

Development and Training: The Deployment of Web-based Vaccination Queue system at Military Resort Command 052/Wijayakrama

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Received 07-08-2023

Revised 17-08-2023

Accepted 22-08-2023

ABSTRAK

Penerapan sistem antrian vaksinasi COVID-19 oleh Komando Resor Militer 052/Wijayakrama di Tangerang merupakan salah satu bentuk pengabdian kepada masyarakat yang dilaksanakan oleh Universitas Multimedia Nusantara (UMN). Sistem ini dibuat untuk mempermudah proses vaksinasi dan mengurangi waktu tunggu peserta vaksinasi. Sistem antrian berbasis website ini dirancang dengan framework Laravel menggunakan model rapid application development dan pengujian fungsionalitas menggunakan blackbox testing. Hasil pengujian fungsionalitas terhadap sistem antrian ini menunjukkan bahwa sistem dapat berfungsi dengan baik dan dapat memenuhi kebutuhan untuk mempermudah proses vaksinasi. Sistem antrian ini telah digunakan oleh lebih dari 1000 orang dan telah memberikan kemudahan bagi masyarakat untuk mendapatkan vaksinasi COVID-19. Penerapan sistem antrian vaksinasi COVID-19 oleh Komando Resor Militer 052/Wijayakrama di Tangerang merupakan salah satu contoh penerapan teknologi untuk mendukung program pemerintah dalam penanggulangan pandemi COVID-19. Sistem ini telah memberikan kemudahan bagi masyarakat untuk mendapatkan vaksinasi dan telah membantu pemerintah untuk mengatur dan mengelola proses vaksinasi dengan lebih baik.

Kata kunci: Covid-19; KOREM-052 WKR; Sistem Antrian; Vaksinasi; Website;

ABSTRACT

Implementing the COVID-19 vaccination queue system by the 052/Wijayakrama Military Resort Command in Tangerang is a form of community service carried out by Multimedia Nusantara University (UMN). This system was created to simplify the vaccination process and reduce the waiting time for vaccination participants. This website-based queuing system is designed with the Laravel framework using the rapid application development model and functionality testing using black box testing. The results of functionality testing of this queuing system indicate that the system can function properly and meet the needs to simplify the vaccination process. More than 1,000 people have used this queuing system, making it easy for the public to get the COVID-19 vaccination. Applying the COVID-19 vaccination queue system by the 052/Wijayakrama Military Resort Command in Tangerang is an example of a technology application to support government programs tackling the COVID-19 pandemic. This system has made it easy for people to get vaccinated and has helped the government to organize and manage the vaccination process better.

Keywords: Covid-19; KOREM-052 WKR; Sistem Antrian; Vaksinasi; Website;

INTRODUCTION

The COVID-19 pandemic that has hit the whole world since 2019 is ongoing in several countries today (Moudy & Syakurah, 2020). Indonesia is one of the countries

that has loosened policies related to COVID-19 (Irawan et al., 2023), one of which is the policy on wearing masks and facilitating domestic and international travel (Damayanti & Ariyanti, 2023).

Several countermeasures have been carried out by the Government of the Republic of Indonesia to deal with the COVID-19 Pandemic, such as limiting physical, social activities, imposing work from office (WFH), regulations on the use of masks, to administering vaccinations (Julia Mahadewi, 2023). The process of administering vaccination requires cooperation and support from various parties, starting from the RT and RW outreach to the community to the regional head level (Riliani et al., 2022). To speed up the vaccination process so that it is evenly distributed and acceptable to all levels of society, the government carries out many vaccination activities in collaboration with various agencies (Oktiviyari et al., 2023). One of the agencies that contributed to the COVID-19 vaccination activity was the Military Resort Command 052/Wijayakrama, Tangerang. In the COVID-19 vaccination process, which has been going on several times, there are obstacles in the queue for vaccination participants which are challenging to control and cause the waiting time to become longer.

Several literature studies were conducted to find the right way to manage the vaccination queue process. Through research and community service activities that have been successfully carried out previously, it was found that the application of queuing system technology can simplify the vaccination process and reduce the waiting time for vaccination participants (Murhatiningtyas et al., 2022). Vaccination activities at several puskesmas and health facilities have used technology with a queuing system in the vaccination process (Prihandini et al., 2023). Based on the review of the literature study, the 052/Wijayakrama Military Resort Command as the organizer of the vaccination program in the Tangerang area, collaborated with Multimedia Nusantara University (UMN) to create a COVID-19 vaccination queue system that could be used by the organizing committee with a capacity of 1000 participants. Due to the ease of access and the specifications of the required devices, a website-based queuing system platform was chosen for the role of technology in this Community Service activity (Wiratama & Desanti, 2022).

The process of designing a vaccination queue system is carried out using the system development life cycle (SDLC) model of rapid application development, with a sequence of systematic steps: Requirement planning, User Design, Construction, and Cutover. This model was chosen based on its suitability for the actual situation, which required this system to be built quickly and user involvement (KOREM-052) during the design process.

IMPLEMENTATION METHOD

Implementing the Rapid Application Development (RAD) Model in the design of the vaccination queue system includes several main stages: **1) Requirement Planning:** This stage aims to identify the needs and requirements of the vaccination queue system. The development team worked closely with the 052/Wijayakrama

Military Resort Command in Tangerang to understand user needs and regulations related to the vaccination process. In addition, this stage also includes analysis and mapping of existing vaccination process flows. The result of this stage is a system requirements specification document that serves as a guide in development (Raihan et al., 2023). **2) User Design:** At this stage, the development team and Multimedia Nusantara University work together in designing the user interface for the vaccination queue system. This design includes the layout, navigation, and interaction elements that the user will use. A responsive and user-friendly design is of great concern to make it easier for the public to register and select a vaccination schedule (Agung et al., 2023). **3) Construction:** The construction phase begins after the user interface design is agreed upon. The development team used the Laravel framework to build a website-based vaccination queue system. They implement features according to predefined specifications. In addition, this stage also includes periodic testing of system components to ensure the stability and quality of the application (Wijaya, 2023). **4) Cutover:** This stage is the testing phase of the vaccination queue system using the User Acceleration method, a black-box testing model to test the system's functionality (Ramadhan et al., 2023).

During the RAD implementation process, rapid iteration and active collaboration were carried out between the development team and the 052/Wijayakrama Military Resort Command in Tangerang and Multimedia Nusantara University. This model allows changes and improvements to be made immediately according to user needs and feedback, resulting in an efficient COVID-19 vaccination queuing system that meets user expectations.

ACTIVITY RESULTS

The Community Outreach Activities lasts for approximately three months. In the first stage, this community outreach activity begins with conducting Requirement Planning with virtual interviews via the Zoom platform. The participants who attended this interview were the PIC from KOREM 052 WKR and Ms. Fenina Adline Twince Tobing, the research and community service coordinator of LPPM Multimedia Nusantara University and a member of the Jansen Wiratama PKM team. This interview was conducted to determine the needs of KOREM 052-WKR, which will be made in the form of a system.

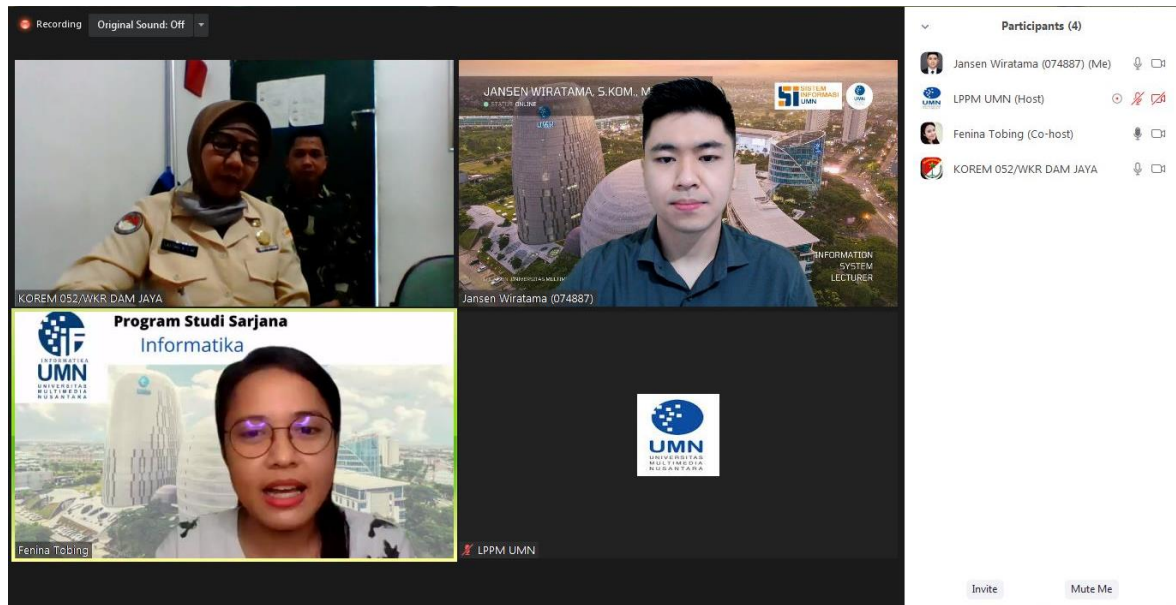


Figure 1. Requirement Planning via zoom meetings

Based on the results of interviews with the PIC from KOREM 052-WKR, several points were obtained, which were the main requirements of the system. In designing a vaccination queue system that is created, these needs are reduced to the system's primary function. These needs include the 7 points described in Table 1:

Table 1. Requirement Planning

No	Requirements
1	The queue system can be accessed via a browser.
2	Features to set the number of vaccination participants.
3	Participant calling feature.
4	Displays queue information on a new tab.
5	Participant calling feature.
6	Features of the complete vaccination process per participant/sequence number.
7	The feature repeats call to participants.

Furthermore, at the **User Design** stage, from the results of the requirements, planning, analysis, and design of the system will be carried out. The process of analysis and design is object-based using UML Diagram. After the analysis and design processes have been completed, this activity is continued with **Construction**, namely the coding process with the Laravel programming language.

The user design and construction stages results are the user interface for the vaccination queue system, which can be accessed via localhost on laptop/computer devices. However, to make access more accessible, this queuing system can be accessed online via the url: <https://queueapp.jansenwiratama.com/>. According to the requirements planning described in Table 1, this system has seven main functions.

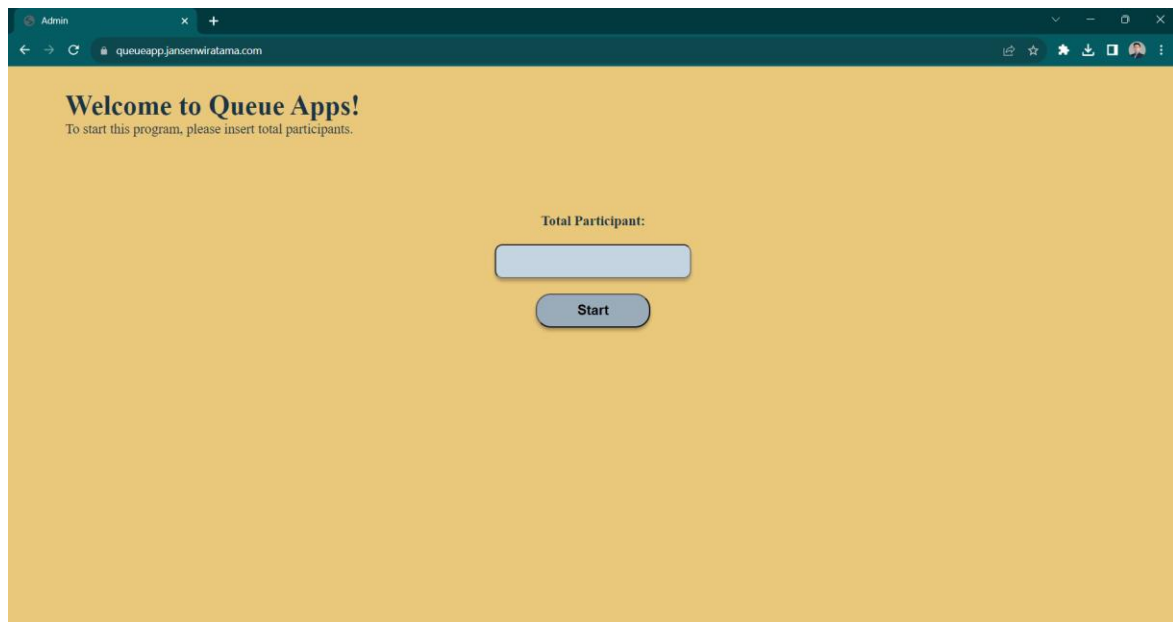


Figure 2. User interface of Queue Systems COVID-19 Vaccine

In Figure 2 above, the user can enter the number of vaccination participants, limited to 1000, in one process. If you have entered the number of vaccination participants, you can proceed by pressing the start button. Then the user will be directed to the monitoring page.



Figure 3. Queue Systems COVID-19 Vaccine monitoring

In the monitoring user interface shown in Figure 3, several features follow the Requirement planning. This Queuing System is equipped with information showing the latest number of participants (last participant), the number of remaining participants (remaining participants), and the total number of participants (total participants). In addition, there is also information about the counter where participants will get their vaccinations. The number of available counters is 4, according to the actual situation

at KOREM-052 WKR. In addition to this information monitoring vaccination, this queuing system also has features to add participant queues via the Queue button, display queue information on a new tab via the Show button, call vaccination participants with the In button, and provide notifications that the vaccination process has been completed with the Out button, and repeat call with the Repeat button.

Tabel 2. Queue Systems COVID-19 function

No.	Requirements	Information	Button
1	The queue system can be accessed via a browser.	url to access the Queue System	https://queueapp.jansenwiratama.com/
2	Features to set the number of vaccination participants.	Input total participants.	Total Participant: Start
3	Participant calling feature.	Input queue	Queue
4	Displays queue information on a new tab.	Display the ongoing queue dashboard.	Show
5	Participant calling feature.	The button calls participants (In).	In
6	Features of the complete vaccination process per participant/sequence number.	Finish button (Out).	Out
7	The feature repeats call to participants.	Repeat button.	Repeat Sound

The Show feature in the vaccination queue system allows the committee to display the latest queue information, which will appear in a new tab in the browser and can be presented to vaccination participants. In addition, this queuing system is also equipped with a narrator's voice so that participants can get vaccinations through sound.



Figure 4. Dashboard of Queue Systems COVID-19 Vaccine

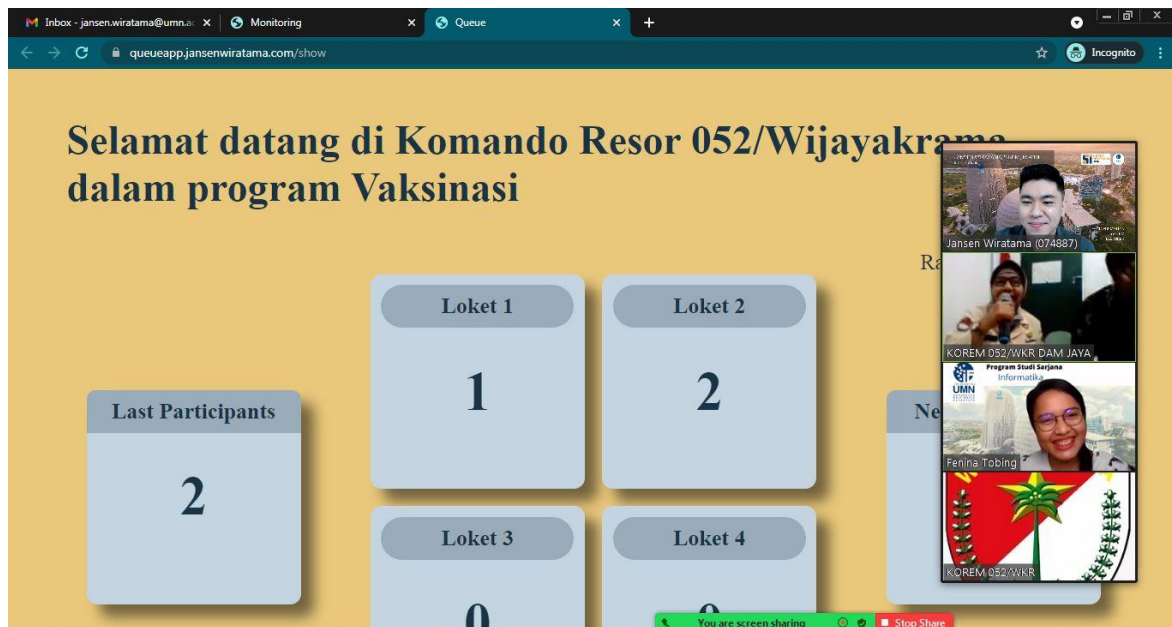


Figure 5. Blackbox testing on Queue Systems

Before this queuing system was launched for use in the vaccination process, it was tested in the **Cut Over** phase using the User Acceptance Test (UAT) method, with the Black-box testing model to test the primary function of this queuing system. This test involved the PIC from KOREM 052 WKR as the system user and the coordinator from LPPM Multimedia Nusantara University as the facilitator. The test results found that all the functions needed can be used correctly and without problems, as shown in Table 3.

Table 3. Blackbox-testing results.

No	Requirements	Access	Test results
1	The queue system can be accessed via a browser.	url to access the Queue System	Valid ✓
2	Features to set the number of vaccination participants.	Input total participants.	Valid ✓
3	Participant calling feature.	Input queue	Valid ✓
4	Displays queue information on a new tab.	Display the ongoing queue dashboard.	Valid ✓
5	Participant calling feature.	The button calls participants (In).	Valid ✓
6	Features of the complete vaccination process per participant/sequence number.	Finish button (Out).	Valid ✓
7	The feature repeats call to participants.	Repeat button.	Valid ✓

CONCLUSION

After going through the implementation stages, the 052/Wijayakrama Military Resort Command successfully created and used this queuing system in the COVID-19 vaccination queue process. The results of the functionality test show that the seven

main functions of this system are valid and can be used. The test results also answer the needs of this Community Service activity.

ACKNOWLEDGEMENT

We extend our heartfelt gratitude to Universitas Multimedia Nusantara and Komando Resor Militer 052/Wijayakrama for their invaluable support, which played a pivotal role in the successful completion of this Community Outreach endeavor. Their substantial contribution was instrumental in achieving our objectives, and we are deeply grateful for their unwavering assistance.

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