Design Web-Based and Mobile Application Doctor Reservation Using Laravel Framework at Klinik Valio Centre

Dava Alhaq Nur Addin[1], Arief Hermawan[2]

[1,2] Informatics Engineering Universitas Teknologi Yogyakarta, Indonesia, 55285

✉ dafa.alhaq64@gmail.com

Abstract

Artikel Info

Submitted:
16-11-2024
Revised:
26-12-2024
Accepted:
27-12-2024
Online first :
27-12-2024

Valio Medical Center Clinic, Central Lombok, faces a significant problem with the length of time patients wait to get a doctor's service, often exceeding the 60-minute standard set by the Ministry of Health. This research aims to solve the problem by developing a web-based and mobile Doctor Reservation Application using the Laravel framework. The method used is creating a doctor's registration system through web and mobile media with Laravel, which is built with the Model View Controller (MVC) concept. The results showed that the Laravel application can run well and reduce patient waiting time at Valio Medical Center. Design a doctor reservation system that facilitates users making doctor reservations without having to come directly to the hospital, with an easy-to-use web-based and mobile interface using the Laravel framework.

Keywords: *Doctor Reservation, Laravel, Patient Waiting Time, Health Facility, Digital Health Service.*

Abstrak

Klinik Valio Medical Centre, Lombok Tengah, menghadapi masalah signifikan dengan lamanya waktu tunggu pasien untuk mendapatkan layanan dokter, sering kali melebihi standar 60 menit yang ditetapkan oleh Kementerian Kesehatan. Penelitian ini bertujuan untuk menyelesaikan masalah tersebut dengan mengembangkan Aplikasi Reservasi Dokter berbasis web dan mobile menggunakan framework Laravel. Metode yang digunakan adalah pembuatan sistem pendaftaran dokter melalui media web dan mobile dengan Laravel, yang dibangun dengan konsep Model View Controller (MVC). Hasil penelitian menunjukkan bahwa aplikasi yang dikembangkan menggunakan Laravel dapat berjalan dengan baik dan efektif mengurangi waktu tunggu pasien di Valio Medical Centre. Desain sistem reservasi dokter yang memfasilitasi pengguna untuk melakukan reservasi dokter tanpa harus datang langsung ke rumah sakit, dengan antarmuka yang mudah digunakan berbasis web dan mobile, menggunakan framework Laravel.

Kata Kunci: *Reservasi Dokter, Laravel, Waktu Tunggu Pasien, Fasilitas Kesehatan, Layanan Kesehatan Digital.*

1.   Introduction

Valio Medical Center is located in the capital city of Central Lombok Regency and is a service clinic for people who need health services. The forerunner of Valio Medical Centre was established in 2018 in Lendang Gocek Hamlet, Pagutan Village, Batukliang Sub-District, Central Lombok Regency. Valio Medical Centre initially operated as a small health center serving the local community, focusing on basic health services. As the need for more comprehensive healthcare services grew, the clinic expanded its medical facilities and services. Today, Valio Medical Centre has become one of the main healthcare centers in the region, providing a wide range of services, including general check-ups and specialist services [1].

The Minimum Hospital Service Standards contained in the Decree of the Minister of Health Number 129 of 2008 stipulate that the waiting time for all outpatient services in a hospital is 60 minutes [2]. The main causes of long patient service times are long registration times at the counter, limited number of doctors, large numbers of patients, and limited other health service staff. Outpatient waiting time is less than 60 minutes, and customer/patient satisfaction is above 90%. According to Maulana et al (2019), The scheduling system at Praya Regional General Hospital still uses paper as a tool for scheduling doctors [3]. Reservation comes from the verb to reserve which means to book and provide a place. In this case the definition of reservation is a transaction that concerns the provision of places, special services and other facilities for passengers who will travel using airplane services [4].

Patients at Praya Regional General Hospital often have to wait more than 60 minutes just to get services from a doctor. This indicates a significant gap between the set standards and the practice in the field, which may be caused by various factors such as the lack of optimization of the scheduling and queue management system [5] [15]. Therefore, improvements in doctor booking scheduling are crucial to reduce patient waiting time, improve service efficiency, and ensure compliance with established healthcare standards. Thus, scheduling doctor bookings in a digital health application using Laravel at Praya Regional General Hospital is expected to provide the right solution to overcome these challenges and improve the booking experience and health services to the community [6] [7].

Reservation application can increase the effectiveness of services at Dr. Candra Safitri's clinic so that patients do not have to wait long. The system processes Doctor Reservation data and Patient transaction data. The system processes the transaction data using the Representational State Transfer Interface Method (REST API). The system can provide a doctor's

practice schedule report on the Doctor's profile page **[8] [9]**. The queue system in hospitals is a queue service that can assist patients in registering and getting a queue number at a hospital health service facility. The hospital queue system or application processes mobile-based hospital queue data, in this case Android, including the Puri Husada Yogyakarta Hospital Online Registration application. The queue application focuses on providing other information, such as queues in process and queue schedule notifications. The system processes the patient data into queue data that can be used to view the patient queue list [9][12]. A hybrid mobile-based outpatient registration application at Kemayoran Hospital makes it easier for patients to register and get valid information, and can save more time without having to come early just to get a queue number and polyclinic services at Kemayoran Hospital. The system processes Doctor data and patient data **[10] [11] [13]**.

Health is one of the most crucial aspects of people's lives, especially when it comes to healthcare services such as medical consultations and medical treatments. Therefore, understanding the importance of fast and efficient access to health services is very relevant in the context of improving the overall booking and health service experience. So, in this research, a web-based and mobile doctor reservation application using the Laravel Framework will be made at the Praya Regional General Hospital to address the problem of patient waiting time with the doctor reservation application.

2. Method

The data obtained in this study are patient waiting time data, how far the average patient's home is from the Valio Medical Center Clinic, and how long the patient's travel distance to the Valio Medical Center Clinic. The data was obtained from the interview process and filling out the questionnaire. The following data was obtained in the interview process and filling out the questionnaire (1) Patient Waiting Time (2) What is the average distance of the patient's home from the Valio Medical Center clinic (3) How long does the patient travel to the Valio Medical Center Clinic.

The system flowchart describes the sequence of steps or processes in the system visually using rare graphical symbols. Flowcharts help in understanding how the system works, from input to output, as well as the steps that occur between them. Flow Chart login register describes the workflow when the user logs in or registers. The Doctor Reservation Flow Chart describes the system workflow when a patient makes a doctor's reservation.
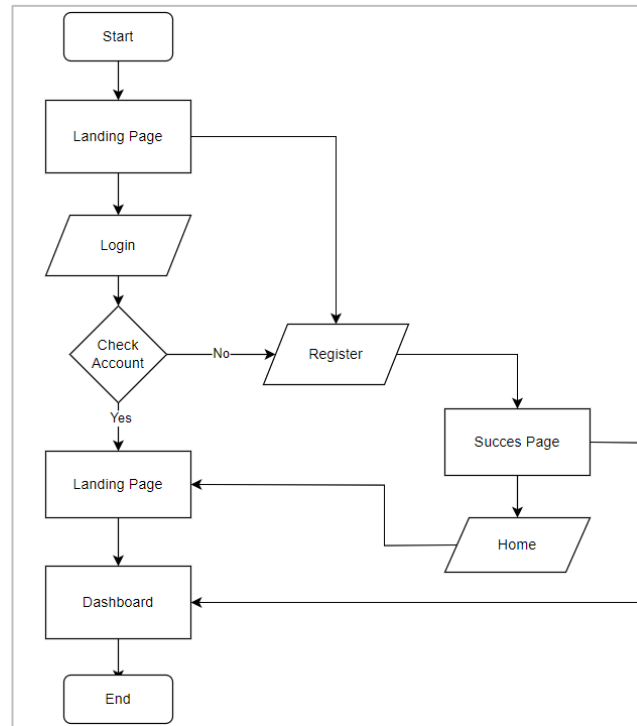
Figure 1. Flow Chart Login and Register

3. Results and Discussion

This stage is the result of the system design at the analysis stage, the design that has been previously made into an application using the PHP programming language and the Laravel *framework*.

3.1. Implementation System Web-Based and Mobile Application Doctor Reservation at Praya Regional Public Hospital
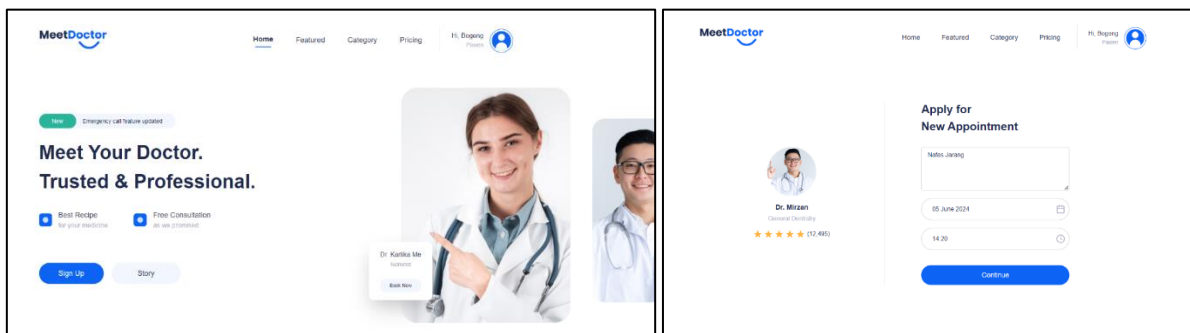

Figure 2. Home Page

On the user home page, there are photos of doctors and specialist doctors. If the user wants to make an appointment, the user can click on the photo of the desired doctor (Book Now) to make an appointment. The doctor's appointment page will be displayed based on the doctor

selected by the user when clicking book now. On this page, the user makes an appointment by entering the consultation topic and information.
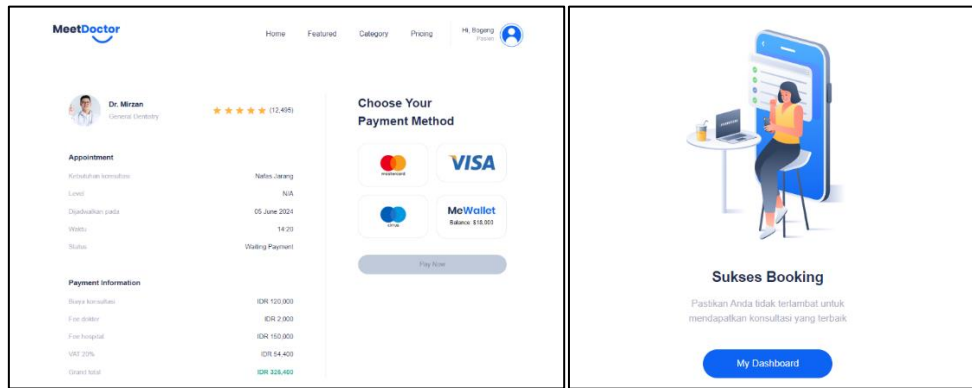
Figure 3. Payment Page

The payment page can display appointment details and payment details, as seen in Figure 3. In the code, the PaymentController calculates the doctor's fee, specialist fee, and other fees, which are displayed on the user's payment page. After the user clicks the pay now button, he is directed to the booking success page.
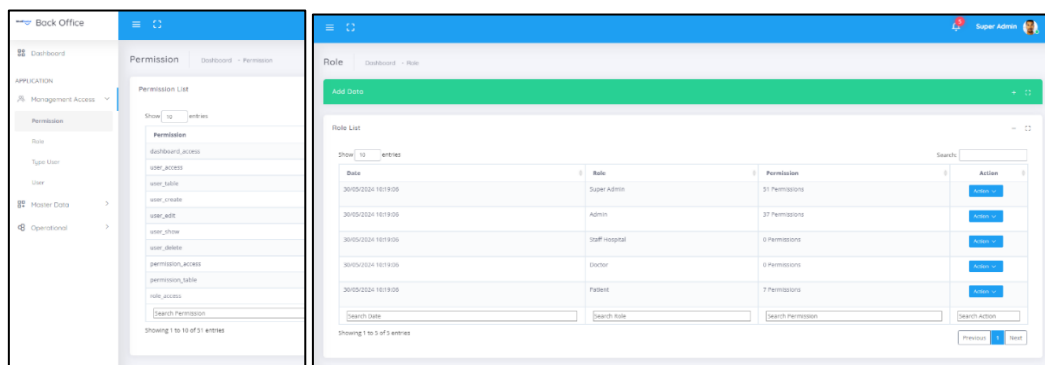

Figure 4. Back Office Permission Page

Back - Office Permission page, which can display all Permission data used for Management Access to Content in the application, Permission data inputted via seeder.
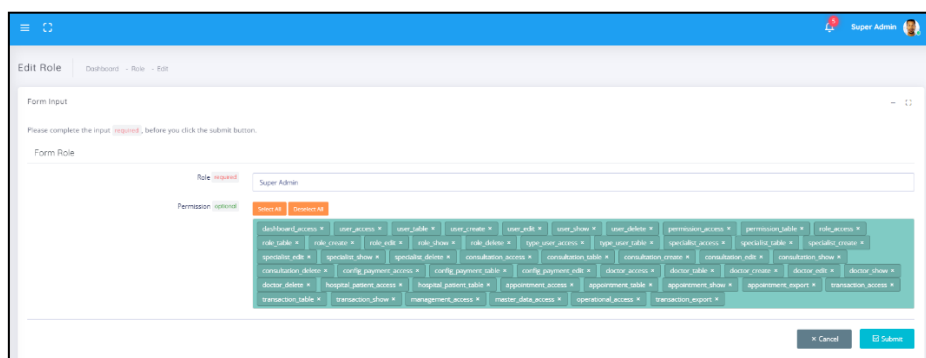
Figure 5. *Edit Role Permission*

On this page, Super Admin can input, update, and delete data from Role User. On the Role page can also provide Permission Access to Users according to their needs.

Figure 6. User

The following is the *User* view in the *Back Office* view section. In this view displays all *user* data containing *user* name, user email, *user role*, user *type*, and user name.

Figure 7. *Add Data User*

The add specialist view is in the *Back Office Master Data/Specialist* view section. On this page, the *super admin* can add new *specialist* data along with *specialist fees*.
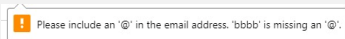

Figure 8. *Transaction*

The following is the source code for TransactionController in the Back Office view. This code will display patient transactions along with the doctor data selected by the patient. Transaction data will be displayed based on the type of user who is logged in. All transaction data will be displayed if the admin is logged in.

3.2. Blackbox Test Result Web-Based and Mobile Application Doctor Reservation at Praya Regional Public Hospital

One of the important elements in building a system is testing the system itself. This is done to find out the accuracy of a system both in functionality and interactive database so that the shortcomings of the system built can be known.

Table 1. Sign In test

True Condition (True Data)			
Testing	Results	Observation	Conclusion
Sign In form in the table	If correct, it will enter the dashboard page	Login data is valid Hi, Taka Pratama Pasien	As Per
False Condition			
Testing	Results	Observation	Conclusion
Incorrect Sign In Form, Example: wrong email/password/no email address entered	Display an error message	Pesan kesalahan Please include an '@' in the email address. 'bbbb' is missing an '@'.	As Per

Tabel 2. Data Appointment Test
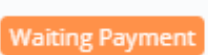
True Condition (True Data)			
Testing	Results	Observation	Conclusion
Form appointment if correct, Example: entering a consultation topic	If true, the payment page will be forwarded	Data Appointment valid **Sukses Booking** Pastikan Anda tidak terlambat untuk mendapatkan konsultasi yang terbaik	As Per
False Condition			
Testing	Results	Observation	Conclusion
Incorrect appointment form, Example: if you do not enter a consultation topic	Display an error message	Error Message	As Per

Table 3. Testing appointment payments

True Condition (True Data)			
Testing	Results	Observation	Conclusion
Payment appointment form if correct, Example: Patient makes payment	If true then forward to the Booking Success page	Data payment valid Payment Completed	As Per
False Condition			
Testing	Results	Observation	Conclusion
Incorrect login form, Example: if you have not made a payment	Display an error message	Error Message Waiting Payment	As Per

Tabel 4. Testing Changing *User* Data
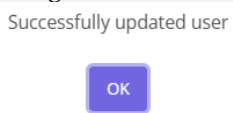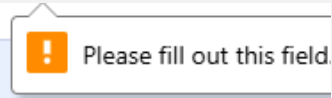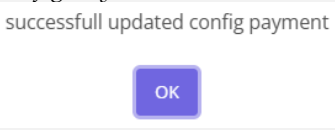
True Condition (True Data)			
Testing	Results	Observation	Conclusion
Form changes user data if correct, Example: enter user data according to the required data	If true it will be returned to the back-office user page	Chage User valid Successfully updated user OK	As Per
False Condition			
Testing	Results	Observation	Conclusion
The form changes user data if it is wrong, Example: not entering the appropriate data with the user data change form	Display an error message	Error Message Please fill out this field.	As Per

Table 5. Testing Chage *Config Payment*

True Condition (True Data)			
Testing	Results	Observation	Conclusion
The form changes the config payment data if it is correct, Example: if entering data in the config payment form / not emptying the form	If true, it will be returned to the back-office config payment page.	*Config Payment valid* successfull updated config payment OK	As Per
False Condition			
Testing	Results	Observation	Conclusion
Incorrect config payment data change form, Example: leaving the config payment form blank and then clicking submit	Display an error message	Error Message N/A	As Per

4. Conclusion

Design of a doctor reservation system that facilitates users to make doctor reservations without having to come directly to the hospital, with an easy-to-use interface based on web and mobile, using the Laravel framework. The development of an online doctor reservation scheduling system at Praya Regional General Hospital, which accelerates the web and mobile-based doctor reservation process, will reduce patient waiting time. The design of a web-based and mobile doctor reservation application using Laravel, allowing the admin to manage patient data in the doctor reservation scheduling system at Praya Regional General Hospital.

References

[1] Mutawalli, L., Zaen, M. T. A., & Bagye, W. (2021). Pengembangan Dashboard Cerdas Untuk Monitoring Data Pasien Rawat Rumah Sakit Umum Daerah Praya Kabupaten Lombok Tengah. *Jurnal Informatika Dan Rekayasa Elektronik*, 4(1), 40–50. https://doi.org/10.36595/jire.v4i1.321

[2] Kementrian Kesehatan. 2018. Keputusan Menteri Kesehatan Nomor 129 Tahun 2008

[3] Maulana, D., Tamrin, R., Alim, A., & Imran, A. (2019). Analisis Hubungan Waktu Tunggu Terhadap Kepuasan Pasien Pada Puskesmas Maccini Sombala. *Jurnal Kesehatan*, 12(2), 99. https://doi.org/10.24252/kesehatan.v12i2.10483

[4] Fitri R. (2020). *Pemprograman Basis Data Menggunakan MySQL* (Reza Fauzan, Ed.). POLIBAN PRESS.

[5] Kusumawardani M D, Darmansah, Astiti S, Fathoni Y.M, Sunardi D, & Fernandez S. (2023). *WEB DASAR Menggunakan HTML, CSS, JSS, PHP, dan Studi Kasus* (Efitra & Juansa Andra, Ed.). PT. Sonpedia Publishing Indonesia.

[6] Putra S. W. Y., Dawis M. A., Novi, Natsir F, Fitria F, Widhiyanti S. A. A., Hasan N. F., Somantri, & Maniah. (2023). *PENGANTAR APLIKASI MOBILE* (Andriyani Widyastuti & Erlangga, Ed.). Penerbit Widina.

[7] Asworowati, R. D., Mustomi, D., Adawia, P. R., Suhendra, A. D., Natong, A., & Cahya Ningrum, M. (2023). Perancangan Sistem Informasi Pendaftaran Pasien Rawat Jalan Pada Rumah Sakit Ibu dan Anak Gizar Berbasis Mobile. *Jurnal Teknologi Dan Sistem Informasi Bisnis*, 5(4), 542–549. https://doi.org/10.47233/jteksis.v5i4.1059

[8] Afiifah, K.', Fira Azzahra, Z., Anggoro, A. D., Redaksi, D., Akhir, R., & Online, D. (2022). Universitas Negeri Jakarta; Jl. Rawamangun Muka Raya No.11 RW.14 Rawamangun. *JURNAL INTECH*, 3(1), 8–11.

[9] Zulhalim, Haroen R, & Fauzan A. (2020). PERANCANGAN APLIKASI PENDAFTARAN KUNJUNGAN PASIEN MANDIRI BERBASIS MOBILE HYBRID PADA RSUD KEMAYORAN. *Journal of Information System, Applied, Management, Accounting and Research, Vol 4*.

[10] Azizah H, & Putra D S. (2019). *PENERAPAN E-HEALTH PADA SISTEM RESERVASI PERAWATAN KULIT WAJAH DI KLINIK KECANTIKAN DOKTER MIRDA BERBASIS ANDROID. 3*.

[11] M. Anisetti, C. Ardagna, V. Bellandi, M. Cremonini, F. Frati, and E. Damiani, "Privacy-aware Big Data Analytics as a service for public health policies in smart cities," Sustain. Cities Soc., vol. 39, no. December 2017, pp. 68–77, 2018, doi: 10.1016/j.scs.2017.12.019.

[12] D. A. Fauzy, I. Iskandar, J. Rahmadhan, and R. Priambodo, "Aplikasi Bengkel Motor Dengan Sistem Pakar Menggunakan Metode Forward Chaining," J. Sisfokom (Sistem Inf. dan Komputer), vol. 9, no. 1, pp. 89–96, 2020, doi: 10.32736/sisfokom.v9i1.783.

[13] S. Boukhary and E. Colmenares, "A Clean Approach to Flutter Development through the Flutter Clean Architecture Package," *2019 International Conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, NV, USA, 2019, pp. 1115-1120, doi: 10.1109/CSCI49370.2019.00211.

[14] Santoso, S., Surjawan, D.J. and Handoyo, E.D. 2020. Pengembangan Sistem Informasi Tukar Barang Untuk Pemanfaatan Barang Tidak Terpakai dengan Flutter Framework. *Jurnal Teknik Informatika dan Sistem Informasi*. 6, 3 (Dec. 2020). DOI:https://doi.org/10.28932/jutisi.v6i3.3071.

[15] Ammirato, S., Felicetti, A.M., Linzalone, R. and Carlucci, D. (2022), "Digital business models in cultural tourism", International Journal of Entrepreneurial Behavior & Research, Vol. 28 No. 8, pp. 1940-1961. https://doi.org/10.1108/IJEBR-01-2021-0070