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DESIGN OF WEB-BASED ACCEPTANCE OF NEW STUDENTS (PPDB) IN SMA YAS BANDUNG

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Abstract
The process of admitting new students (PPDB) at SMA YAS Bandung is still being carried out offline. Prospective students who will register must go to the registration place, fill out the registration form, and bring the requirements. Often there are errors or data loss that impact the slow performance of the PPDB process. The existing Covid-19 pandemic in Indonesia requires schools to implement PPDB online. Along with the development of computer technology, it is now possible to develop computer-based information systems, therefore with these problems, a web-based information system for the admission of new students at SMA YAS Bandung is needed. The method used in designing this information system uses a waterfall model, and software testing is carried out using black-box testing. The design of this web-based PPDB information system can run effectively and efficiently and help prospective students register online, and assist admins in managing prospective student data. This study's results can be seen from the features of this system running according to predetermined needs.

1.0 INTRODUCTION

New Student Admission (PPDB) is one of the routine activities carried out by schools every year to screen selected prospective students according to their criteria [1]. In its implementation, New Student Admission activities for SMA YAS Bandung begin with the registration, selection, announcement, recording, and processing of data that have not used computers optimally. The committee that did the recording experienced errors or loss of data, which resulted in the length of the data processing, resulting in the slow performance of new students' admission at SMA YAS Bandung. In previous research, there have been several journals that discuss web-based acceptance of new students, including:

Based on research conducted by Rizlaili Istiqomah, Kristen, Budi Wahyono with the title "The Implementation of Online-Based New Student Admissions in Surakarta" more focused on the implementation of online-based new student admissions in Surakarta City and the effectiveness of the implementation of online-based new student admissions in the City Surakarta. In the implementation of this research using descriptive research with a qualitative approach [2].

Based on research conducted by Windu A Pambudi, it is more focused on knowing the implementation of PPDB Online at the State Junior High School level by the Yogyakarta City Education Office and knowing the factors that support and hinder the implementation of PPDB Online in the City of Yogyakarta. The implementation of PPDB Online at the State Junior High

School level by the Education Office has been going well. In the future, the Education Office is expected to improve the monitoring and coordination system further [3].

Based on research conducted by M Hamdani S, Zulfikar Sembiring with the title "Web-Based New Student Admissions Application at PAB 8 Saentis Private High School, North Sumatra Province". prospective new students to get information about the school [4].

Based on research conducted by Zulhipni RSE, Gita R, Vera N entitled "New Student Admissions Information System With Client-Server Based SMS Gateway" focuses more on information systems for new student admissions based on SMS gateways using the Software Development Life Cycle method (SDLC)[5]. Based on research conducted by Dede S, Aan K, Dedy AK K, entitled "The Effectiveness of Online Website-Based New Student Admissions (PPDB)" focuses more on seeing the effectiveness of web-based new student admissions. The research method used is descriptive qualitative, carried out in State Junior High Schools in Purwakarta Regency [6].

In 2020, the whole world to Indonesia was experiencing a Covid-19 pandemic, where this can occur to prospective students and the committee on duty if the school admits new students offline [7]. Website is a technology that can help humans share information quickly and is not limited by time and place. In management, computers provide various facilities to improve service quality, such as school websites for information sources between schools and the community and web-based information systems to support school data administration [8]. The results of previous research conducted by other researchers show that web-based new student admissions facilitate the implementation of registration and data collection of prospective new students. By looking at these results, researchers have differences with previous research where this research focuses on the design of the new student admissions website, which can make it easier for prospective students to obtain information and collect the required requirements using the waterfall method.

With the design of the information system for the admission of new students online at SMA YAS Bandung, it is hoped that the PPDB system will be more transparent, accountable, and accommodating. The advantage is that the program can run well on all operating systems, is very suitable and easy to implement on networked computers, is very stable in all operating systems [9].

2.0 THEORETICAL

2.1. Theory is related to the object of research

New Student Admission

Routine activities from schools/madrasas to accept prospective students who meet specific requirements to obtain education in academic units and follow a higher level of education. New Student Admission provides the most comprehensive opportunity for school-age citizens to obtain the best educational services [10].

2.2. Theories system used

Information System

An *information system* is a framework that coordinates resources (human, computer) to convert input (input) into output (information) in order to achieve company goals [11]. According to Tanggela, Pakareng, & Wenas, information systems come from two words: system and information. A system means a unified whole consisting of several interconnected parts and interact to achieve specific goals. At the same time, information is conveyed, so that information systems have the meaning of a sure way to provide what is needed by the organization to operate successfully. [12].

Website

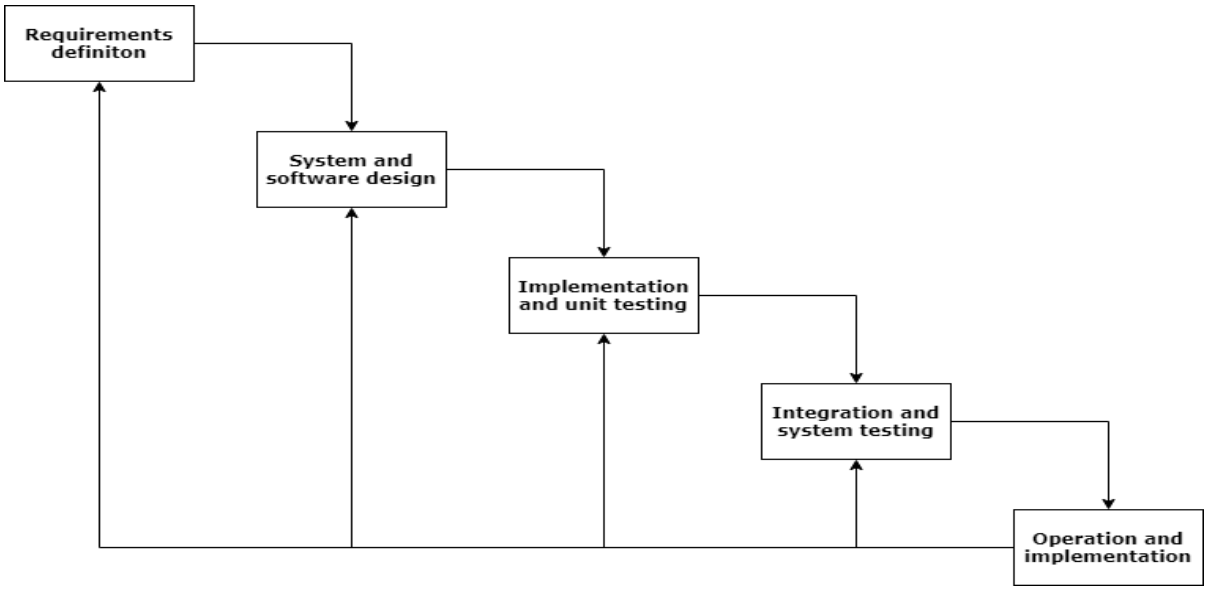
A website is a collection of pages related to other files that are related to each other. On a website, there is a page known as the home page. A *homepage* is a page that is first seen when someone visits a website [13].

MySQL

MySQL is a derivative of one of the main concepts in databases for a long time, namely SQL (Structured Query Language). SQL is a database operation concept, especially for the selection or selection and entry of data, which allows data operations to be done quickly automatically [14].

3.0 METHODOLOGY

The method used in making this system is the waterfall method, which focuses on designing new student admission applications, making it easier to register, looking for information relating to registration for new prospective students, and recording data from each prospective student. The software development model introduced by Winston Royce in the 70s is a simple classic model with a linear system flow. The output from the previous stage is the input for the next step. The waterfall method is a sequential software development process in which progress is seen as continuing to flow downward through the phases of planning, modelling, implementation, and testing [15].



Picture 1. Waterfall Method

a. Requirements Definition
   At this stage, an analysis of a complete PPDB SMA YAS Bandung system's needs was carried out. This data collection aims to find user needs by conducting direct interviews.
b. System and Software Design
   At this stage, the results of the analysis of the current needs carried out by making a system design, both software and hardware, for PPDB SMA YAS Bandung.
c. Implementation and Unit Testing
   After the PPDB system design is complete, the coding process will be carried out in the form of commands understood by the computer using a programming language and carried out by unit testing.
d. Integration and System Testing
   After coding, the overall test was carried out on the PPD system of SMA YAS Bandung.
e. Operation and Maintenance
   At this stage, monitoring, evaluating, and improving the PPD system at SMA YAS Bandung are carried out.

4.0 RESULTS AND DISCUSSION

4.1. Requirements Definition

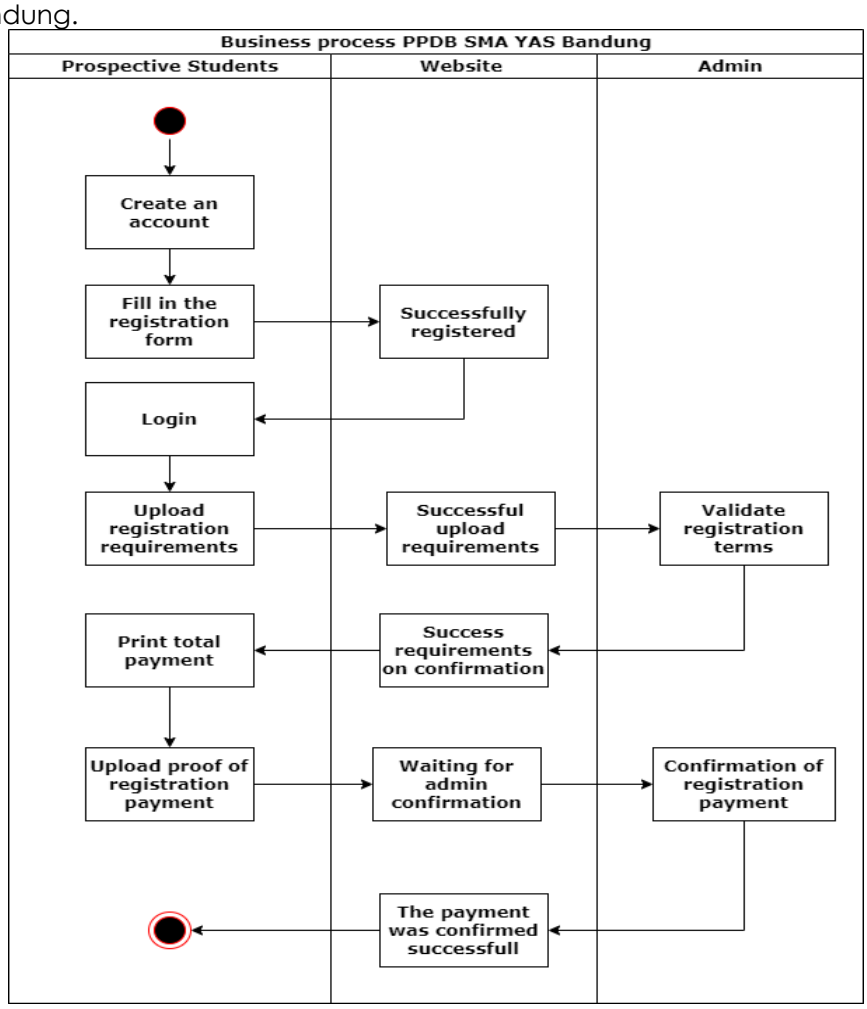
Requirements Definition aims to find out what technology is suitable to be applied, what hardware and software needed and the users who will use this system.

a. Software Requirements Analysis
   In designing this PPDB system, the authors use the PHP programming language, HTML for the interface and MySQL for the data database management system in this application.

4.2. System and Software Design

A general description of the online PPDB system's operation, first prospective students, create an account by completing the registration form. Prospective students can log in using an account designed and collect the conditions needed to register. After all the requirements have been met and successfully uploaded by prospective students, the committee will verify. Once verified, prospective students can make payments per existing payment details, and prospective students upload proof of payment for verification by the committee. For more

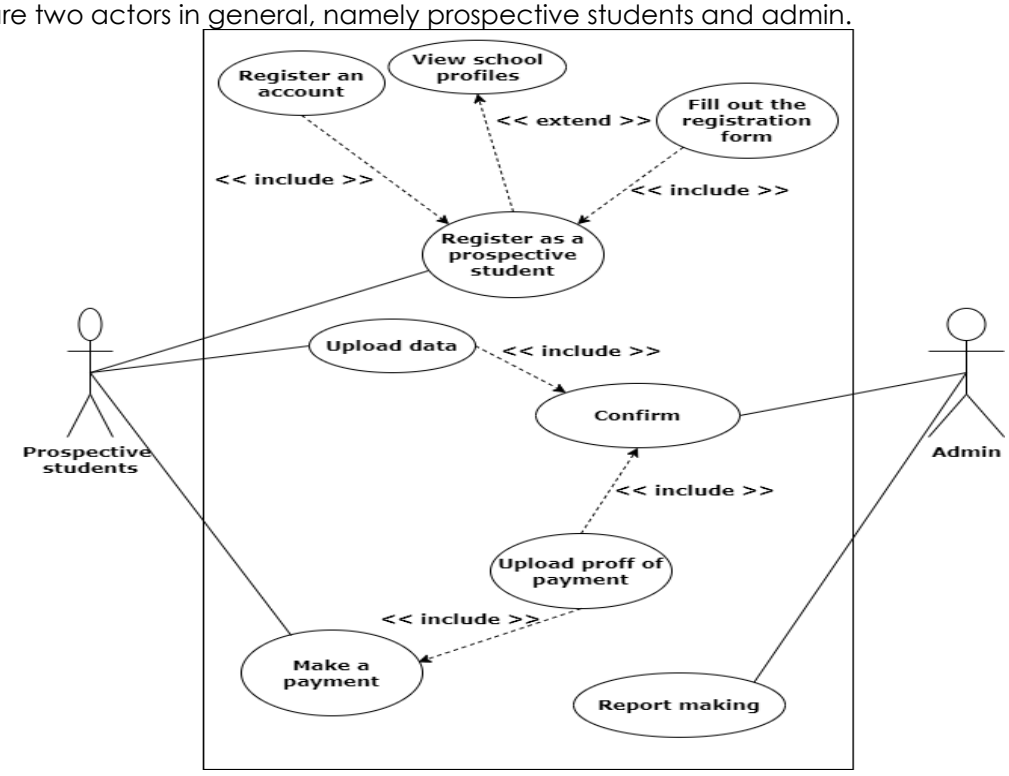
information, see the picture of the web-based PPDB information system business process at SMA YAS Bandung.



Picture 2. Business Process

a. Use Case Diagram

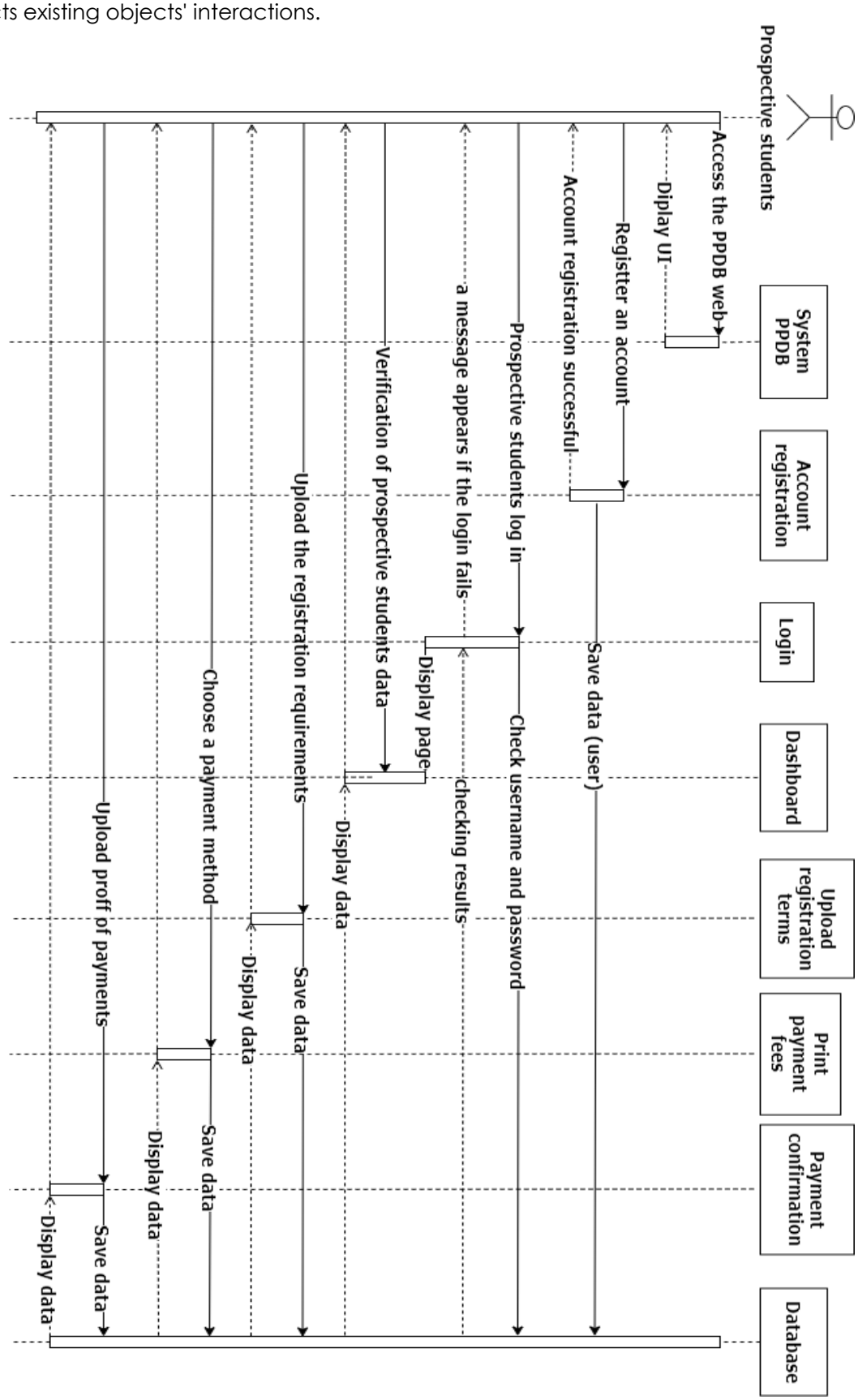
Use case diagram PPDB web-based information system SMA YAS Bandung. In this system, there are two actors in general, namely prospective students and admin.



Picture 3. Use Case Diagram

b. Sequence Diagram

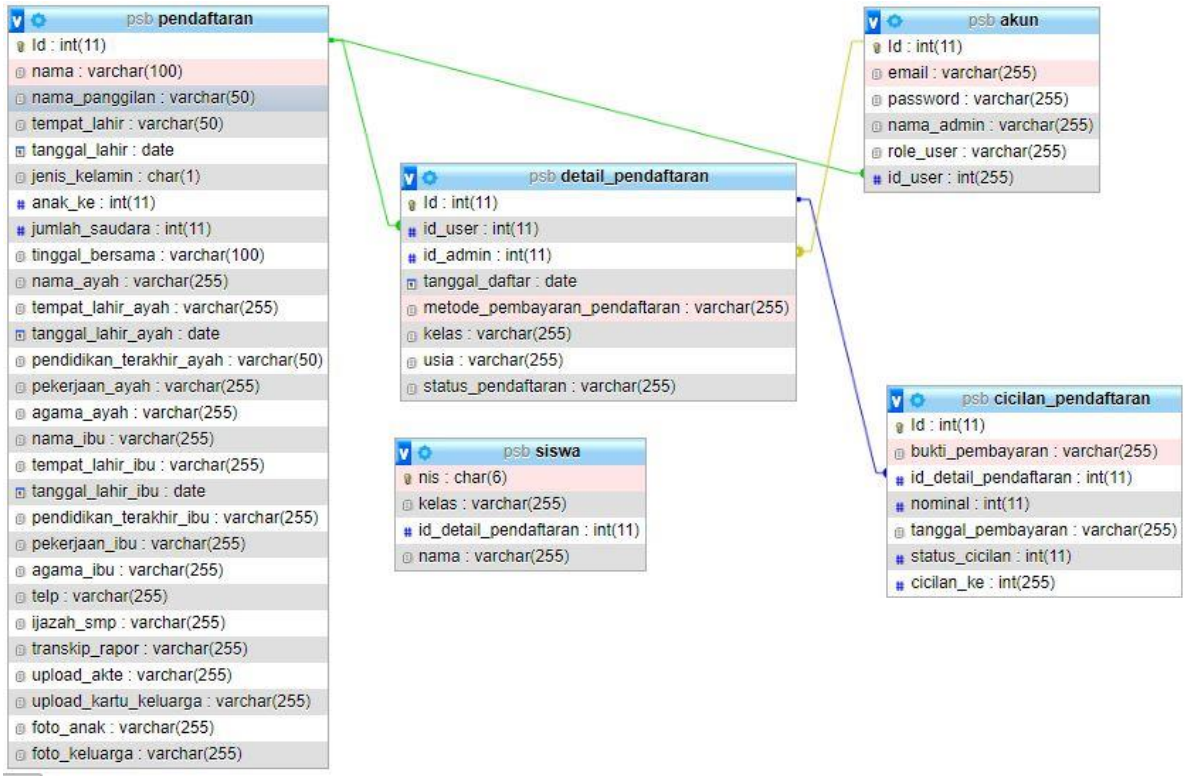
The sequence diagram of the PPDB web-based information system at SMA YAS Bandung depicts existing objects' interactions.



Picture 4. Sequence Diagram

c. Relational Database

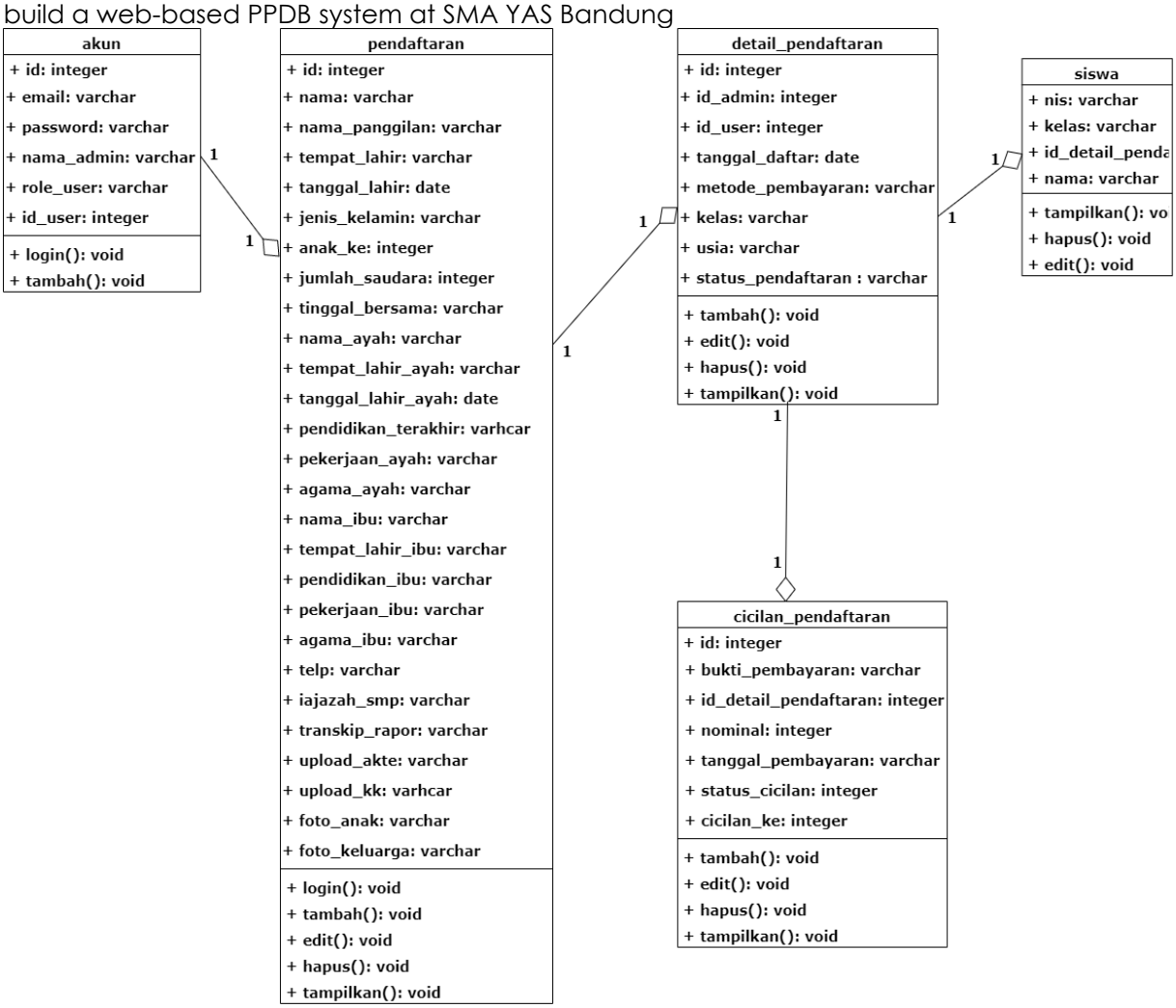
The form of relationships between tables in the PPDB information system database describes the flow of relationships between tables in the information database system created.



Picture 5. Relational Database

d. Class Diagram

The class diagram illustrates the system structure of defining classes that will be made to build a web-based PPDB system at SMA YAS Bandung

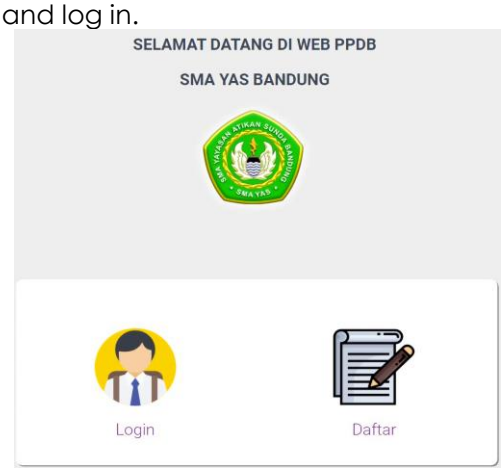


Picture 6. Class Diagram

4.3. Implementation and Unit Testing

a. Homepage

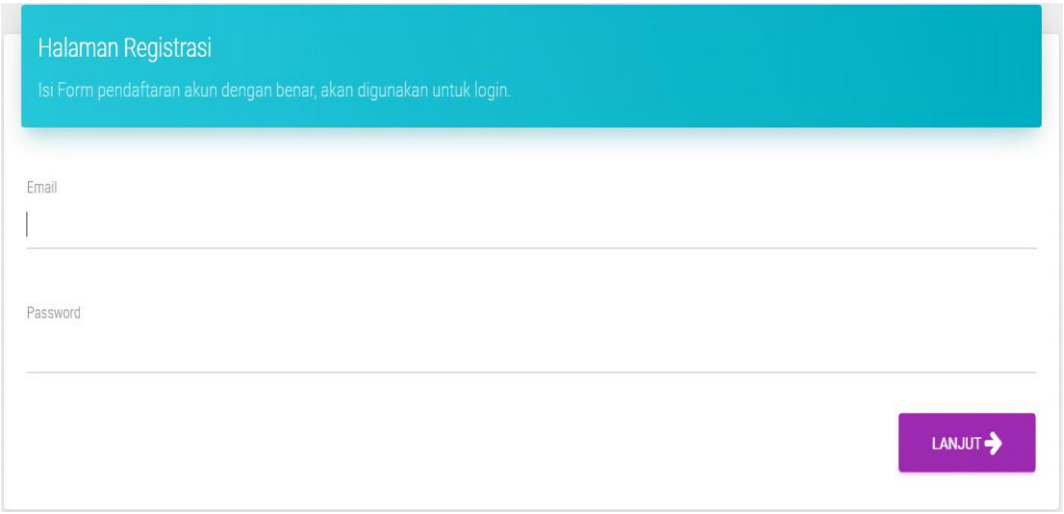
The start page for the web-based PPDB system at SMA YAS Bandung will be used to enter the account registration page and log in.



Picture 7. Homepage

b. Registration Page

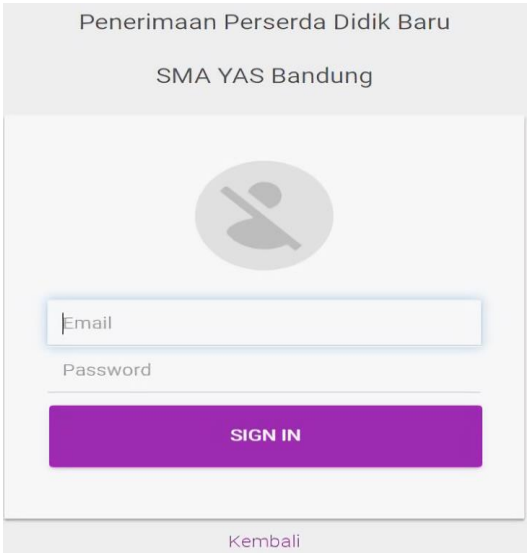
Before accessing the registration system, users first register on this page by filling in their email and password.



Picture 8. Registration Page

c. Login Page

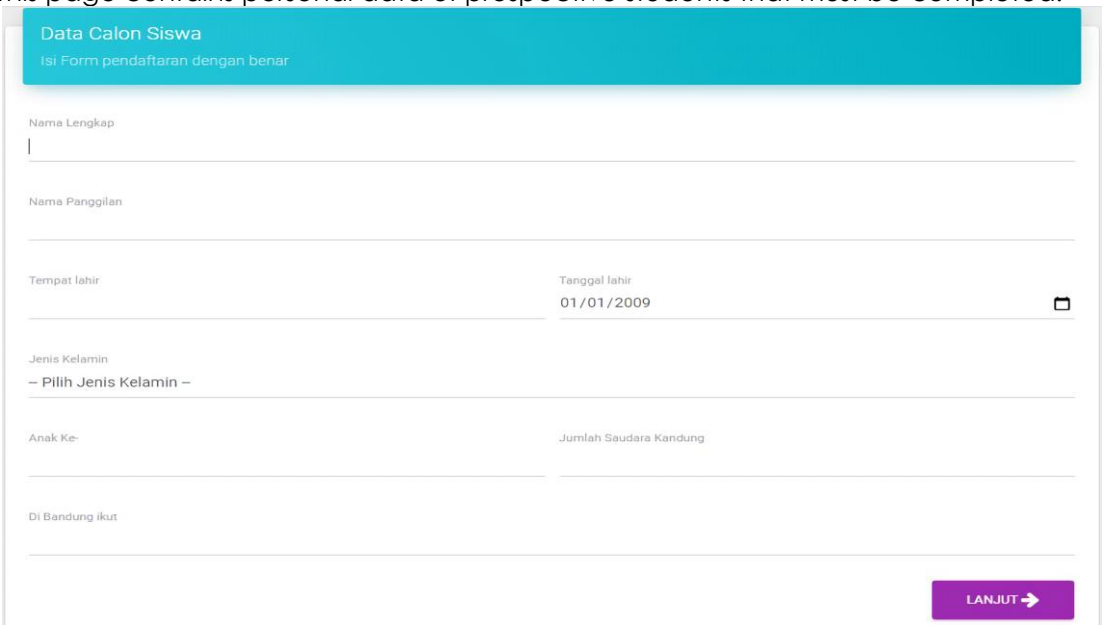
The login page contains an email and password that prospective students must fill in in order to register.



Picture 9. Login Page

d. Prospective Student Data Form

This page contains personal data of prospective students that must be completed.



Picture 10. Prospective Student Data Form

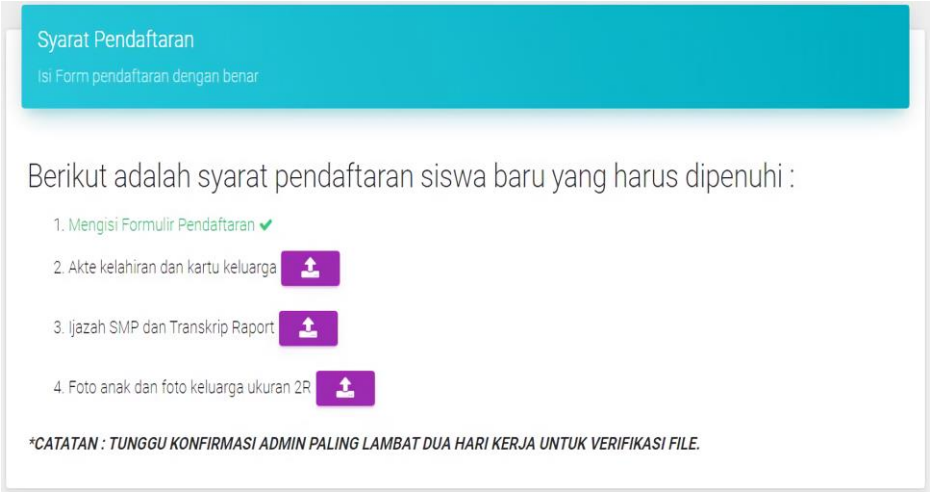
e. Display Home

This page contains menus that can register as prospective students, such as user profiles, registration requirements, payment, payment confirmation and logout.

Picture 11. Display Home

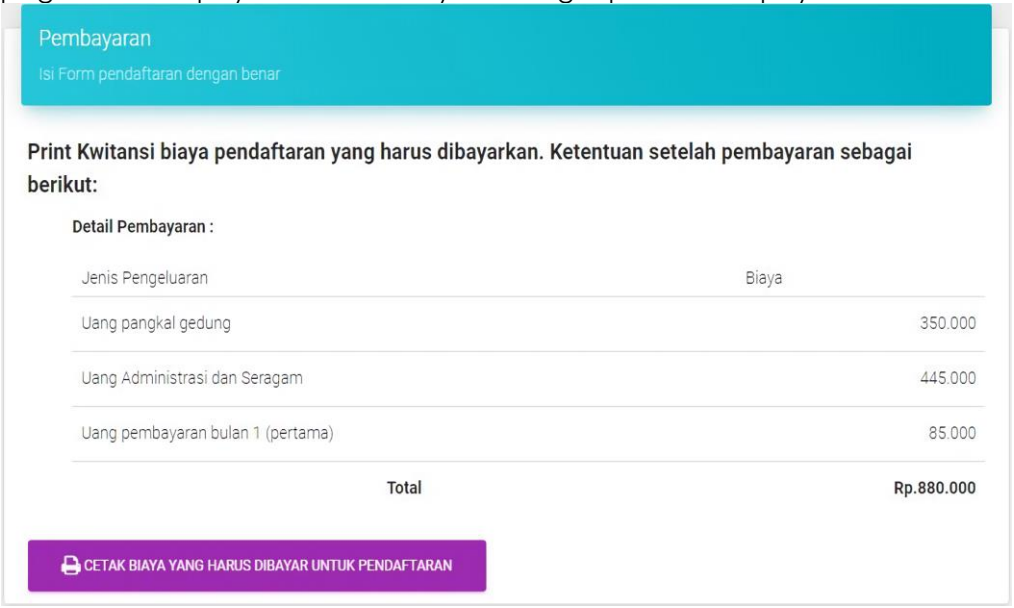
f. Registration Requirements Page

On this page, the function is to upload the registration requirements that the school has determined.



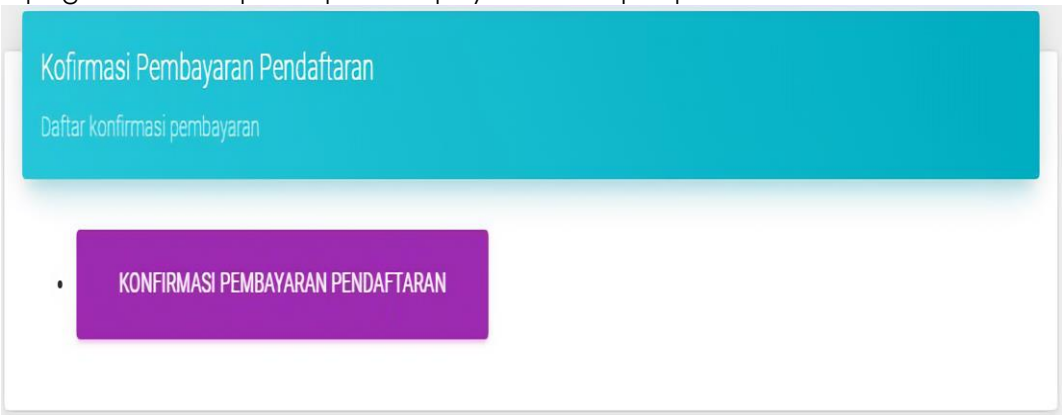
Picture 12. Registration Requirements Page

g. Payment Page
This page contains payments made by selecting a predefined payment method



Picture 13. Payment Page

h. Payment Confirmation Page
This page serves to upload proof of payment that prospective students must make.



Picture 14. Payment Confirmation Page

i. Unit Testing
In this study, the authors conducted testing using the Black-box testing method on the existing functions in the information system for new student admissions at SMA YAS Bandung with the results as shown in the following table.

Table 1. Testing Table

No	Description	Scenario	Expected output	Conclusion
1	Login	Username and password match	Successfully entered the user page	Valid
		Incorrect username and password	Login failed. Return to the login page	Valid
		The username is correct, and the password is wrong	Login failed. Return to the login page	Valid
		Wrong username and correct password	Login failed. Return to the login page	Valid
2	Logout	Choose the exit button	Return to the main page (home)	Valid
3	Registration / save data	Fill in all data correctly	Prospective student data successfully stored in the registration database	Valid
		Does not fill in all data	Registration failed.	Valid

			Return to the registration page	
		Using characters that are not allowed	Registration failed. Return to the registration page	Valid
4	Edit data	Change data properly	prospective student data has changed successfully	Valid
		Using characters that are not allowed	The data has not changed successfully, return to the data edit page.	Valid
5	Upload requirements	Upload requirements correctly	Requirements for prospective students are stored in the registration database	Valid
		The document file requirements are not following the provisions	Upload requirements failed, return to the upload requirements page	Valid
6	Print registration fee	The admin has verified requirements for prospective students	Show registration fee and print	Valid
		The admin has not verified the requirements for prospective students	Print registration payment is not yet available	Valid
		Prospective students have not uploaded the requirements	Print registration payment is not yet available	Valid
7	Confirm registration payment	Upload proof of payment correctly	Proof of registration payment stored in the database	Valid
		The proof of payment file is not following the provisions.	Confirm proof of payment failed, return to the registration payment confirmation page	Valid

Based on the results of testing carried out by the author above with the existence of a web-based new student admission information system at SMA YAS Bandung, it can make it easier for prospective students to register by accessing the PPDB website page and the school in recording data from prospective students so that the resulting report can quickly be obtained precisely and at any time. With this system, we can change all processes that were initially done manually, and now we can do it using the internet. It can be done anywhere and anytime. All the information and requirements needed are available in this system. Looking at all the available features and results, we can ensure that the system's acceptance of new students YAS SMA can overcome the problems in SMA YAS Bandung in accepting new students. With the convenience provided by this system, it becomes an attraction for prospective students who want to continue their education at YAS Bandung High School.

5.0 CONCLUSION

5.1. Conclusion

Based on the results of this study regarding the problems that occurred at SMA YAS Bandung in carrying out the process of accepting new students, which was carried out manually and during the Covid-19 pandemic, all new student admission processes required all new student admission processes carried out online without being hindered by distance and time. The purpose of this research is to make it easier for the school to carry out the process of accepting new students where all functions are computerized, easy access to information for prospective students who want to register just by opening a web page from YAS SMA and

making it easier for the school in the data processing. from prospective students. The design carried out in this study uses the waterfall method, which can make it easier to analyze the system's needs to make it easier to make the design of the application meet all the requirements of this new student acceptance process.

Based on the evaluation of testing that has carried out using the black-box testing method, it shows that every function in the new student admission system is running well according to the output produced. In this study, it was only carried out until the design stage, by implementing it would have a good impact and would be a solution for the school in carrying out the process of accepting new students online.

5.2. Suggestion

This new student admission information system's suggestion is to add additional features that can make it easier for candidates to get additional information. This system will better combine with existing information systems in the school itself.

REFERENCES

[1] E. D. Oktaviyani, D. A. Dwipitaloka, F. Sylviana, and L. Licantik, "Perancangan Sistem Informasi Penerimaan Peserta Didik Baru (Ppdb) Dan Registrasi Online Berbasis Website Pada Smp Negeri 6 Palangka Raya," J. Teknol. Inf. J. Keilmuan dan Apl. Bid. Tek. Inform., vol. 14, no. 2, pp. 119–128, 2020, doi: 10.47111/jti.v14i2.1223.

[2] R. Istiqomah, Kristiani, and B. Wahyono, "The Implementation of Online-Based New Student Admissions in Surakarta," IOP Conf. Ser. Earth Environ. Sci., vol. 1808, no. 1, 2021, doi: 10.1088/1742-6596/1808/1/012037.

[3] A. Aris, R. Anggara, and Z. A. Zamzami, "Perancangan Sistem Informasi Penerimaan Siswa Baru Berbasis Web Pada PKBM Bhakti Sejahtera," Cices, vol. 2, no. 1, pp. 87–98, 2016, doi: 10.33050/cices.v2i1.215.

[4] N. S. Province, "Journal of Research Computer Science Private High School , North Sumatra Province," vol. 1, no. 1, 2021.

[5] Z. R. S. Elsi, G. Rohana, and V. Nuranjani, "New Student Admissions Information System With Client Server Based Sms Gateway," JITK (Jurnal Ilmu Pengetah. dan Teknol. Komputer), vol. 6, no. 2, pp. 159–166, 2021, doi: 10.33480/jitk.v6i2.1377.

[6] D. Supendi, A. Komariah, and D. A. Kurniady, "The Effectiveness of Online Website-Based New Student Admissions (PPDB)," vol. 526, no. Icream 2020, pp. 109–111, 2021.

[7] D. Purwitasari, A. Rausanfita, and H. Fabroyir, "Sistem Pendaftaran Online untuk PPDB SMA/SMK Negeri Provinsi Jawa Timur," Sewagati, vol. 4, no. 2, p. 145, 2020, doi: 10.12962/j26139960.v4i2.7662.

[8] H. Supriyono et al., "Penerapan Teknologi Web Sekolah Bagi Smp Dan Sma Muhammadiyah Kartasura," War. LPM, vol. 19, no. 1, pp. 39–52, 2016, doi: 10.23917/warta.v19i1.1983.

[9] Y. Pujantoko, "PEMBUATAN WEBSITE SMA NEGERI 1 PRACIMANTORO MENGGUNAKAN PHP & MySQL," Skripsi, p. 17, 2009.

[10] N. A. Y. Ramadhani, "Pembangunan Sistem Informasi Penerimaan Siswa Baru Di Sekolah Menengah," J. Speed – Sentra Penelit. Eng. dan Edukasi, vol. 3, no. 3, pp. 35–43, 2011.

[11] Putri. Lely Deviana, "Perancangan Sistem Informasi Penerimaan Siswa Baru Pada Sekolah Menengah Kejuruan Negerti 3 Pacitan," Indonesia.J.Netw.Secur.3, vol. 3, no. 4, pp. 2–5, 2014.

[12] T. Hidayat, M. Muttaqin, and D. Djamaludin, "Sistem Informasi Penerimaan Peserta Didik Baru Online Berbasis Website di Yayasan Pendidikan Arya Jaya Sentika," Komputika J. Sist. Komput., vol. 9, no. 1, pp. 7–14, 2020, doi: 10.34010/komputika.v9i1.2750.

[13] M. Muslihudin and A. Larasati, "Perancangan Sistem Aplikasi Penerimaan Mahasiswa Baru Di Stmik Pringsewu Menggunakan Php Dan Mysql," J. TAM, vol. 3, pp. 32–39, 2014.

[14] dewi maharani, "Perancangan Sistem Informasi Akademik Berbasis Web Pada Sekolah Islam Modern Amanah," vol. 2, no. April, pp. 27–32, 2018, doi: 10.31227/osf.io/r9szc.

[15] R. Benarivo, "Rancang bangun sistem informasi dan penerimaan peserta didik baru berbasis web," Electron. Theses Diss. Univ. Muhammadiyah Surakarta, pp. i–15, 2018.