Journal of ICT Aplication and System (JICTAS)
Volume 1 Number 2, Desember 2022, pp. 62 ~68
ISSN: 2830-098X, DOI: 10.56313/jictas.v1i2.163

Web Based Information System Design in Elementary Schools

Erliyen Nofrianda[1], Detri Amelia Chandra[2], Andri febriansyah[3], Anik Supriani[4]
Program Studi Pendidikan Teknologi Informasi – STKIP Rokania [1,2,3,4]

Article Info

Article history:

Received July 26, 2022
Revised Agustus 06, 2022
Accepted November 13, 2022

Keywords:

Information System
Web
Waterfall
UML

ABSTRACT (10 PT)

This article aims to design and implement a Web-Based Information System in Elementary Schools. The method used in this research is to use the system development method with the Waterfall model. The type of data in this study is to use qualitative data. Web-Based Information System in Elementary School is designed using the UML (Unified Modeling Language) development method which consists of Use Case Diagrams, Activity Diagrams, Sequence Diagrams and Class Diagrams. Database design using MySQL and system interface. The software used in the design and implementation of the system uses XAMPP as a web server, PHP and MySQL as a database. Web-Based Information System in elementary schools includes, login page, home page, profile page, student page, gallery, agenda page, student registration page, contact page, manage profile page, manage student page, manage gallery page, manage agenda page, page registration

Corresponding Author:

Erliyen Nofrianda
Information Technology Education Study Program, STKIP Rokania
Jl. Raya Pasir Pengaraian Km 15, Rokan Hulu, Riau, Indonesia
Email: erliennovrianda4@gmail.com

1. INTRODUCTION (10 PT)

The rapid development of information technology has spurred the emergence of various new applications, including in the field of information technology. The development of information technology today has grown very rapidly which has brought us into a new world, a world where communication plays an important role in life. Various kinds of facilities are provided to fulfill all communication needs. The website is one of the historic discoveries in the field of Internet technology-based information. The website is expected to be an alternative for developing more effective and efficient information systems at low costs in the future. This can run smoothly if there is a computer network as an internet medium.

The education sector, especially schools, does a lot of data processing, both data for teachers, students, and staff. School data is processed in large quantities, can change at any time so that storage media must be carried out properly and always updated on an ongoing basis. Most schools still manage academic data manually, but some have used computers but have not used the internet. A system like this, of course, has many shortcomings that affect the weakness of wasted energy, administrative systems, academic services that are less than optimal

System design is the determination of the processes and data required by the new system. If the system is computer based, the design may include specifications of the equipment to be used. (Sukisno & Wuni, 2017). Information is a collection of data that is processed into a form that is more useful and more meaningful to the recipient. Meanwhile, according to (Hardiyanti, 2021) information is a collection of facts (data) that are organized in a certain way so that they have meaning for the recipient. A system will not run smoothly and can eventually die without any information.

This information system is needed because it includes all activities to process, collect, store, analyze and disseminate data that is processed into information for specific purposes. So that the data that has been

processed in such a way can produce an understanding that is right on target for anyone who needs the information.

Schools are educational institutions where students and teachers carry out teaching and learning activities, in this case the school can provide school information to people who need information, especially parents of students. School information needed by parents and the general public is conventionally done by visiting the school, then asking the school for the information needed and asking for information from students who attend the school in question to get the information needed. However, because of the website, parties who need information about the school do not need to come to school and ask students but simply open the school's website.

2. METHOD (10 PT)

This study uses the waterfall method. The Waterfall model is a sequential development model. The Waterfall model is systematic and sequential in building a software. The build process follows a flow from analysis, design, code, testing and maintenance. The waterfall development model has several advantages, namely it can be easily understood and can be applied in the software development process. The waterfall development model (Dini Silvi, 2019) can be seen in the following figure .

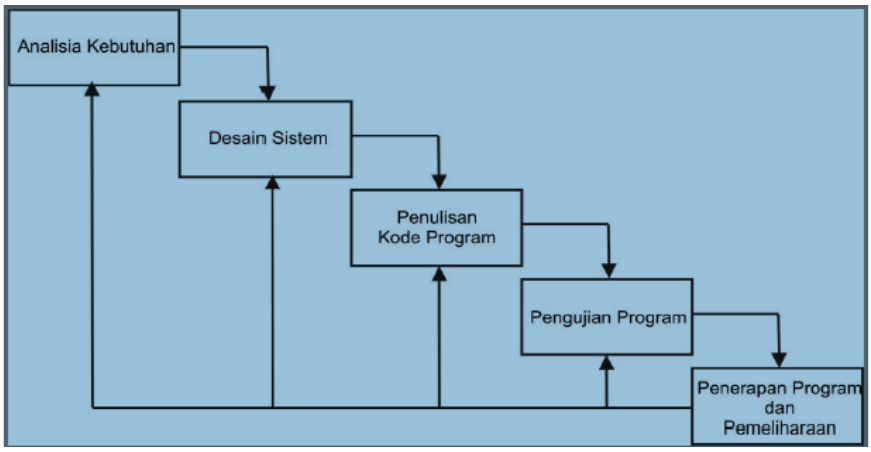


Figure 1. Waterfall Development Model

3. RESULTS AND DISCUSSION (10 PT)

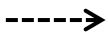
System analysis can be in the form of depicting, designing, and making sketches or arrangements of several separate elements into a unified and functioning unit, it also involves the configuration of the hardware and software components of a system (Amelia Chandra et al., 2021) . For the analysis and design of the system to be built using use case diagrams, activity diagrams, class diagrams and sequence diagrams.

3.1. Use Case Diagram

Use case describes an interaction between one or more actors with the information system created. Use cases are used to find out what functions have the right to use these functions (Rahyudi, 2022) The symbols in the use cases can be seen in table 4.1 below:

Tabel 1. Symbol Use Case Diagram

No	Name	Picture	Information
1	*Actor*		Specifies the set of roles that users play when interacting with use cases.
2	*Dependency*		Relationship where changes that occur in an independent element (independent) will affect elements that are not independent (independent)

3	*Generalication*		A relationship in which the child object (descendent) shares the behavior and data structure of the object that is above the parent object (ancestor)
4	*Include*		Specifies that source use case explicitly
5	*Extend*		Specifies that the target use case extends the behavior of the source use case at a given point
6	*Association*		What connects one object to another.
7	*System*		Specifies the package data that displays the system in a limited way

The symbols used in making Use Cases in this study are the first actor symbols which describe people who will use the system, the Use Case symbols units which represent the menus of the system to be created, the third is the association symbol which is a communication link between the actor and the user .

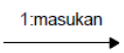
3.2. Activity Diagram

Activity diagrams or activity diagrams describe the workflow or activity of a system or business process or menu in the software, what needs to be considered here is that the activity diagram describes system activities not those carried out by actors, so activities are carried out by the system (Rahyudi , 2022). Activity diagrams are widely used to define the following :

1) Business process design in which each sequence of activities described is a defined system business process.
2) View grouping of the system where each activity is considered to have a view interface design.
3) Test design in which each activity is considered to require a test that needs to be defined test cases.

The sequence diagram can be seen in table 2 below :

Tabel 2 Diagram sequence

No	Simbol	Keterangan
1	*Actor* 	Segala sesuatu yang berinteraksi dengan sistem aplikasi komputer.
2	Garis hidup	Menyatakan kehidupan suatu objek.
3	Pesan tipe *create* 	Objek yang lain, arah panah mengarah pada objek.
4	Pesan tipe *call* 	Menyatakan suatu objek memanggil operasi yang ada pada objek lain.
5	Pesan tipe *send* 	Menyatakan bahwa suatu objek mengirimkan data/masukan ke objek lain.

3.3. Class Diagram

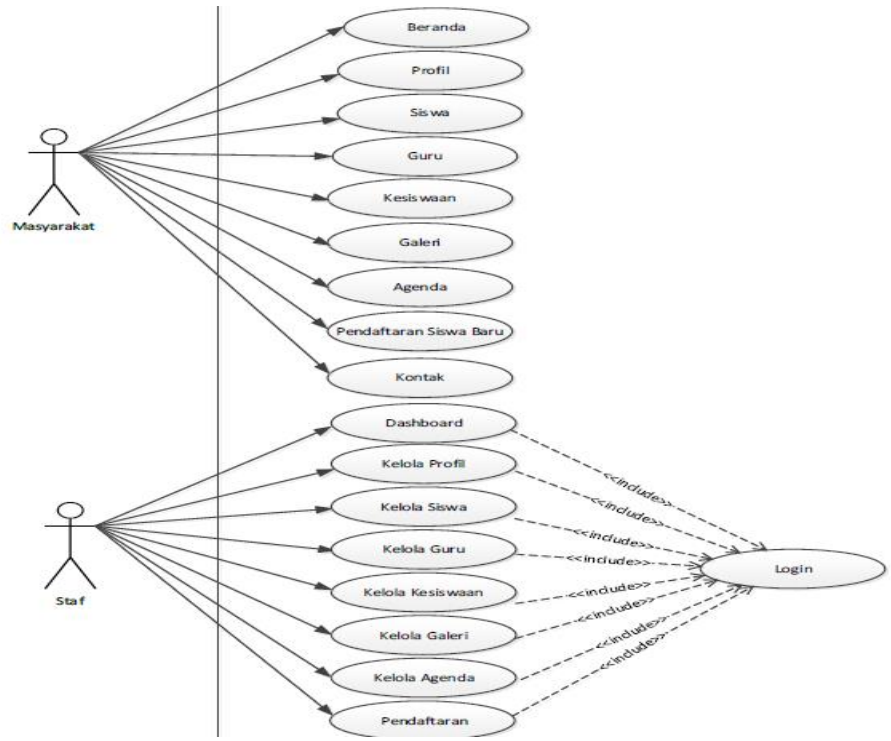
Class diagram is a diagram that describes the structure of the system in terms of defining the classes that will be made to build the system. Class is a collection of objects with and that have a common structure,

common behavior, common relations, and common semantics/words. Classes are determined/found by examining objects in sequence diagrams and collaboration diagrams [5] Class diagram symbols and descriptions can be seen in table 4.3 below :

Tabel 3 Diagram Class

Name	Information	Symbol
Dependency	The use of dependencies is used to indicate operations on a class that uses another class.	
Class	Classes are the building blocks of object-oriented programming. class is described as a box divided into 3 parts. The top is the name part of the class. The middle section defines the class attribute. The final section defines method-method	
Association	An association is the most common relationship between two classes and is denoted by a line connecting the two classes. This line can represent the types of relationships and can also display the laws of multiplicity in a relationship.	1..n Owned by 1
Composition	If a class cannot stand alone and must be part of another class, then that class has a Composition relation to the class on which it depends.	

The user case is a general technique used in developing information systems to get functional requirements from existing systems. The use case diagram of a web-based information system in elementary schools can be seen in the following figure:



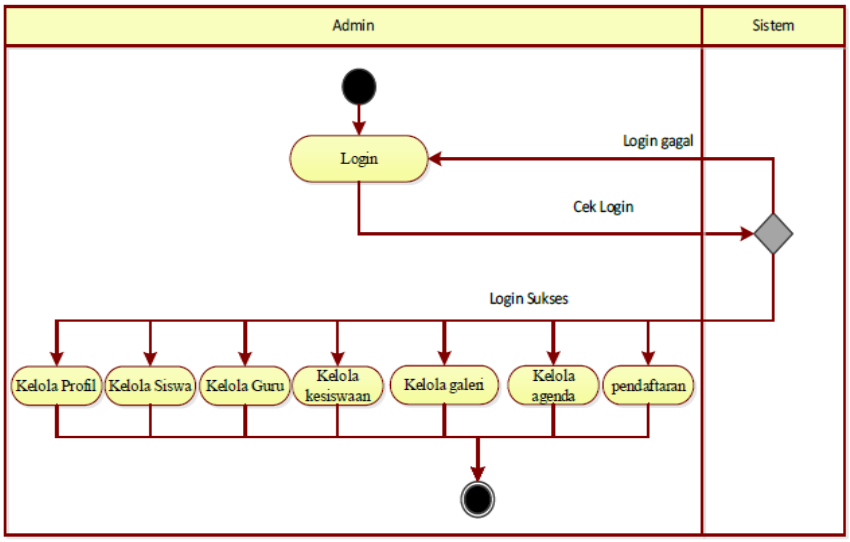
Picture 2. *Use Case*

The picture above explains that the public can see the menus on the website such as their menu which is the main menu when accessed publicly, the profile menu is a menu that provides information about elementary schools, student data is information about student data, teacher or staff data. , student grades and data from the principal in the elementary school. The gallery menu is information about photos of activities carried out by students and teachers in the elementary school. The agenda menu is information in the form of extracurricular which is the development of students' talents such as dancing, singing, storytelling, scouting, sports and other extracurricular activities, the registration menu is information for new students who want to register at the

school, while the contact menu is information or activities that can be used. used by the community in providing questions or suggestions to school staff.

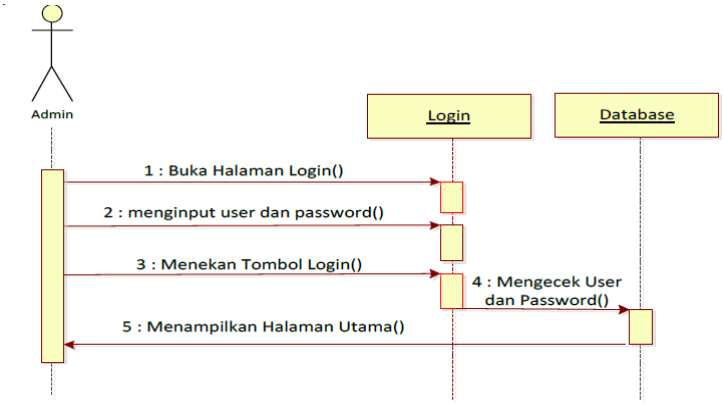
Image of staff as actors who have tasks in processing elementary school websites including logging into the system, viewing dashboards, managing profiles, managing student data, student grades, teacher data, principal data, managing galleries, managing agendas, confirming new registrations, and managing contact to provide information to people who want to know about the elementary school

Activity diagrams are carried out by the admin and the system, namely the admin can login, if it fails, the system will display an error and return to the login page. However, if successful, the admin can manage profile data, student data manager, student data, teacher or staff data, school principal data, gallery data, agenda data, and registration data which can be seen in Figure 4.2 below :



Picture 3. Diagram Activity Admin

The web-based information system login sequence diagram in elementary schools can be seen in Figure 4.3 below:



Picture 4. Diagram *Squence*

The login database is implemented in the form of a table where each column contains data regarding the database data used which can be seen in table 4 below:

Tabel 4 Tabel Admin

No	Column	Type	Null
1	id_admin (kunci utama)	int(11)	Tidak
2	Useradmin	Varchar(20)	Tidak
3	Pasadmin	Varchar(150)	Tidak
4	Namaadmin	Varchar(20)	Tidak

System testing is part of the measurement that has right and wrong answers. The test is carried out using black box testing, black box testing is a test carried out which only observes the results of execution through test data and checks the functionality of the software. This test focuses on the functional requirements of the software. Tests are carried out in order to briefly check the accuracy of the system

4. CONCLUSION

Based on the results of research and discussion of web-based information systems in elementary schools, it can be concluded that the web-based information design is designed using the URL model, which includes Use Case Diagrams, Activity Diagrams, Class Diagrams and Sequence Diagrams. The web-based information system in elementary schools uses the PHP version 7 programming language, html as a markup language medium. Implementation of a web-based information system in elementary schools in the form of logins, dashboards, profile input, student data input, teacher or staff data input, principal data input, student data input, gallery data input, activity data input, agenda data input, registration data input new students and input contact data. The web-based information system in elementary schools was tested using black box testing

ACKNOWLEDGEMENTS

Thank you to the head of the study program who has provided motivation to carry out research to completion, then to the supervisor who gave criticism for the perfection of this article.

REFERENCES

[1] Sukisno and W. F. Wuni, "Analisa Dan Perancangan Sistem Informasi Tracking Acuan Quality Departemen Brushing Berbasis Web Di PT. Indotaichen Textile Industry," *J. Informatics Eng.*, vol. 5, no. 1, pp. 43–51, 2017.
[2] dkk Hardiyanti, "Sistem informasi sekolah berbasis web pada sekolah dasar negeri (SDN) Seriti," *Indones. J. Educ. Humanit.*, vol. 1, no. 3, pp. 156–168, 2021.
[3] D. Dini Silvi, "Penerapan Metode Waterfall dalam Perancangan Sistem Informasi Aplikasi Bantuan Sosial Berbasis Android," *Semin. Nas. Sains dan Teknol. 2019*, pp. 1–7, 2019.
[4] D. Amelia Chandra *et al.*, "Penerapan Metode Item Based Collaborative Filtering Berbasis Web Pada Recommender System Laptop," *Eng. Technol. Int. J. Juli*, vol. 3, no. 2, pp. 2714–755, 2021.
[5] D. Rahyudi, "Aplikasi Media Pembelajaran Sistem Fotosintesis Pada Tumbuhan Berbasis Android Kelas Viii Smp Negri 4 Wotu," vol. 2, no. 1, pp. 20–33, 2022.
[6] A. Lubis, *Basis Data Dasar*, 1st ed. Yogyakarta: Deepublish, 2016.

BIOGRAPHIES OF AUTHORS

	**Erliyen Nofrianda**. Currently studying at the Rokania Teaching College of Education in the Information Technology Education Study Program, She can be contacted at email: erliennovrianda4@gmail.com
	**Detri Amelia Chandra** is a Lecture, Program Study of Educational Information Technology, STKIP Rokania, Raya Pasir Pengaraian Street Km 15 Rokan Hulu, Riau 28557,. His research focuses on analisys System, Scaffolding in education, Scientific literacy, project-based learning. He can be contacted at email: detriamelia@rokania.ac.id.
	Andri Febriansyah. Currently studying at the Rokania Teaching College of Education in the Information Technology Education Study Program, She can be contacted at email: andrifeb28@gmail.com

Anik Supriani. Currently studying at the Rokania Teaching College of Education in the Information Technology Education Study Program, She can be contacted at email: putrasolo794@gmail.com,