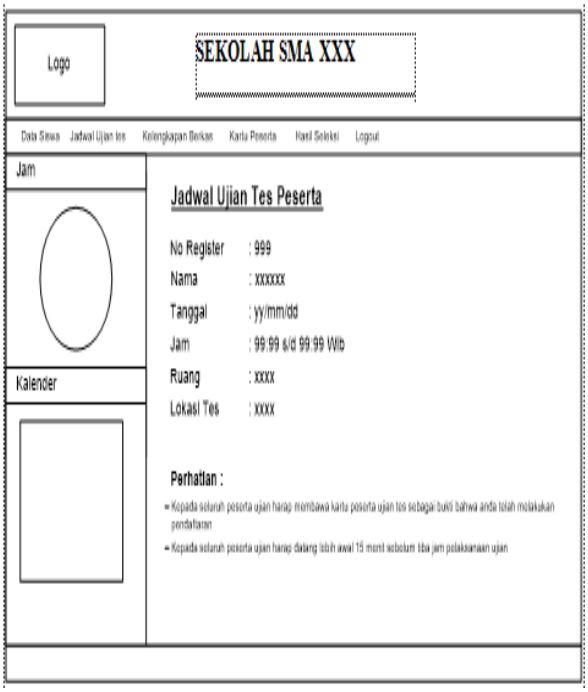


Figure 10. Exam Schedule Page Design

6. Student Information Completeness Page Design

   This pages exists to receive files upladed by prospective students in PDF and Doc formats.

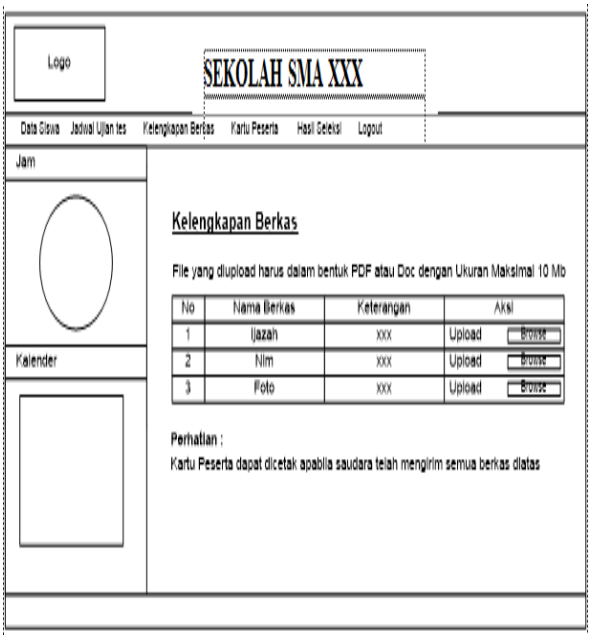


Figure 11. The design of completeness file

7. Examinees Card Page Design
   Once all student information has been submitted, exam cards can be printed. These cards must be brought at the time of the exam.

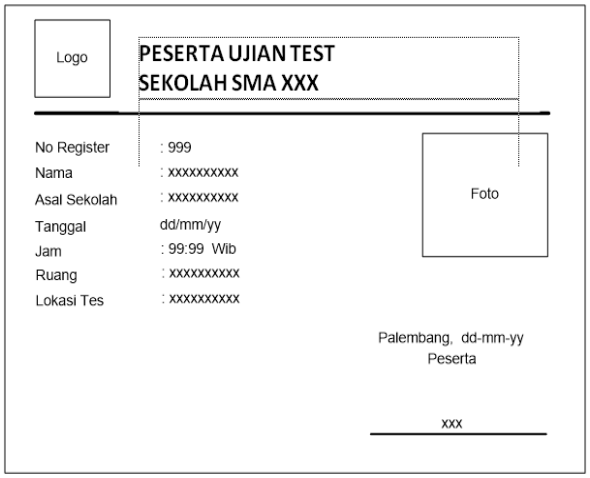
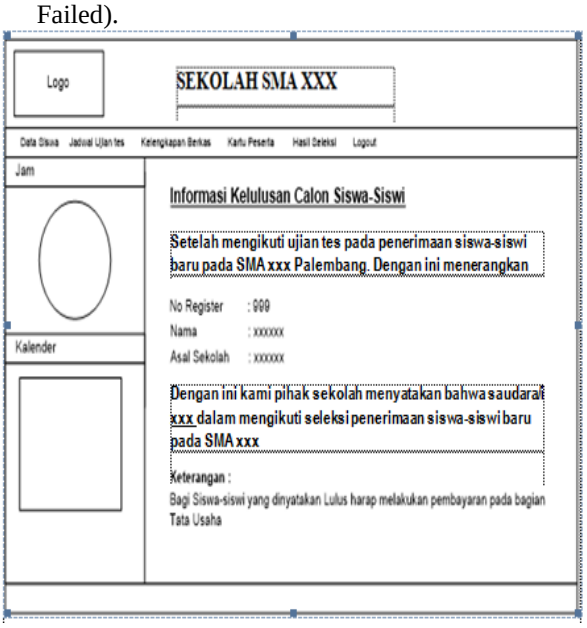


Figure 12. Examinees Card Page Design

8. Selection Results Page Design

This page serves to inform prospective students of the results of the enterence exam (Passed or Failed).



GaFigure 13. Selection Results Page Design

9. Test Result Data Input Page Design

This page is used to input the test scores of prospective students

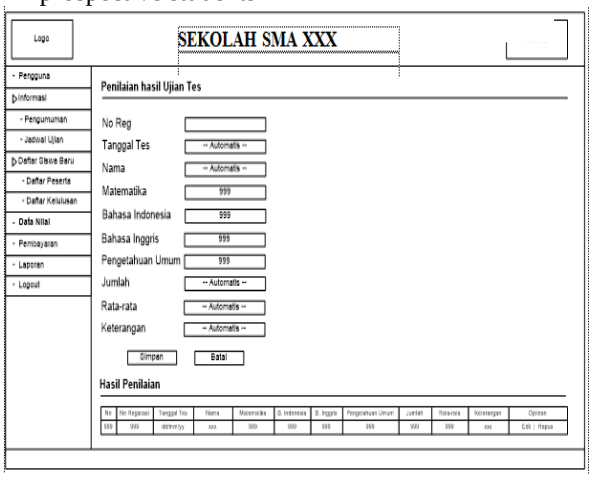


Figure 14. The design input data value

10. The design of payment

This pages is used to process payment information for new students who pass the enterence exam.

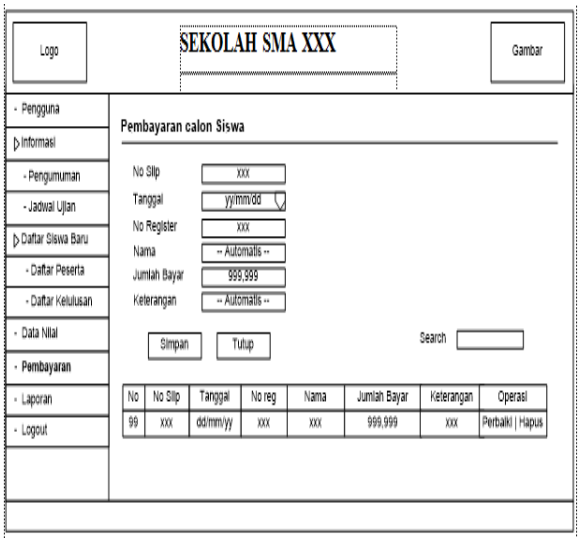


Figure 15. The design of payment

Based on the above designs, the next step is for schools to create a web-based information system so that the new student admissions process can be done from anywhere and is more efficient.

PHP (Hypertext Preprocessor) is one of the languages used in web development. According to Kadir (2009, p. 4) [5], PHP is a programming language that allows applications to be dynamic and to interact with a database.

From the description above it can be concluded that PHP is capable of supporting facilities and databases that can run on various operating system, because it is a scripting language that is embedded with HTML (HyperText Markup Language) and is processed on the server.

IV. CONCLUSION

Based on the description above, it can be concluded that:

1. This study only resulted in a design that can give an overview for a new student information system that is web-based.
2. This design overview can then be devloped by schools to make a web based information system for new student admissions that can be used by prospective students to register online..

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