Designing Information System for Vocational School in Minahasa Regency

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This school information system website is designed for Vocational Schools in Minahasa Regency to be able to store school data safely and can be easily found if needed. In this information system, there is management of school information data, management of learning materials, report cards, lesson schedules, and various other school data. There are four users in this information system, namely admin, teacher, homeroom teacher, and students. This school information system is designed using the MVC (Model, View, and Controller) model by applying the XP (Extreme Programming) method. The programming language used is the PHP programming language using the CodeIgniter framework and the implementation of the MVC model. It is hoped that this school information system can help manage various school data in a practical, safe, and effective manner.
Keywords: School Information System, Vocational Education, Minahasa Regency, MVC Model.

1. Introduction

Education is one of the most essential aspects of human life. Higher education seems to guarantee the welfare of the individual and society group, therefore at this time education is always prioritized. Over time, the world of education is always progressing, and technology has a very important role in that regard. Technological developments will greatly affect the progress education World. Information technology has functioned as a supplier of knowledge, however So far, many still do not understand and maximize the function of technology effectively. To adapt to this ever-evolving era, it is necessary to exist in proximity which is intense with technology, especially in the scope of education. Well teachers and students are required to be "familiar" with technology so that they have strong

competitiveness in the current 4.0 era. By maximizing the use of technology, the improvement in the quality of education also occurs, and the implementation of learning shifted towards computerization, one of which was the existence of a school information system. The school information system, it will make it easier for students to access information and things and activities important to them.

Technology as one of the supporting facilities to improve the quality of education is currently still not implemented by all schools. Still many schools that have not implemented the benefits of an information and technology system based on the Internet, which on basic will help education system in school. The Ministry of Education and Culture on 2020 reported that for 2021 the budget for school digitization reached 3 trillion IDR (MoEC, 2020). The Effort of governments prove that progress of education will easy achieved with utilize technology as good as possible.

Vocational school is one of receptacle producer's source power people who are needed in various fields of work. Because it's quality Vocational education must continue to be considered and guaranteed. Everything that can help and improve the effectiveness of education is important to note. However many school which not yet use system information school as means technology which help process learning and distribution various information important in school. Annual data collection of students, teachers and employees changed need system which can managed with fast so that no occur accumulation data. Besides that delivery information other still limited announcements that are displayed on the bulletin board at school. This matter cause delivery of information occurs very slowly.

Another thing to note is the creation and receipt of value results report card in school are still done by manually. Mark by teacher eye lesson submitted to the homeroom teacher which is then written to each report card students, after which a copy is made which will be given to the students. Use technology also is answer which efficient for complete problem this. Besides, save time and power, use system information school this could minimize cost in use paper and ink printers, besides students and teachers given the convenience for access report value.

From what which has been explained in on, so writer means to do research to design a school information system for secondary schools vocational. This research is expected to provide convenience in accessing various information which needed, help process learning, and could make it easy to deliver of the latest, accurate information and fast.

2. Literature Review

Planning

Planning is a process for creating and designing a system that new. design system is a process after analysis from cycle development to design a system (Nur & Suyuti, 2018).

Stage planning or design system has two objective main (Darmawan,2013), that is:

1.   Fulfill need usage system

2.   Give a description that clearly and produces design Wake up which is complete to

computer programmers and other technical experts involved in development or system creation which by detailed.

System

System is gathering people which each other work same with provision- systematic and structured rules and regulations to form a unified whole carry out something function for reach objective. System own a number of characteristics or nature which consist from component system, limitation system, environment outside system, system interface, system input, system output, system processing and target system (Anggraeni, 2017). System objectives are targets or final goals to be achieved by a company system. In order for this target to be achieved, the target or target must be First, the characteristics or criteria are known. Efforts to achieve a goal without know characteristic features or criteria from the target possible big target the no will once achieved. Characteristic features or criteria could also used as reject measuringin evaluate success something system and base for did something control (Ariawan, 2010).

Information

According to Jacob (2012) in the book "Introduction to Information Systems" for eachlevel management with activity which different, needed information with different characteristics. The characteristics of information are: information density, large information, frequency information, access information, time information, and source information. In general, information can be defined as the result of data processing to shape more useful and more means for recipient which describe something events that real which used for takingdecision (Anggraeni, 2017).

System Information

System information is something system in in something organization which bring together need processing transaction daily which support function operation managerial organization with strategic activities from an organization to can provide certain outside parties with the necessary reports (Sutabri, 2012).

Web

World Wide Web (WWW) which is more known as the web is one of the services that is used by a user's computer connected to the Internet with hypertext for showing data in the form of text, Figures, voice, animation etc. At first the web was an information space on the internet, which can help users to find information by following the link provided in document which featured in web browser (Rikanita, 2017).

School

According to the Big Indonesian Dictionary "KBBI" the definition of a school is an institution or buildings used for learning and teaching activities according to the level education "elementary school, junior high school and senior high school". School is an institution that is used for learning activities for students and educators as well as Becomes the place to give and also accept lessons which in accordance with his field. School become one of the places to educate children with meaning to provide the knowledge given so that they can become good human beings useful for the nation and also the country.

XP Method

XP Method is one of System Development Life Cycle (SDLC) partfrom Agile Methods which emphasizes the simplicity of system development. Method XP is popular used for overcoming problem requirements which of fickle (vague and volatile requirements) and unclear (Wahyudin, 2018). In order to facilitate the development of this system in a short time, the method agile is method which used, Thing because the approach method agile gives a level success development system which better compared by method structural design (Pratasik & Rianto, 2020). According to Wahyudin on journal which title design Wake up System Information Academic, Making system information use method XP own four Step,that is:

1.   Planning (Planning)

Stage planning started with To do analysis about system which currently running and system specifications that describe outputs, features, and functions function from software that will be made.

2.   Design (Design)

At this stage, the system design is carried out using UML diagrams to show modeling systems and modeling architecture.

3.   Coding (Coding)

Stage this is step in making a system information school with notice planning system which has done on Step design.

4.   Test (Testing)

On Step this done testing code. This will show is design information school can used in accordance with the needs user.

3.   Research Methodology

This study uses the XP method. By using this XP method so there are 4 Step that should done, that is as follows:

1.   Planning (Planning)

The planning stage begins with knowing what are the shortcomings and problems which should handled from process business which long, then make system requirements specification that describes what features and functions are function from information system which will made.

2.   Design (Design)

In step this done planning system use technique design UML (Unified Modeling languages),

with stages as following:

a.   Make Use Case Diagram

Aims to analyze the system requirements to be made, as well as understand system which currently walk.

b.   Make Use Case Scenario Diagram

Describe Use Case which already made on stage first.

c.   Make Activity Diagram

Create a workflow from one activity to another.

d.   Make Class Diagram

Visualize structure class from something system and show relationships between classes and a detailed explanation of each class in the model design (logical view) of a system.

e.   Make Sequence Diagram

Explain interaction objects arranged in some order time. Researchers show Steps for the sake of Step which should occur for produce something in in Use case.

3.   Coding

Stage this is a step in making system information school with pay attention to the design and design of the system that has been carried out the before. Making system information use PHP with a framework code igniter, while databases use MySQL.

4.   Test (Testing)

At this stage, testing is carried out using black-box testing. This will show whether the school information system design can be used according to user requirements and whether each feature and function there is functioning properly.

4.   Results and Discussion

The Results of this research refer to XP method as follows;

1.   Planning

Based on specification analysis, the information system requirements are shown in Table 1.

Table 1. Specification Need System

Admin	1. To do login on system
	2. To do processing data student
	3. To process data teacher
	4. To do processing data Theory lesson
	5. To do processing data class
	6. To do processing data timetable eye lesson
	7. To do process data information school
	8. To do processing data gallery
	9. To do processing data curriculum
	10. To do processing file or files school on system

User Teacher	1. To do login on system
	2. See timetable eye lesson
	3. To do processing data Theory lesson
	4. To do processing mark student in each class that taught
User Student	1. To do login on system
	2. See eye schedule lesson
	3. Access and download Theory lesson
	4. Access and download report card

2. Design

On Step this explained how to design a device soft system information school based on need with use diagram UML (Unified Modeling languages).

1. Use Case Diagram

Definition role each actor on system information school could seenon table 2.

Table 2. Definition Actor Use Case Diagram

| 1 | Admin | Person who manages data master system information school. |
2	Subject Teacher	People who could to do login for access page timetable, Theory and report cards. User teacher could process data Theory and data report card
3	Home Class Teacher	People who could to do login for access page report cards. User homeroom teacher could manage and print mark report card student.
4	Student	People who could To do login for access page timetable, Theory and report cards. User student could download files Theory and report card
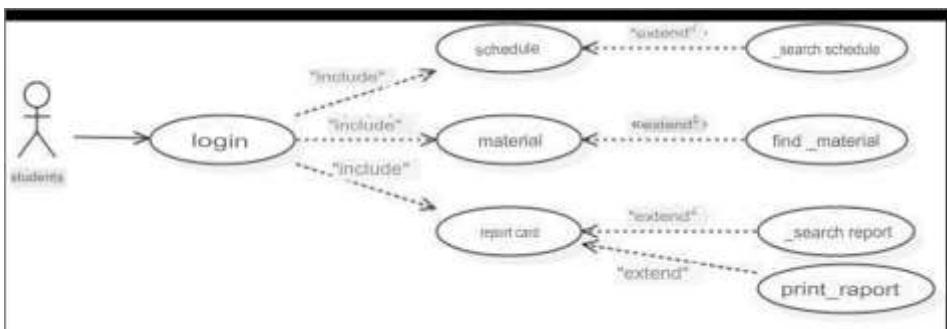
Figure 1. Use Case Student Chart
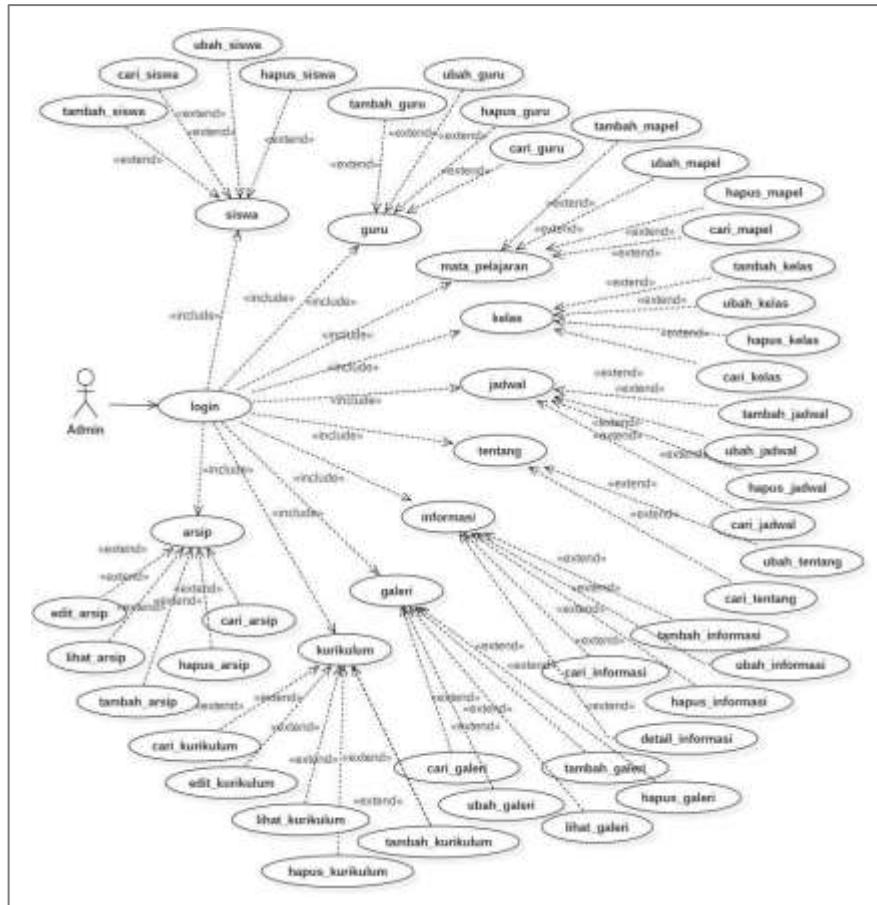
Figure 2. Use Case Admin Diagram
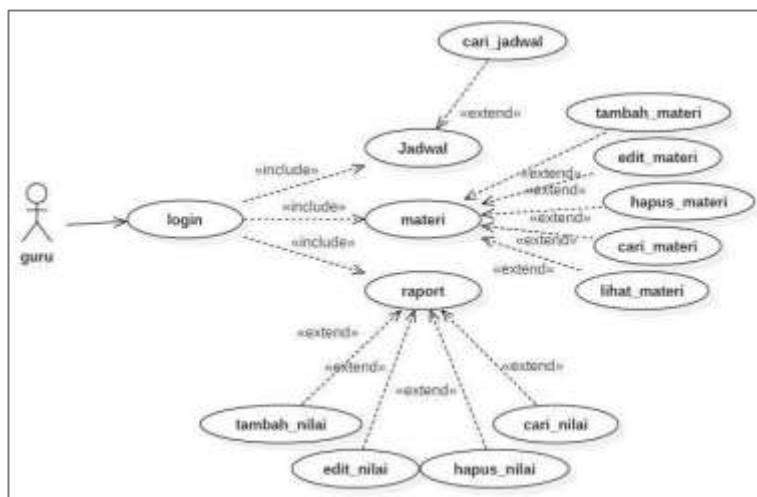
Figure 3. Use Case Diagram Teacher
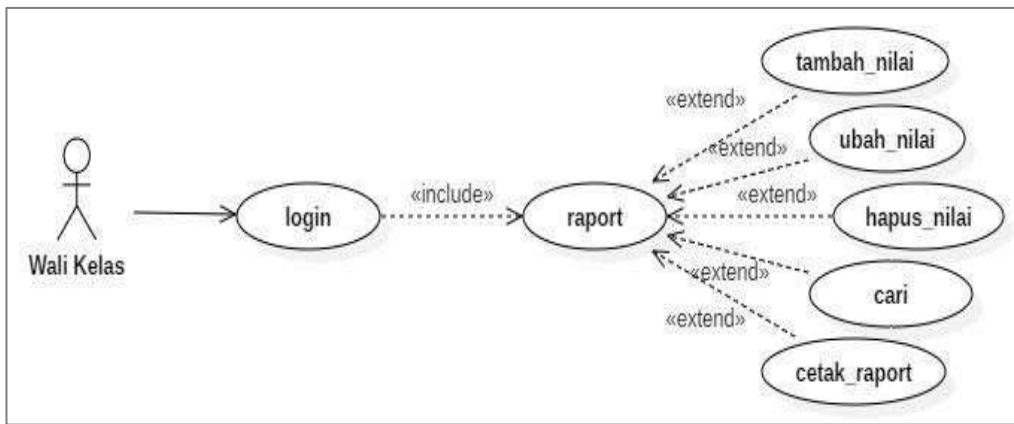
Figure 4. Use Case Guardian Chart Class

2.   Class diagram
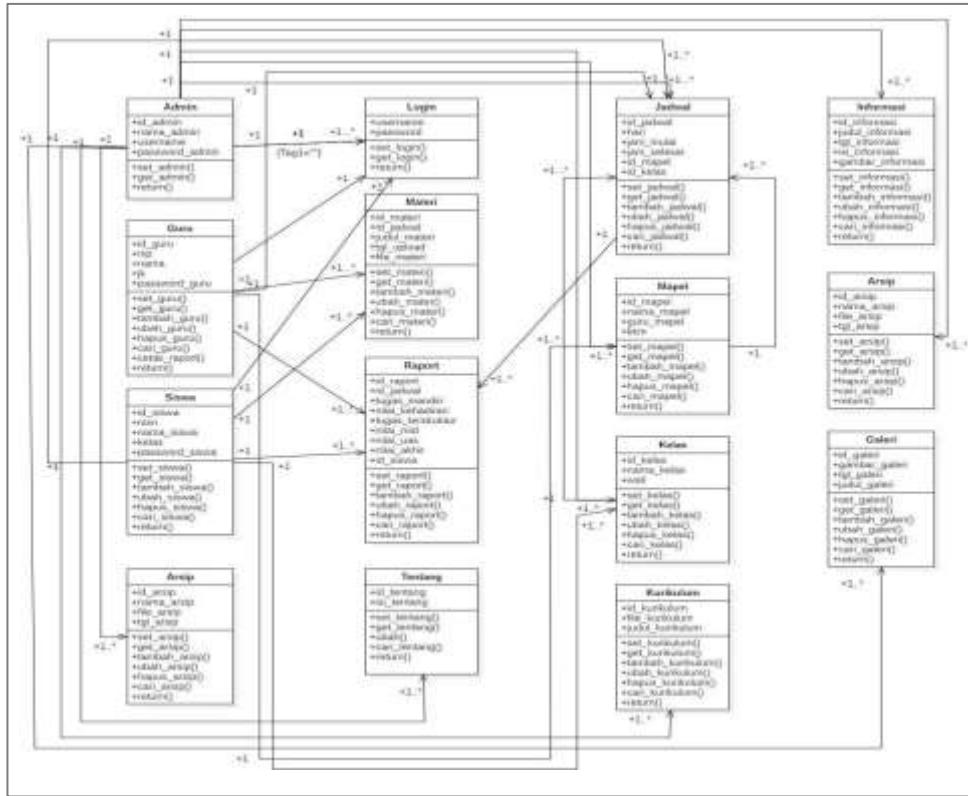
Figure 5. Class Diagram

3.   Coding

Coding stage is the translation stage of the previous stages. At this stage a user interface is created using the PHP programming language and base MySQL data.

4.   Test

Stage testing this use method testing black box testing. Table 3 is the results of system testing.

Table 3. Test result with approach black box testing

No	Function	Statement	Results	Decision
1	Login	Function for login	In accordance	Valid
2	Plus Data Student	Function enter data student	In accordance	Valid
3	Change Data Student	Function change data student	In accordance	Valid
4	Wipe Data Student	Function delete data student	In accordance	Valid
5	Plus Data Teacher	Function enter data teacher	In accordance	Valid
6	Change Data Teacher	Function change data teacher	In accordance	Valid
7	Wipe Data Teacher	Function delete data teacher	In accordance	Valid
8	Add Subject data	Function enter eye data lesson	In accordance	Valid
9	Change Subject Data	Function change data eye lesson	In accordance	Valid
10	Wipe Subject Data	Function delete data subjects	In accordance	Valid
11	Add Data Class	Function enter data class	In accordance	Valid
12	Change Data Class	Function change data class	In accordance	Valid
13	Wipe Data Class	Function delete data class	In accordance	Valid
14	Add Data Timetable	Function enter data timetable	In accordance	Valid
15	Change Data Timetable	Function change data timetable	In accordance	Valid
16	Wipe Data Timetable	Function delete data timetable	In accordance	Valid
17	Change Data About	Function change data about	In accordance	Valid
18	Wipe Data About	Function delete data about	In accordance	Valid
19	Add Data Information	Function enter data information	In accordance	Valid
20	Change Data Information	Function change data information	In accordance	Valid
21	Wipe Data Information	Function delete data information	In accordance	Valid
22	Look Details Information	Function see details information	In accordance	Valid
23	Add Data Gallery	Function enter data gallery	In accordance	Valid
24	Change Data Gallery	Function change data gallery	In accordance	Valid
25	Wipe Data Gallery	Function delete gallery data	In accordance	Valid
26	Look Details Gallery	Function see details gallery	In accordance	Valid
27	Add Data Curriculum	Function enter data curriculum	In accordance	Valid
28	Change Data Curriculum	Function change data curriculum	In accordance	Valid
29	Wipe Data Curriculum	Function delete data curriculum	In accordance	Valid
30	Look Curriculum	Function see details curriculum	In accordance	Valid
31	Add Data files	Function enter data files	In accordance	Valid
32	Change Data files	Function change data files	In accordance	Valid
33	Wipe Archive Data	Function delete data files	In accordance	Valid
34	Look Details files	Function see details files	In accordance	Valid
35	Add Data Theory	Function enter material data	In accordance	Valid
36	Change Data Theory	Function change material data	In accordance	Valid
37	Wipe Data Theory	Function delete material data	In accordance	Valid
38	Look Theory	View function material details with download Theory	In accordance	Valid
39	Add Data report card	Function enter data report card	In accordance	Valid
40	Change Data report card	Function change data report card	In accordance	Valid
41	Wipe Data report card	Function delete data report card	In accordance	Valid
42	Print Report	Function print report card	In accordance	Valid
43	Search Data	Function look for data	In accordance	Valid

5.   Conclusion

Based on the research and testing of the system made, the conclusions can be formulated as follows:

1.   The school information system created can facilitate data management school, like data student and data teacher,

2.   This information system provides convenience in managing report cards. This of course give convenience for teachers in Thing making report evaluation. Para student even given convenience in Thing access report card each and can print report cards directly of the system,

3.   This school information system is also a learning medium for students because they can access and get material that is directly provided by subject teachera through school information system,

4.   With use system information school this, various information and newsschool faster and more accurate in delivery.

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