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Design and Build a Web App-Based Conference Registration System Using the Waterfall Model

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Abstract

During the pandemic, many events are held online. conference registration (webinars, seminars, workshops) which basically will cause its complexity for admins if there are excess registrants or over participants from achieving the registration quota target. In addition, the admin must monitor regularly to ensure that there are no excess registrants that result in inefficient. The method used in the development of this application is the waterfall method. The purpose of this research is to build a web-based conference registration system that can make it easier for admins/organizers to manage the registration process. The results of this study the system can display the results of the recap from the admin so that the user can see the quota from the conference registration organized by the committee as well as testing of users from several tests to produce an application system that runs well.

I. INTRODUCTION

Starting from the spread of the covid-19 virus, there were many activities carried out online due to the development of the covid-19 virus that was increasingly spreading throughout the world, especially in Indonesia[1][2]. This is also to anticipate the spread of COVID-19 and reduce public crowds. Therefore, various fields have begun to transform through the use of websites, for example for PPDB (student registration system) [3], assessment of the implementation of independent learning in independent campus [4], for registration of nadhir waqaf [5], as well as national conferences. In addition, large events such as seminars, webinars, or workshops are also held online to make it easier for participants to participate in

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these events without being constrained by the Covid-19 regulations. But behind it all, the admins must provide a registration form to accommodate the participants who take part in the event[6].

The problems that are often faced by admins and users in preparing registration forms and participating in conference events [7][8], the first is for admins to continue to monitor the number of participants which results in inefficient management of participant data and requires great effort to anticipate excess participants so that over-participation does not occur [9][10]. As for users, one of the problems that are often faced is the difficulty of knowing the achievement of the target participants who have registered at the event.

Therefore, the author researched the Design and Build of a Web App-Based Conference Registration System Using the waterfall method by creating a registration system that has automatic features to prevent late users from registering [11][12], and there are also several event lists to assist users in choosing more than one particular event [2] [13]. in one application and the system can display the recap results from the admin so that the user can see the registration quota for each event [9]. The technology used in the system is VueJs for display interfaces [14] [15] and firebase as a database used to store participant data [16] [17].

The method proposed in this research is using the waterfall method with a systematic approach. Starting from the stages of analysis, design, coding, testing, and maintenance sequentially. To describe the system so that the client has a clear picture of the system to be developed.

II. RELATED WORKS

In the study entitled Design of a Web-based student re-registration information system (Case Study at Manado Polytechnic) research using a questionnaire for system testing was 93.3% requiring this system to provide convenience in registering. And the results of this study are the implementation of a web-based student re-registration information system [18].

The research, entitled the design of information systems and web-based acceptance of new students.The conclusion gained is the website is very necessary school, because with the website users can access information that is in school quickly through the internet media. The results of the assessment of the website with a questionnaire given to teachers and employees as many as 24 people with the results of 74.69% which means the website is good to apply [19].

III. METHODS

A. Waterfall Method

In this study, the method used for application design is the waterfall. The waterfall method is one of the methods in the System Development Live Cycle (SDLC)[20]. The waterfall system has special characteristics in the workmanship of a system that is done sequentially [18]. In general, the waterfall method has the following steps:

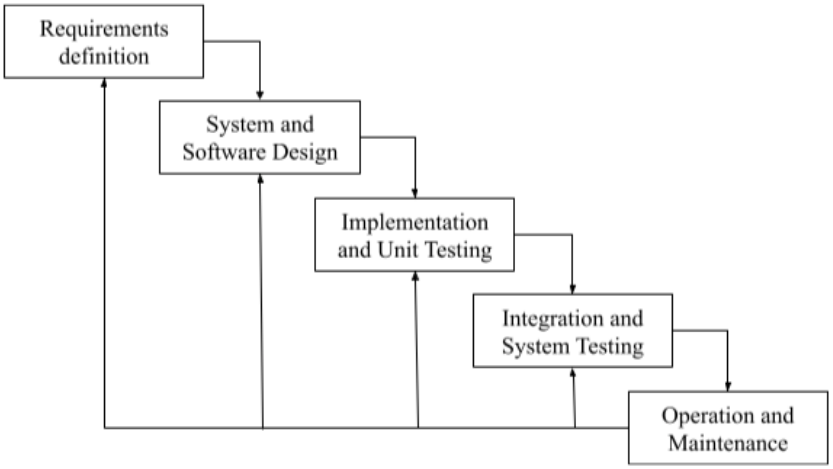

Figure 1. Waterfall Model

B. Stages in the Waterfall Model

The following are several stages of the Waterfall method:

Stage 1: Requirements Definition

The process of finding requirements for software, for example, data collection. The information obtained is then analyzed, so that complete information is obtained regarding the specification of software requirements.

Stage 2: System and Software Design

At this stage the aim is to provide an overview of the application to be developed and how it works.

Stage 3: Implementation and Unit Testing

At this stage, the software design is implemented in a series of programs or program units. Tests are carried out that the program meets the specifications.

Stage 4: Integration and System Testing

After doing unit testing, the next step is to test the entire program to ensure that the software meets the design and requirements.

Stage 5: Operation and Maintenance

This last stage describes maintenance on the software at a fairly long time and periodically, as well as repairing the system from before and improving the system (update fiture).

C. Transform Mapping

Transform mapping is applied to a data stream that shows a clear boundary between incoming and outgoing data. The transform mapping in the registration application design is as follows:

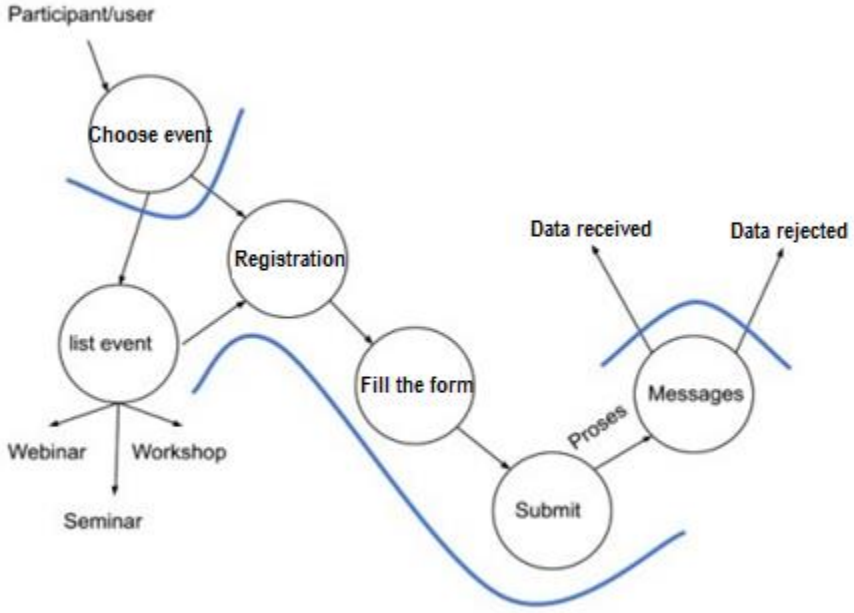

Figure 2. Transform Mapping

D. Flowcart

A flowchart is a diagram that displays the steps and decisions to carry out a process from a program. Each step is depicted in the form of a diagram and connected by lines. The flow of the system is starting from selecting the event, followed by filling out the form according to the format, after all the data is correct and then submitting it, if the event is full, the system will display a failed message, and the system will display a successful message when the event still has quota remaining. is a flowchart image for making a web app-based conference registration system.

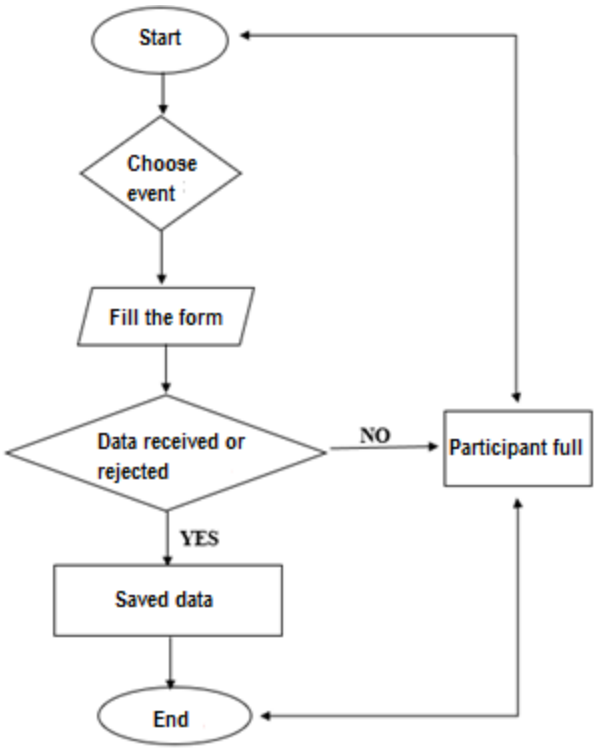

Figure 3. Flowchart System

E. Data Flow Diagram

A data flow diagram is a data flow diagram system created to help design software for personal, business, and organizational needs. There are four kinds of diagram notation used, namely data store, data flow, process, and the external entity. The data flow in the registration application design is as follows:

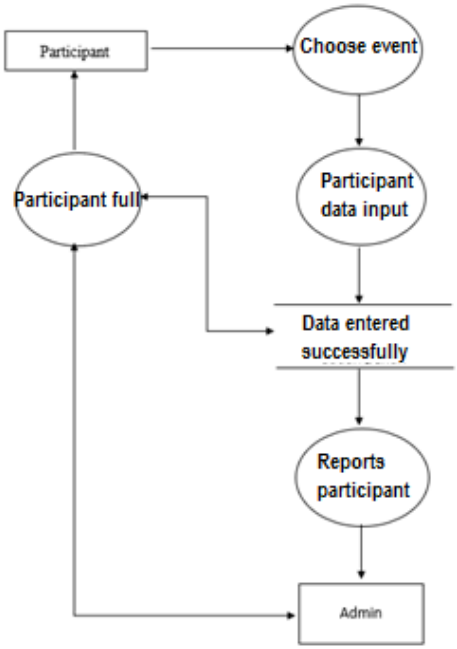

Figure 4. Data Flow Diagram

F. Entity Relationship Diagram (ERD)

Entity Relationship Diagram is a model to explain the relationship between data in the database based on basic data objects that have relationships between relationships. The flow of the ERD is that the participant has data on name, email, cellphone number, agency, event hours which will be managed by the admin. Next, the admin adds events along with the implementation date. The ERD on the system is described as follows.

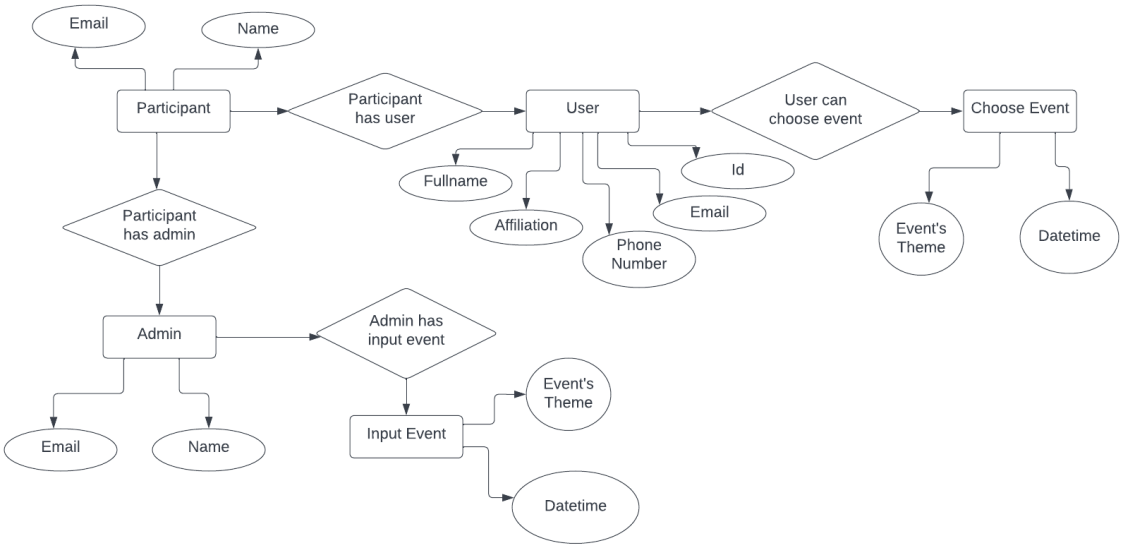

Figure 5. Entity Relationship Diagram ERD

IV. RESULTS AND DISCUSSIONS

The results of the application display designed in accordance with the waterfall method.

A. App View Conference Registration Main Page

The main page contains a list of events (events) providing information related to the event. On this page, there are also event categories (general, special). For special categories, only participants who are still within the internal scope of the campus or organizations, etc., while the general category is an event that can be attended by all groups or the public, on this page is succes.

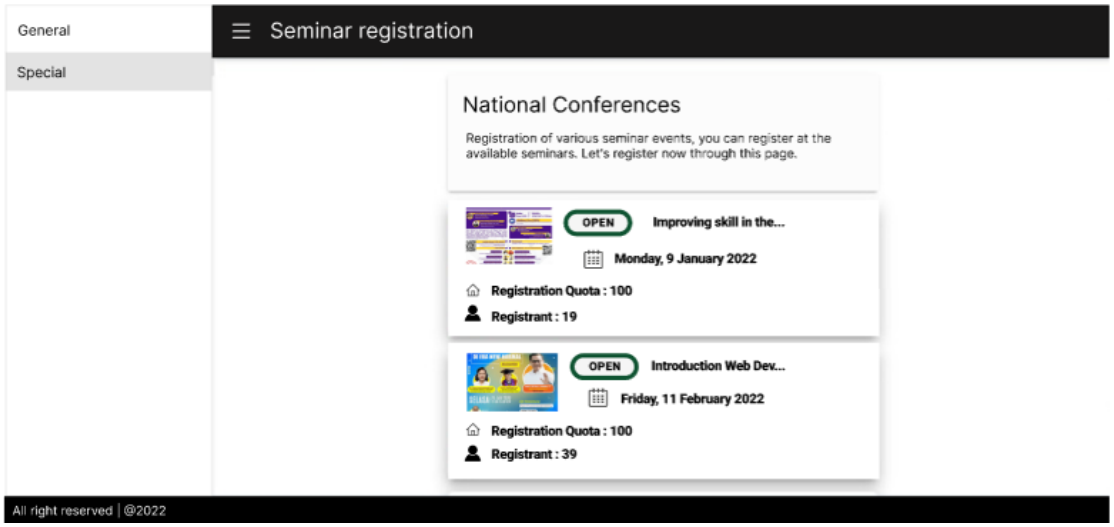

Figure 6. Home Page

B. Registration page

On this page, there is a form that must be filled out by the user which includes (full name, agency, email, cellphone number, event time). if one column is not filled or does not match the format, the system will refuse and the submit button is disabled as long as the column is still in an unfilled condition, On this page is succes.

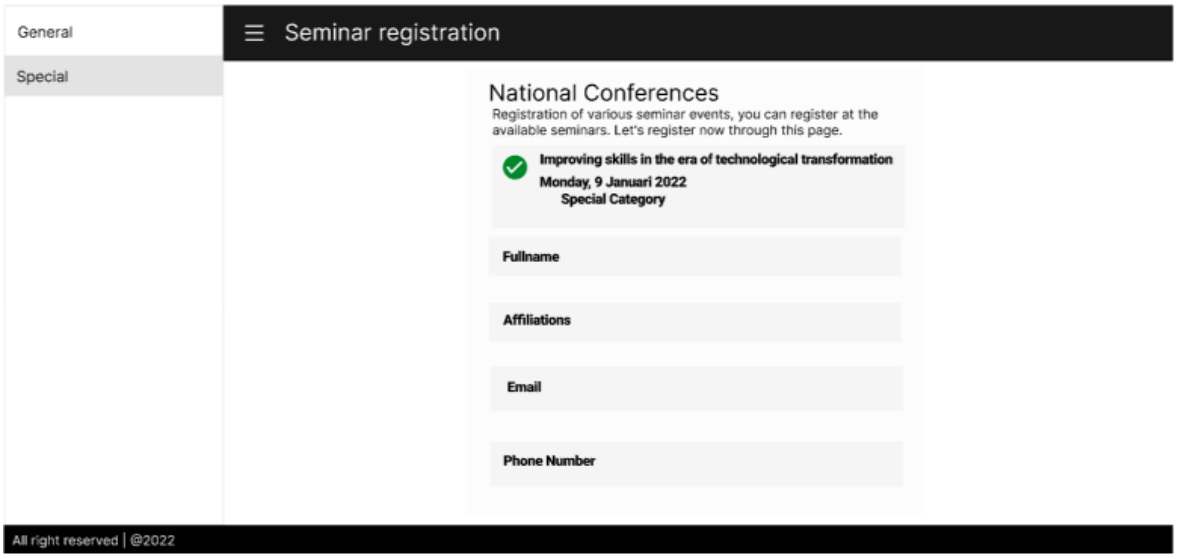

Figure 7. Registration Page

C. Feedbacks failed to register page

This page works if the user fails to register because the event has reached the quota target (full), then the system will return the message "Quota at 08:00 - 11:00 is full", On this page is succes.

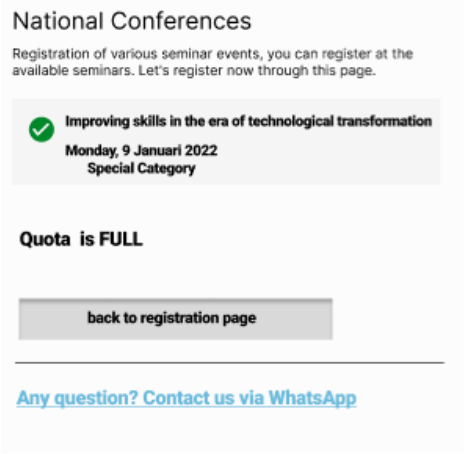

Figure 8. Feedbacks

D. Successfully registered page

This page functions if the user has successfully registered because the event still has quota remaining, then the system will return the message "Congratulations, your data has been successfully submitted" and the data has successfully entered the database, On this page is succes.

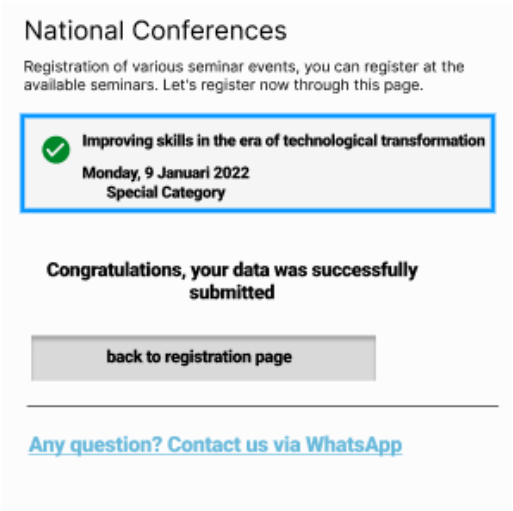

Figure 9. Successfully Registration Page

E. User test results

The results obtained in this conference registration application research are testing from the user side, which can be summarized in Table 1.

Table 1. User Test Result

No	User test result		
	Test Case	***Succes***	***Failed***
1	Choose an event category	Succeed	
2	Choose an event	Succeed	
3	Data input process	Succeed	
4	Submit process	Succeed	
5	Message display successfully register	Succeed	
6	Message display failed list	Succeed	

The results obtained from the results of testing the system as a whole shows the results are going well, this can be seen in the graph below.

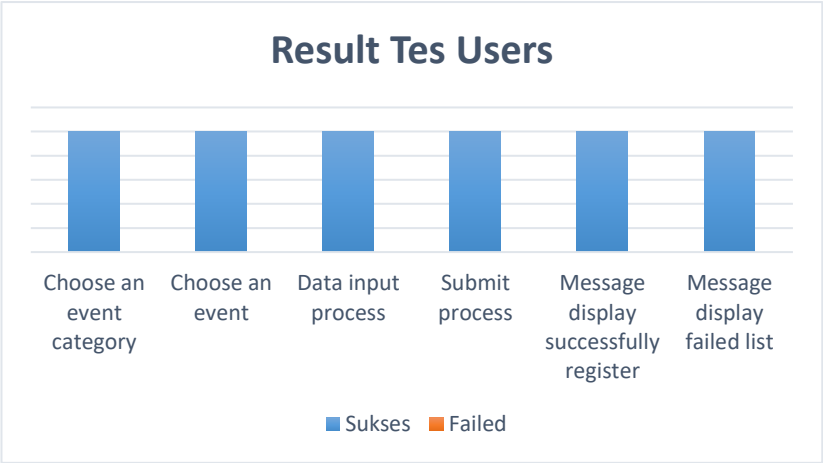

Figure 10. Graph of User Test Result

V. CONCLUSIONS AND RECOMMENDATIONS

In this conference registration application, there are several useful features for users and admins. First, in the application, there is a list of events (events) displaying information about the number of registration quotas that make it easier for users to choose events. Second, there is an automatic feature that prevents users when the event has reached the quota limit, this is also useful for admins to be more efficient in managing data so that over-participation does not occur. This application is less than perfect, the author hopes that in the future it can be developed again with various features and adapt to the latest technology.

VI. REFERENCES

[1] R. Roshan, R. Porwal, and C. Mani Sharma, "Review of Search based Techniques in Software Testing," *International Journal of Computer Applications*, vol. 51, no. 6, pp. 42–45, 2012, doi: 10.5120/8050-1387.

[2] R. Amin Teknik Informatika STMIK Nusa Mandiri Jakarta Jl Damai No and W. Jati Barat Jakarta Selatan, "Rancang bangun sistem informasi penerimaan siswa baru pada SMK Budhi Warman 1 Jakarta," *ejournal.nusamandiri.ac.id*, Accessed: Jun. 02, 2022. [Online]. Available: http://ejournal.nusamandiri.ac.id/index.php/jitk/article/view/391

[3] E. Sulistiyani, R. Budiarti, A. K.-S. NASIONAL, and undefined 2022, "Pemanfaatan Sistem PPDB Online Guna Menjaga Keberlangsungan Layanan MTs. Abadiyah Pada Masa Pandemi COVID-19," *103.106.72.138*, Accessed: Jun. 02, 2022. [Online]. Available: https://103.106.72.138/index.php/smpm/article/view/832

[4] R. Putri Nourma Budiarti *et al.*, "IMPLEMENTATION OF MERDEKA BELAJAR KAMPUS MERDEKA (MBKM) AND MODELING OF QUESTIONNAIRE BASED ON A CASE OF MBKM IN UNIVERSITAS NAHDLATUL ULAMA SURABAYA," *Business and Finance Journal*, vol. 7, no. 1, pp. 83–92, 2022, doi: 10.33086/bfj.v7i1.2576.

[5] M. C. Sukron, R. P. N. Budiarti, and A. S. Kamil, "IMPLEMENTATION OF NADHIR ONLINE REGISTRATION SYSTEM IN BADAN WAKAF INDONESIA USING AGILE DEVELOPMENT METHODS," *Applied Technology and Computing Science Journal*, vol. 3, no. 1, pp. 30–47, 2020, doi: 10.33086/atcsj.v3i1.1746.

[6] A. Kadir, "Dasar Pemrograman WEB Dinamis Menggunakan PHP, penerbit ANDI." Yogyakarta, 2008.

[7] Y. Hu, N. L.-2010 I. C. Symposium, and undefined 2010, "Automatic black-box method-level test case generation based on constraint logic programming," *ieeexplore.ieee.org*, Accessed: Jun. 02, 2022. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/5685369/

[8] D. Verma, B. K.-J. of C. S. and Engineering, and undefined 2012, "Component testing using finite automata," *Citeseer*, Accessed: Jun. 02, 2022. [Online]. Available: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.300.2225&rep=rep1&type=pdf

[9] P. Silitonga, D. P.-J. S. I. Kaputama, and undefined 2021, "Implementasi System Development Life Cycle Pada Rancang Bangun Sistem Pendaftaran Pasien Berbasis Web," *researchgate.net*, 2021, Accessed: Jun. 02, 2022. [Online]. Available: https://www.researchgate.net/profile/Doni-Purba-2/publication/356407568_IMPLEMENTASI_SYSTEM_DEVELOPMENT_LIFE_CYCLE_PADA_RANCANG_BANGUN_SISTEM_PENDAFTARAN_PASIEN_BERBASIS_WEB/links/6198c70a07be5f31b79fa2bf/IMPLEMENTASI-SYSTEM-DEVELOPMENT-LIFE-CYCLE-PADA-RANCANG-BANGUN-SISTEM-PENDAFTARAN-PASIEN-BERBASIS-WEB.pdf

[10] W. Welda and B. A. Minartiningtyas, "Sistem Informasi Pengelolaan Kerjasama Bidang Humas pada STMIK STIKOM Indonesia," *Jurnal Sisfokom (Sistem Informasi Dan Komputer)*, vol. 6, no. 2, pp. 86–92, 2017.

[11] B. Kitchenham *et al.*, "Systematic literature reviews in software engineering – A tertiary study," *Information and Software Technology*, vol. 52, no. 8, pp. 792–805, 2010, doi: 10.1016/j.infsof.2010.03.006.

[12] H. Bhasin, S. Shewani, and D. Goyal, "Test Data Generation using Artificial Life," *International Journal of Computer Applications*, vol. 67, no. 12, pp. 34–39, 2013, doi: 10.5120/11450-7045.

[13] H. Bhasin, E. Khanna, and S. Sudha, "Black Box Testing based on Requirement Analysis and Design Specifications," *International Journal of Computer Applications*, vol. 87, no. 18, pp. 36–40, 2014, doi: 10.5120/15311-4024.

[14] P. Vue *et al.*, "Pemanfaatan Vue Js Pada Fitur Pengaturan Tambak Dalam Aplikasi Budi Daya Tambak Jala," *journal.uii.ac.id*, Accessed: Jun. 02, 2022. [Online]. Available: https://journal.uii.ac.id/AUTOMATA/article/view/17403

[15] R. Cahyadi *et al.*, "TEKNOLOGI FIREBASE UNTUK APLIKASI LAPOR AKAKOM," *ejournal.akakom.ac.id*, vol. 4, no. 1, 2019, Accessed: Jun. 02, 2022. [Online]. Available: https://ejournal.akakom.ac.id/index.php/jiko/article/view/252

[16] S. Supriatiningsih, "Implementasi Metode Waterfall Pada Aplikasi Perpustakaan Berbasis Web," *Indonesian Journal on Software Engineering (IJSE)*, vol. 6, no. 1, pp. 83–93, 2020, doi: 10.31294/ijse.v6i1.8028.

[17] A. F.-I. I. S. R. Journal and undefined 2021, "Rancang Bangun Sistem Pendaftaran Pelatihan Berbasis Web," *ejournal.uinib.ac.id*, Accessed: Jun. 02, 2022. [Online]. Available: https://ejournal.uinib.ac.id/jurnal/index.php/insearch/article/view/2035/0

[18] M. Madiun, "Teknik Mudah Membangun Website dengan HTML, PHP dan MySQL," *Madiun: Andi*, 2008.

[19] R. Benarivo and H. Supriyono, "Rancang bangun sistem informasi dan penerimaan peserta didik baru berbasis web," 2018, Accessed: Jun. 02, 2022. [Online]. Available: http://eprints.ums.ac.id/id/eprint/59993

[20] B. Oetomo, "Pengantar Teknologi Informasi Internet," 2007, Accessed: Jun. 02, 2022. [Online]. Available: https://r2kn.litbang.kemkes.go.id/handle/123456789/77385