

Design Of Website-Based Online Reservation And Queue Application At UPTD Puskesmas Kayen Kidul

Deni Luvi Jayanto ^{1*}, Devita Medariska ², Prakasit Poonwong ³, Ni'matu Zuliana ², Andra Dwitama Hidayat ², Vicky Bin Djusmin ⁴, Roma Firmansyah ⁵, Tri Mukti Lestari ⁶, Ninda Mulya Ike Ardila ²

¹ Tadulako University

² Institut Ilmu Kesehatan Bhakti Wiyata

³ Praboromarajchanok Institute Thailand

⁴ Cokroaminoto Palopo University

⁵ Sekolah Tinggi Ilmu Hukum Biak, Papua

⁶ Maulana Malik Ibrahim Islamic State University Malang

¹ Soekarno Hatta KM. 9, Tondo, Mantikulore, Kota Palu, Sulawesi Tengah, Indonesia

² Jalan Wahid Hasyim 65 Bandar Lor, Kediri Jawa Timur 64114, Indonesia

³ Tambon Bang Khen, Mueang Nonthaburi District, Nonthaburi 11000, Thailand

⁴ Jalan Latamacelling, Tompotika, Wara Palopo, Sulawesi Selatan 91911, Indonesia

⁵ Brambaken, Kec. Samofa, Kabupaten Biak Numfor, Papua 98111, Indonesia

⁶ Jalan Gajayana 50, Dinoyo, Lowokwaru Malang Jawa Timur 65144, Indonesia

* deniluvijayanto@gmail.com

Uploaded: 2024-04-22, Revised: 2024-08-05, Accepted: 2024-08-15

Abstract — UPTD Puskesmas Kayen Kidul always prioritizes service to the community but has difficulty managing patient registration and queues because it does not have digital and online registration so patients are not optimal when there are many visits. A patient registration system design is required which can be used as a reference for building the system by the programmer. This research aims to review the availability of Standard Operating Procedures (SOP), system requirements in the Unified Modeling Language (UML) and design a user interface for website-based online reservations and queues. This type of research uses a qualitative descriptive approach with 2 registration officer respondents through interviews and then analyzing feature needs and data using SOPs with observation. The research results of the SOPs already exist and are appropriate, UML in the form of use cases, activity diagrams, sequence diagrams and class diagrams have been created and user interface requirements based on color, layout and controls have been realized and tested on officers.

Keywords – ui, registration, puskesmas, reservation, queue

Abstrak — UPTD Puskesmas Kayen Kidul selalu mengutamakan pelayanan kepada masyarakat tetapi mengalami kesulitan mengatur pendaftaran pasien serta antrian karena belum memiliki pendaftaran digital dan online sehingga pasien tidak optimal saat kunjungan banyak. Diperlukan rancangan sistem pendaftaran pasien yang dijadikan acuan membangun sistem oleh programmer. Penelitian ini bertujuan meninjau ketersediaan Standar Operasional Prosedur (SOP), kebutuhan sistem dalam Unified Modeling Language (UML) dan merancang user interface reservasi dan antrian online berbasis website. Jenis penelitian menggunakan pendekatan deskriptif kualitatif dengan 2 responden petugas pendaftaran melalui wawancara kemudian dilakukan analisis kebutuhan fitur dan data menggunakan SOP dengan observasi.



Hasil penelitian SOP sudah ada dan sesuai, UML berupa use case, activity diagram, sequence diagram, dan class diagram sudah dibuat dan kebutuhan user interface berdasar warna, layout dan kontrol sudah diwujudkan dan diujikan kepada petugas.

Kata kunci – ui, registrasi, puskesmas, reservasi, antrian

Copyright © by author

1. INTRODUCTION

Indonesian Minister of Health Regulation No. 43 of 2019 states that a Community Health Center or Puskesmas is a health service facility that organizes first-level public health efforts and individual health efforts by prioritizing promotive and preventive efforts in its work area. One of the services provided by the Puskesmas is collecting patient data when seeking treatment, which is online registration. Puskesmas as one of the first level individual health service institutions require the presence of an information system that is accurate and reliable, and adequate to improve health services to patients and other related environments [1]. Medical records are documents containing patient identity data, examinations, treatment, procedures and other services that have been provided to patients and electronic medical records are medical records created using an electronic system intended for administering medical records [2]. The digital information used in registering patient identities at Puskesmas can be used as part of electronic medical records which makes it easier for officers to provide services. The development of an online patient registration information system at the Puskesmas can greatly help the operational activities of the Puskesmas because patient service activities are more effective and efficient [3]. Online registration services are able to modernize health service registration with the aim of making people feel it is easy, fast, comfortable, practical and also helps save time and costs due to reduced use of paper [4]. Integrated information services and information management are very important in every institution, including community health centers. The benefit that can be obtained from online registration is that patients don't have to queue for long at the puskesmas, patients only need to register, then choose the clinic they are going to and immediately get a queue number which is very effective and efficient so that there is no accumulation of patients at the puskesmas

[5]. Information technology provides speed and accuracy in processing data when compared to manual methods, making it easier for users to manage data.

Designing a registration information system at a community health center such as identifying use case needs, class diagrams, sequence diagrams which are used as references which will later be continued in determining interface designs such as layout, color and control are also things that must be considered [6]. The development of information technology today has a great influence on the progress of health services in order to create a healthy and prosperous society. Assessment of user interface design is an important factor in creating applications, especially for color, layout and controls [7]. The combination of colors in a design will give an impression to the user, so you must pay attention to it when choosing colors [8]. The choice of color in a display must pay attention to the needs and desires of the user [9]. Adjusting data components is also important so that the system can exchange data between health units [10]. Developing an application to identify data needs requires defining and creating a Unified Modeling Language (UML), which is a method for visual modeling that is used as a means of designing object-oriented systems [11].

When the survey was carried out, it was found that the Puskesmas Kayen Kidul needed to design a patient registration information system that was used as a reference for managing patient identity data. It was found that management of registration data to date has not been carried out properly and has resulted in a lack of synchronization between the patient's identity data and the node they have. So officers input data repeatedly and cause service to take a long time when officers should be able to provide service quickly. Puskesmas Kayen Kidul need to be supported by auxiliary units that have specific tasks, one of which is the medical records unit. The medical records unit is



responsible for managing patient data into health-related information. In this research, Standard Operational Procedures (SOP) and UML requirements will be identified which include use cases, activity diagrams, sequence diagrams and class diagrams and then used as a basis for designing user interface designs based on color, layout and control.

2. RESEARCH METHODS

This type and design of research approach uses descriptive qualitative research methods. Descriptive research is a method that functions to describe or provide an overview of the object being studied through data or samples that have been collected [12]. The object studied in this research is the registration unit. The research location was carried out at the Puskesmas Kayen Kidul which was carried out from October 2023 – January 2024. The population and sample used in this study was 2 officer from the patient registration unit. The instruments in this research used interview and observation sheets. The following are the stages that have been carried out in the research.

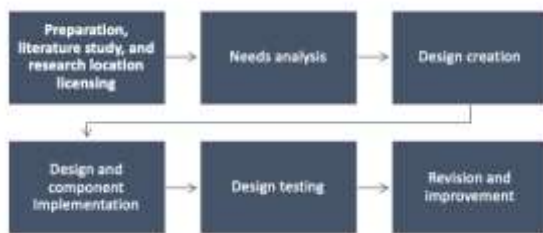


Figure 1 stages of research

a. Preparation, literature study, and research location licensing

The stage of searching for literature and previous research references regarding registration by collecting information on needs related to the use of devices, tools for design and references. Researchers will carry out official permits starting from sending letters and collecting initial data (initial survey).

2. Needs analysis.

At this stage, interviews are carried out and adjustments are made to the needs and components that are important and needed by the officers so that they can later be included in the design

3. Design creation

Stages for designing and analyzing a suitable interface design, starting from the use of layout location, color and buttons (including menus).

4. Design and component Implementation

Stages of implementing components into design, designs are made according to observation and interview data.

5. Design testing

The stage of testing the design with users (officers) to see suitability and get feedback.

6. Revision and improvement

Stages of improving the design and entering it according to testing until the design and components are in accordance with the officer.

3. RESULTS

The following are the results of observations, interviews, and products that have been created :

1. Standard Operating Procedures (SOP)

Based on research results, Standard Operating Procedures (SOP) for patient registration at the Puskesmas Kayen Kidul already exist and regulated No. 440/P.SOP.LKT.019/418.25.3.83. 2/2017. The SOP for patient registration that has been implemented at the Puskesmas Kayen Kidul that contains the sequence of patient reception, data that must be recorded by officers and who have the obligation to provide services to patient reception.

2. Unified Modeling Language (UML)



The following is a process design created using Unified Modeling Language (UML) which is implemented in use case diagrams, activity diagrams, sequence diagrams, and class diagrams.

a. Use Case Diagram

At the use case diagram manufacturing stage, interviews, observations and testing were carried out with officers. So that the results obtained are in accordance with the officer's needs later.

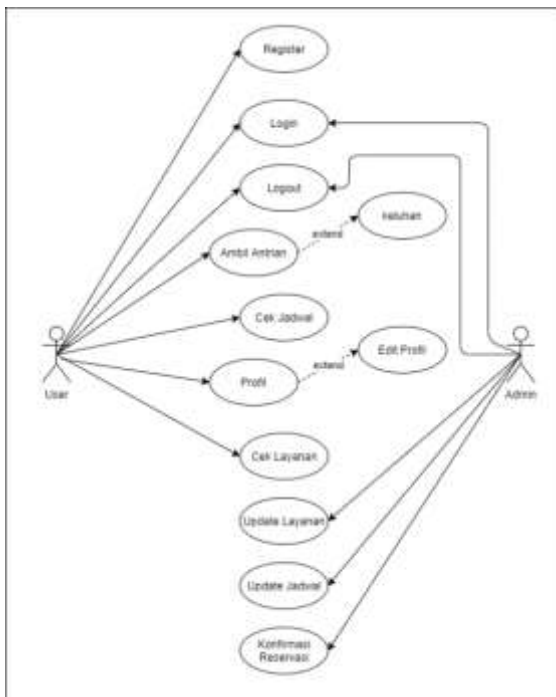


Figure 2 Use case diagram of website-based online reservation and queuing application

In Figure 2, it is explained how the interactions that occur between actors (users and admins) and the processes that can occur in an application. The processes that occur include:

- 1) Register process that can be carried out by users on the website on the page provided. By entering data such as username, email and password we can access it.
- 2) Login can be carried out by admin or user. This process aims to organize the identification process. Minimal login process consisting of a username or user account and a password to obtain access rights. When used to log in, both

the username and password must be correct, because the two are interrelated and cannot be separated.

- 3) Logout is the process of leaving a computer network system, after previously logging in to an account, or it can also be defined as logging out of an account that has previously been used. Logout aims to maintain the security of an account so that it is not used by other people.
- 4) Ambil Antrian, this process is the process that occurs when the user takes the online queue number in the application. By entering personal data, as well as perceived complaints in order to determine the queue priority scale.
- 5) Cek Jadwal, is a process provided to check schedule availability.
- 6) Update Layanan are a process for the admin to update the list of services available at the health center.
- 7) Update Jadwal are a process for admins to update available service schedules.
- 8) Konfirmasi Reservasi is a process that indicates that the queue number taken by the user has been approved.

b. Activity Diagram

At the activity diagram manufacturing stage, interviews, observations and testing were carried out with officers. So that the results obtained are in accordance with the officer's needs later.

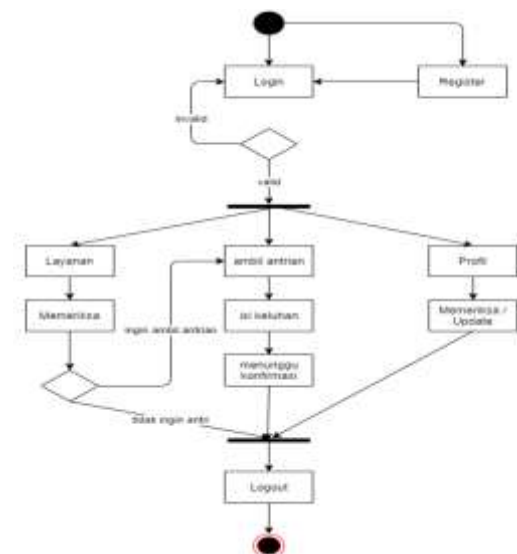


Figure 3 Activity diagram of website-based online reservation and queue application

An explains how an activity occurs in a running program. The activities that occur are as follows:



- 1) The first activity is Login or Register. This stage is carried out by entering data that we have created or want to create, then linking the existing data with the values or input that we provide.
- 2) The process is divided into several different activities, namely checking the service, taking the queue or checking the profile. At this stage it is carried out depending on our needs.
- 3) The final stage is logout.

c. Sequence Diagram

At the sequence diagram manufacturing stage, interviews, observations and testing were carried out with officers. So that the results obtained are in accordance with the officer's needs later.

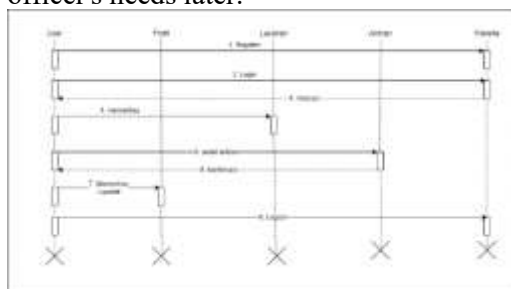


Figure 4 Sequence diagram of website-based online reservation and queuing application

Sequence diagram on the user's side how processes in a program can occur. The processes that occur in this diagram are explained sequentially, such as:

- 1) Registrasi
- 2) Login
- 3) Validasi
- 4) Memeriksa Layanan
- 5) Ambil Antrian
- 6) Menunggu Konfirmasi
- 7) Melakukan pembaruan profil
- 8) Logout

d. Class Diagram

At the class diagram manufacturing stage, interviews, observations and testing were carried out with officers. So that the results obtained are in accordance with the officer's needs later.

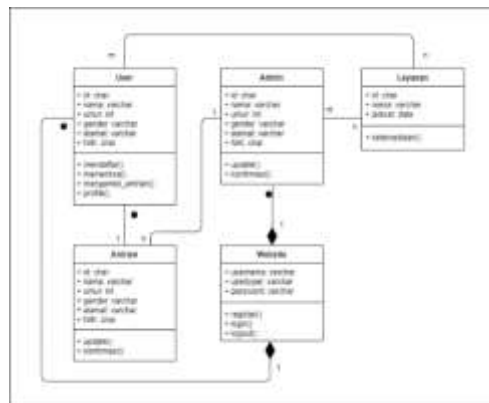


Figure 5 Class diagram of website-based online reservation and queuing application

Each entity has its own attributes and relationships between one class and another.

- 1) A user entity that has attributes with various data types. This entity has a one mandatory relationship with the queue entity, which means that each queue can only be created by one user. One to many with service entity which means that this entity can check all existing services.
- 2) The admin entity has a one-to-many relationship with queues which means that each admin can serve many queues, and also with the service entity which means that admins can also update the list of available services.
- 3) The aggregation relationship between the website and the user and admin indicates that the processes that can be carried out by the user and admin must go through a method that has been determined by the website entity.

3. Design User Interface

a. Color

The results of the user interface design display above have been tested by officers based on color, layout and controls. In terms of design, officers tend to like using blue and white as the main colors for web applications. Apart from



that, the colors orange, red and blue were chosen to differentiate the buttons.

b. Layout

In terms of layout, the officers liked and chose the menu display on the right and the display on the left compared to the menu access above. In addition, the ratio comparison between the menu space and the results displayed is stated to be in accordance with the officer. The ordering of the menu has been adjusted according to the officer's request.

c. Control

The selection of buttons given is according to the officer, including the naming, size and position of the button according to the officer's needs. Apart from that, the scrolling of the menu buttons placed is synchronized with the officer.

Based on the analysis of system requirements in UML and officers request, the user interface design for the online reservation and queue application is obtained as follows:

1) Login Page



Figure 6 Online Reservation and Queue Application Login Page

The login page is the page used by users who already have an account to enter the main page by entering their username or email and password first.

2) Register Page



Figure 7 Online Reservation and Queue Application Register Page

The register page is the page used by users for the account creation process, where users are asked to fill in their full name, NIK, username, email and password.

3) Dashboard Page

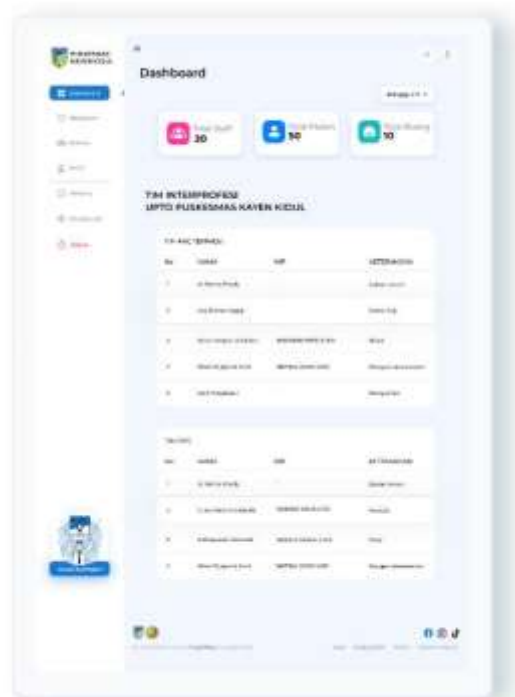


Figure 8 Online Reservation and Queue Application Dashboard Page



The dashboard page contains the presentation of information regarding important data from the Puskesmas Kayen Kidul such as total staff, total patients, total rooms and a table containing the name of the interprofessional team.

4) Service Page for Officer



Figure 9 Online Reservation and Queue Application Service Page

The service page is a page that contains complete information on services and schedules available at the Puskesmas Kayen Kidul. On this page, users can also directly retrieve the queue number.

5) Queue Page



Figure 10 Online Reservation and Queue Application Queue Page

The queue page is a page where the user can take the queue number. If the user clicks the take queue button, a pop up will appear like the second picture where the user is asked to fill in what services they want to use as well as user complaints. If you have taken the queue, the queue number can be printed.

6) Profile Page

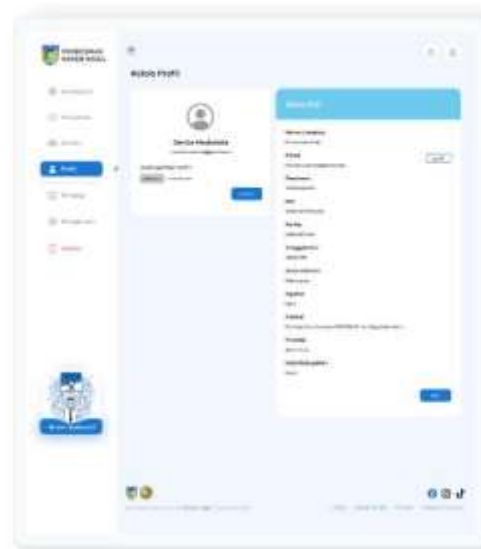


Figure 11 Online Reservation and Queue Application Profile Page

The profile page is a page that contains complete user data, on this page the user gets access to

change his own personal data if there are errors in the data.

7) About Page



Figure 12 Page about the Online Reservation and Queue Application

The About page is a page containing the profile of the Puskesmas Kayen Kidul : History, Vision and Mission.

8) Administrator Login Page



Figure 13 Online Reservation and Queue Application Admin Login Page

The admin login page is a page that can only be used by admins, before entering the main page the admin is asked to enter a username or email and password.

9) Administrator Dashboard Page

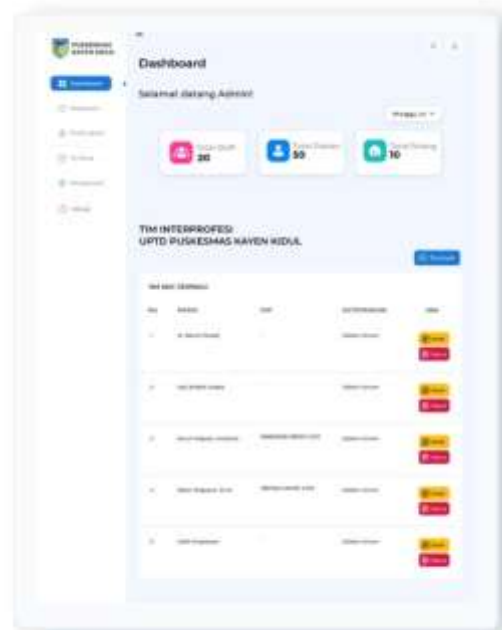


Figure 14 Online Reservation and Queue Application Admin Dashboard Page

The admin dashboard page is not much different from the user dashboard page, but the admin has access to add, change and delete existing information.

10) Administrator Service Page

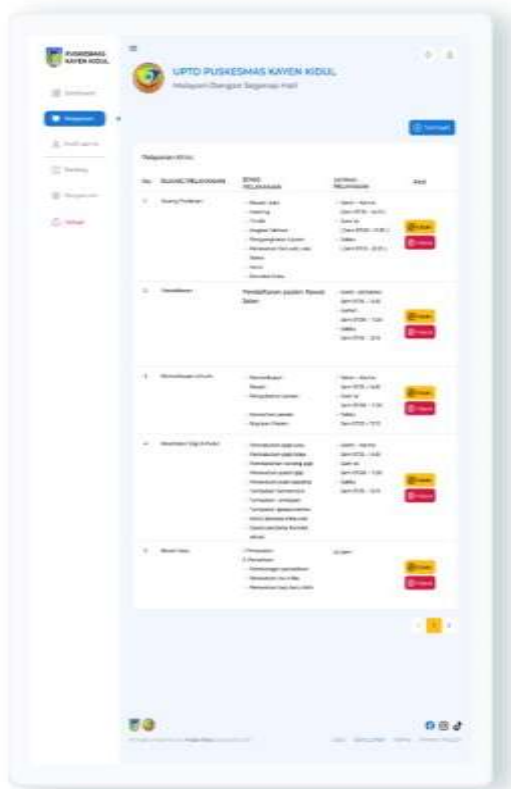


Figure 15 Online Reservation and Queue Application Admin Services Page

On the admin services page there is also information on the Puskesmas Kayen Kidul services where the admin can add, change and delete this information.

4. DISCUSSION

1. Standard Operating Procedures (SOP)

Based on research results, Standard Operating Procedures (SOP) for patient registration at Puskesmas Kayen Kidul already exist, which is in accordance with the Regulations Minister of Health of the Republic of Indonesia Number 512/MENKES/PER/IV/2007 Concerning Practice Permits and Implementation of Medical Practice Chapter I article 1 paragraph 10 Standard Operational Procedures are a set of instructions or steps that are standardized to complete a certain routine work process, where the Standard Operational Procedures provide the correct and best steps based on mutual consensus to carry out various activities and service functions created by

health service facilities based on professional standards [13]. The SOP for patient registration that has been carried out at the Puskesmas Kayen Kidul is proof that it has carried out its function by implementing Minister of Health Regulation PMK No. 24 of 2024 about medical record [2].

2. Unified Modeling Language (UML)

Unified Modeling Language is an object-oriented system design tool and each category has a diagram that explains the system architecture and is integrated with each other [14]. This has been implemented in this research so that it is easy to build and see a picture of the system. This theory has been used as a reference for determining functional requirements and is used to understand the processes carried out in website-based online reservation and queue applications. In the functional requirements there is a use case diagram modeling which explains the process of interaction between actors (users and admins). These processes include the registration process, login process, log out, take the queue, check schedules, update services, update schedules, and confirm reservations. So this reference will make it easier for researchers to communicate with programmers who will later realize system requirements and be ready for use by officers when carrying out work, especially for future patient admissions. This is also supported by the fact that the use of UML for modeling which can be used to model information system architecture provides advantages in facilitating system analysis to design software architecture [15]. This is also in line with the statement on making use case diagrams, class diagrams and sequence diagrams which have been adapted to the analysis of staff needs and can be used as a reference in designing information system interfaces [6]. So it is very appropriate to use this diagram to identify needs before carrying out the design stage.

3. Design User Interface

Based on the identification of system running requirements, researchers used UML as a reference in creating interfaces which are based on 3 components, namely layout, color and UI controls [7]. This is also supported by the fact that design testing must be carried out by paying attention to color, layout, and controls [10].

a. Color



The importance of color in design is an attraction for users [8]. The appearance of this application uses white and blue as the main color of the application. According to Goethe and Itten, blue is associated with intelligence, communication, trust, efficiency, calm, duty, logic, coolness, protectiveness, reflection, cooperation, integrity and sensitivity [9]. So by using the color blue it will make officers happy with the work they are carrying out and officers are confident in the activities they are carrying out, there by increasing self-confidence. So that the impression that the researchers want to give to the officers who will later run the application can be cooler, more communicative, calmer, with integrity and the positive qualities possessed by blue. On the other hand, most people often describe blue as the color of stability and security. This blue color is also a color that supports the vision and mission of Puskesmas Kayen Kidul, which can later be interpreted as trustworthy, responsible, loyal to the community.

According to research the colors used to attract users' attention must be placed strategically and consistent use of colors will also help users understand the application. So, choosing colors is very important because by paying attention to colors, especially colors that are consistent in each appearance, users can better understand the application that is being run [7]. The hope that researchers want to achieve is that in the future applications that have appropriate and consistent colors can make officers more productive at work and officers feel comfortable. White color in color psychology, according to Goethe and Itten, these colors will give the user the impression of purity, peace, and cleanliness [8]. So, the Puskesmas Kayen Kidul can provide the best service to the community. This is also supported because tests have been carried out on officers who run the reservation application.

b. Layout

The importance of layout is that it is used for convenience when using the application [7]. It is stated that the design and arrangement of the interface needs to be considered to produce a good appearance. This theory explains that layout is part of interface design which regulates the layout of visual elements on a page on the interface

display such as text, images, lines, shapes, white spaces. Based on reseach, researchers consider the use of layout by analyzing the need for text, images, lines used in design so that later officers can easily find the desired part/feature.

Researchers also use common terms to write each part, so that officers can understand the meaning of these terms in the application. Apart from that, the researchers also considered dividing the layout or appearance of the website-based online reservation and queue application which was created into 2, namely the admin dashboard page and the user dashboard page so that it would make it easier to present the information needed by users and admins because they have different functions and displays. Officers have also stated that it is in accordance with future needs, so that a layout that is easily recognized in each part is expected to increase officer time (efficiency) when running the application. This is also true if the design provides a comfortable layout without any errors when the information system is actually implemented, making officers more enthusiastic and improving the quality of work [16].

c. Control

Creation of controls on the interface) is complete adapted to research [7] which states that a control, be it a button or an icon, must show that the user can interact with the control. So, each button that is part of the control has also been adjusted, including the naming, so that it is easily recognized by officers. Also states that the term control in material design is referred to as a component and includes many control components in an application such as buttons, sliders, tabs, text fields and others. This has been adapted to design needs such as enter, register, take queue, print queue, edit, submit, delete, add icons and so on. With a good analysis of control needs, the officer running the application can easily carry out commands into the application as desired. Making controls in the form of alternative buttons for giving commands can minimize the amount of work you have. This is supported by the fact that the button placement must be adjusted to the user and if there is a button that is not quite right, it needs to be corrected so that the user is not confused and does not choose the wrong button [17].

Researchers have also tested the controls in the design and officials have stated that they



meet requirements. Full support for officers, including adjusting control needs, can make officers more user friendly in every application operation. So, it is hoped that officers will be able to run the application and make every job more effective and efficient. The button size needs to be improved to correct input errors, giving commands by the user and should not be too small [18].

5. CLOSING

Conclusion

Based on the description of the research results and discussion, the following conclusions can be obtained:

1. The Operational Procedure (SOP) for patient registration at the Puskesmas Kayen Kidul is No. 440/P.SOP.LKT.019/418.25.3.83.2/2017 Regarding Customer Registration already exists and the SOP has been used as a reference for designing user interfaces for website-based online reservations and queues aimed at improving service quality in the work effectiveness of registration officers.
2. Unified Modeling Language (UML) has been created according to the needs of officers which can be used as a benchmark for creating systems.
3. The user interface design of the website-based online reservation and queue application based on layout, color and UI controls has been adapted to the officers.

Suggestion

Based on conclusion above, the author can provide suggestions as follows:

1. The online reservation and queue application will soon be implemented by other developers or researchers, so that it can be easier to promote the services available at the Puskesmas Kayen Kidul more effectively and efficiently. Apart from that, it can reduce waiting time for patients and as a form of service limitation during the pandemic, so that the time when going to the doctor is more effective.
2. The provision of infrastructure such as computers, internet networks, servers and other supports will also be considered so that it can be implemented well.
3. When it is implemented, that it will provide training and outreach to officers and educational instructions for the community (HR) so that implementation can be more optimal.

4. In the future researchers can develop applications such as adding other features that are more interesting and more complete, for example a chat feature so that users and admins can communicate more easily, which can be an added value for this application to be better.

6. THANK-YOU NOTE

Thanks to God, Families and Friends.

7. BIBLIOGRAPHY

- [1] D. Permatasari and Nurgiyatna, "Perancangan Sistem Informasi Layanan Kesehatan Puskesmas Ngemplak Kabupaten Boyolali," Universitas Muhammadiyah Surakarta, Surakarta, 2014.
- [2] M. K. R. Indonesia, *Rekam Medis*. Indonesia: [https://yankes.kemkes.go.id/unduh/ileunduh_1662611251_882318.pdf](https://yankes.kemkes.go.id/unduh/ileunduh/1662611251_882318.pdf), 2022, p. 2.
- [3] S. Y. Gunawan, D. Cahya, and P. Buani, "Sistem Informasi Pendaftaran Pasien Secara Online Pada Puskesmas Citeureup," 2022. [Online]. Available: <http://jurnal.bsi.ac.id/index.php/imtechno>
- [4] F. K. Ikhyana, F. E. B. Setyawan, P. Pratama, and Y. Iswanti, "Keefektifan Sistem Pendaftaran Dan Antre Online Terhadap Pelayanan Kesehatan," *CoMPHI Journal: Community Medicine and Public Health of Indonesia Journal*, vol. 4, no. 1, pp. 103–110, Dec. 2023.
- [5] I. M. Hardanti, Fitriyah, and R. Martini, "Implementasi Program Inovasi Pendaftaran Online Pasien Puskesmas PUSTAKA (Puskesmas Tanpa Antrian Kota Semarang) Tahun 2019," *Journal of Politic and Government Studie*, vol. 12, no. 3, pp. 685–693, Jul. 2023.
- [6] D. L. Jayanto *et al.*, "Perancangan Desain Interface Pendaftaran Pasien Rawat Jalan Online via Mobile di Puskesmas Tanjunganom Kabupaten Nganjuk," *Jurnal Rekam Medis dan*



- Informasi Kesehatan Indonesia (Jurmiki).*
- [7] M. N. El Ghiffary, T. D. Susanto, and A. Herdiyanti, "Analisis Komponen Desain Layout, Warna, dan Kontrol Pada Antarmuka Pengguna Aplikasi Mobile Berdasarkan Kemudahan Penggunaan (Studi Kasus: Aplikasi Olride)," *JURNAL TEKNIK ITS*, vol. 7, no. 1, pp. A143–A148, 2018.
- [8] A. F. Yogananti, "Pengaruh Psikologi Warna dalam Website," *Andharupa, Jurnal Desain Komunikasi Visual & Multimedia*, vol. 1, no. 01, 2015.
- [9] M. N. Sasongko, M. Suyanto, and M. P. Kurniawan, "Analisis Kombinasi Warna Pada Antarmuka Website Pemerintah Kabupaten Klaten," *JURNAL TEKNOLOGI TECHNOSCIENTIA*, vol. 12, no. 2, pp. 125–133, Feb. 2020.
- [10] D. L. Jayanto, E. F. Bisono, S. Nurcahyati, N. V. Mahmuna, N. I. Maulana, and E. A. Wirawan, "Prototype Standarisasi HL7 SIMRS Rawat Jalan RSUD Kabupaten Kediri dengan RSUD Simpang Lima Gumul," *J-REMI: Jurnal Rekam Medik dan Informasi Kesehatan*, vol. 4, no. 4, pp. 185–195, Sep. 2023.
- [11] V. Yasin, "Tools Rekayasa Perangkat Lunak dalam Membuat Pemodelan Desain Menggunakan Unified Modeling Language (UML)," *TRIDHARMADIMAS: Jurnal Pengabdian Kepada Masyarakat Jayakarta*, vol. 1, no. 2, p. 139, Dec. 2021, doi: 10.52362/tridharmadimas.v1i2.666.
- [12] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfa Beta, 2019.
- [13] K. RI, "Peraturan Menteri Kesehatan Republik Indonesia Nomor 512/Menkes/Per/IV/2007," *Peraturan Menteri Kesehatan Republik Indonesia Nomor 512/Menkes/Per/IV/2007*, 2007.
- [14] HAVILUDDIN, "Memahami Penggunaan UML (Unified Modelling Language) HAVILUDDIN Program," *Memahami Penggunaan UML (Unified Modelling Language) HAVILUDDIN Program*, vol. 9, no. 2, 2013.
- [15] E. B. Pratama, A. Hendini, and A. Fristian, "Pendekatan Metode Prototype Pada Aplikasi Presensi Berbasis Mobile (Studi Kasus: Kantor Desa Mekar Jaya)," 2023. [Online]. Available: <http://jurnal.bsi.ac.id/index.php/justian>
- [16] D. L. Jayanto, N. Man, and A. Putra Primanto, "Perancangan Desain User Interface Sistem Informasi Peminjaman dan Pengembalian Dokumen Rekam Medis di Puskesmas Jabung," *Journal Health Information Management Indonesian (JHIMI)*, vol. 03, no. 01, 2022.
- [17] P. Ambarwati and M. Mustikasari, "Usability Evaluation of the Restaurant Finder Application Using Inspection and Inquiry Methods," *Jurnal Sistem Informasi (Journal of Information System)*, vol. 17, no. 2, 2021.
- [18] Mochammad Aldi Kushendriawan, Harry Budi Santoso, Panca O. Hadi Putra, and Martin Schrepp, "Evaluating User Experience of a Mobile Health Application 'Halodoc' using User Experience Questionnaire and Usability Testing," *Jurnal Sistem Informasi*, vol. 17, no. 1, 2021, doi: 10.21609/jsi.v17i1.1063.

