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Design and Development of an Online Queue Administration System in Health Services (Study Case: Klinik Halyna Pageruyung Kendal)

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A R T I C L E I N F O

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ABSTRACT

Queuing culture reflects the identity of an advanced nation, because it forms a social attitude that is disciplined and respects other people. Apart from respecting each other, queuing in an orderly manner and not overtaking or breaking through the queue includes respecting the rights of others. Online queuing systems offer many benefits, including elimination of queues, increased efficiency in service delivery, and increased customer satisfaction. They can be applied to a wide range of industries, including healthcare, banking, retail and government services. In a health service agency such as a clinic, service for customer satisfaction is very important, so efforts are always made to improve service quality. An online queuing system is a digital system that allows users to enter a virtual queue, where they wait their turn to access services or receive assistance. The system provides users with a way to book time slots, secure their place in the queue, and receive real-time updates on the status of their positions. To implement an online queuing system requires investment in appropriate hardware and software, such as a cloud-based queue management system or mobile application. Overall, online queuing systems can help optimize service delivery, reduce waiting times, and improve the overall customer experience. The existence of a queuing system makes it easy for people to manage time efficiently. The increasing need for fast services requires that every public service, especially health clinics, have a queuing system. With the Online Queue Administration System to help queue administration problems.

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1. INTRODUCTION

Queuing culture reflects the identity of an advanced nation, because it forms a social attitude that is disciplined and respects other people. Apart from respecting each other, queuing in an orderly

manner and not overtaking or breaking through the queue includes respecting the rights of others. Queues can be found in several public service facilities where people will experience a queuing process from arrival, entering the room, waiting, until the service process takes place. Waiting in a queue is the most common thing that happens in everyday life in society.

In a health service agency such as a clinic, service for customer satisfaction is very important, so efforts are always made to improve service quality. The queue application is an application that can help improve service to the community to avoid crowding and long waiting times to get service. Online queuing systems developed in response to the need to improve service efficiency and minimize waiting times for customers. Along with the development of digital technology, more and more organizations are switching from physical queues to online queues. The existence of a queuing system makes it easy for people to manage time efficiently. The increasing need for fast services requires that every public service, especially health clinics, have a queuing system. Queuing systems that are widely used can be in the form of mobile and desktop applications.

From the problems in the queue, it is necessary to have a system or application that can inform online queues that can be accessed remotely. This can help users or patients know the estimated time for the examination service to be carried out at the intended polyclinic. In this study, the topic of Design and Development of an Online Queue Administration System is proposed to help with queuing administration problems. With an online queuing system, it can increase the efficiency of service delivery and provide a better experience for customers. Customers can book times that suit their schedule and don't have to wait at a physical location to get service. In addition, online queuing systems also enable them to collect data and analysis on waiting times, busy operating times, and service speed, which can help them improve efficiency and service quality.

2. RESEARCH METHODS

This chapter describes several procedures, steps and mechanisms in system implementation, methodology and research framework which contain the Method Design Stage, Data Collection Stage, Trial Scenario Design Stage, Implementation Stage and Analysis of Results, Time and Place of Research. The research framework is described in the following chart.

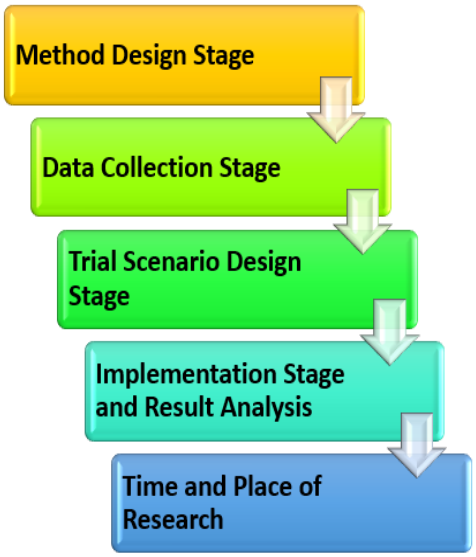


Figure 1. Research framework

Method Design Stage

The method in this study uses the Rapid Application Development (RAD) software development method. RAD is an incremental software development process model, especially for short processing times. The following is a process chart for the RAD method.

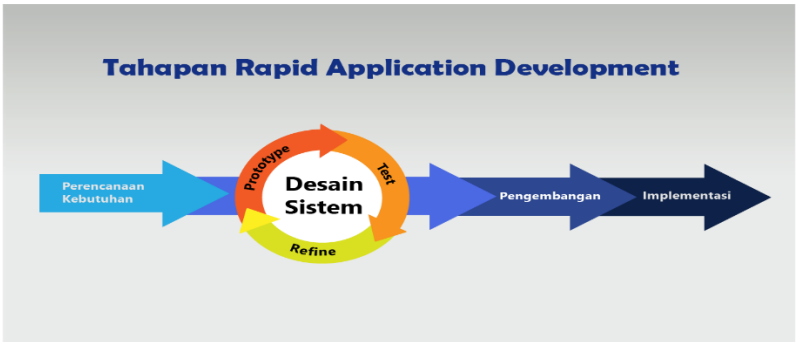


Figure.2 Method Design Stage

Needs Planning

This stage is the initial stage in a system development, where at this stage problem identification is carried out and data collection is obtained from users or user stakeholders which aims to identify the ultimate purpose or goals of the system and the desired information requirements. At this stage the involvement of both parties is very important in identifying the need for the development of a system.

System Design

In the system design stage, the activity of the users involved is very important to achieve the goal because at this stage the design process and the design improvement process are carried out repeatedly if there are still design discrepancies with the user needs that have been identified in the previous stage. The output of this stage is a software specification which includes the organization in the system in general, data structures, and others.

The process of developing and collecting feedback

At this stage the system design that has been made and agreed upon, is converted into a beta version of the application up to the final version. At this stage the programmer must continue to carry out development activities and integrate with other parts while continuing to consider feedback from users or clients. If the process runs smoothly then it can proceed to the next stage, whereas if the application being developed does not meet the needs, the programmer will return to the system design stage.

Data Collection Stage

The data collection stage is one of the important stages in research, which aims to collect relevant information to answer research questions. The data collection stage is usually carried out after the researcher plans the research design and chooses the right research method. Data collection techniques used in this study are.

Observation

Observation is a method of collecting data in research that involves direct observation of the research object. Observations are usually carried out by researchers with the aim of collecting data regarding certain behaviors, actions, interactions, or phenomena that occur in research subjects. Observations can be made directly by observing the subject directly or indirectly by observing records or documents related to the subject. The author made direct observations of the patient registration process to get a queue at the Kebongembong Primary Clinic. The results of these observations were immediately recorded by the author and from the observation activities, errors or processes and activities could be identified.

Interview

Interview is a method of collecting data in research that involves direct conversation between the researcher and the research subject. The purpose of the interview is to obtain in-depth and detailed information regarding the experiences, perceptions, attitudes, beliefs, or views of the

research subjects regarding the topic being studied. The author conducted interviews with nurses or managers of the Kebongembong Primary Clinic.

Library Studies

In addition to conducting interviews and observations, the author also conducts literature studies through references in the library, the internet or elsewhere that support research development.

Trial Scenario Design Stage

To describe the process design, this study used a combination of Flow Charts and UML (Unified Modeling Language). Flow Charts are generally used to design systems and UML is commonly used to design object-oriented applications.

Implementation Stage and Results Analysis

At this stage, the application implementation process includes planning, interface design, scripting, database creation, testing and hosting.

Implementation schedule

The following is the research implementation schedule

Table 1. Schedule Study

Activity	September				October				November				December				January				February			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Preparation																								
Data collection																								
Data processing																								
Preparation of reports																								
Report Publication																								
Activity	March				April				May				June				July				August			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Preparation																								
Data collection																								
Data processing																								
Preparation of reports																								
Report Publication																								

3. RESULTS AND DISCUSSIONS

System Design System design is the stage after the analysis of the system development cycle which is defined from the functional requirements and preparation for the implementation design that describes how a system is formed, which can be in the form of drawing, designing, and making sketches or arrangements of several separate elements into a unified whole and function also involves the configuration of hardware and software components. The design and development of an online queuing system is intended for admins and patients.

The online queuing system is a web-based and mobile system that uses the internet network as a link to a web server. Furthermore, this system can be accessed by users using the internet network. Users are divided into 2 groups that have different access rights, these users include the admin as the main administrator who has full authorization access rights and the patient is the one who accesses and gets a queue number from the system.

Doctor management, schedule management and queue number management are the main components used in making an online queuing system. In designing the process using use case diagrams, Activity diagrams and system layout design. Use Case Diagram to describe the interaction relationship between the system and actors, Use Case can describe the type of interaction between system users and the system. Activity diagrams model the processes that occur in a system. The system layout design describes the system interface design.

Use Case Diagrams

The design of the Use Case Diagram consists of patients and admins, along with the proposed use cases for the online queuing system

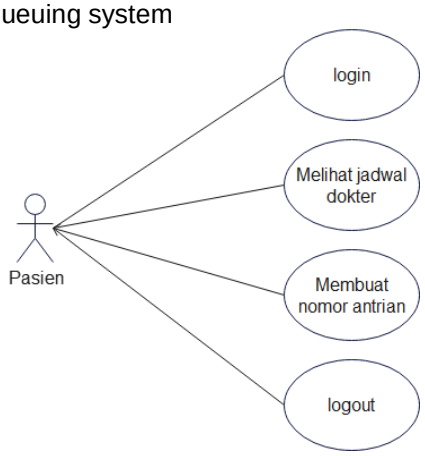


Figure 3. Patient Use Case Diagrams

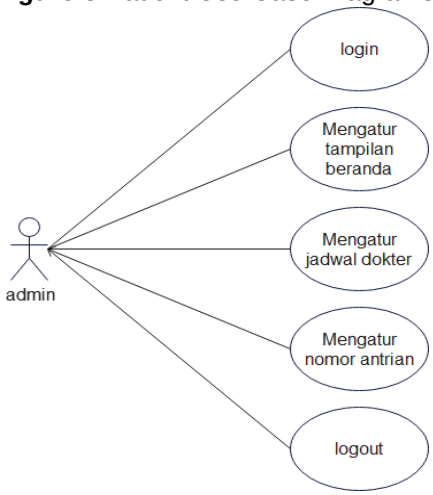


Figure 4. Admin Use Case Diagrams

The proposed Activity Diagram

Activity diagram, which is a diagram that can model the processes that occur in a system. The process sequence of a system is depicted vertically. Activity diagram is a development of a Use Case which has an activity flow, along with the proposed Activity Diagram.

Table 2. Activity diagram manages queue numbers

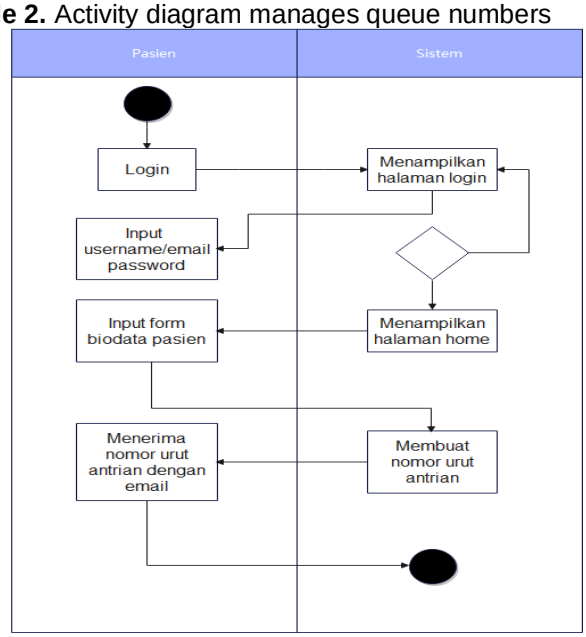
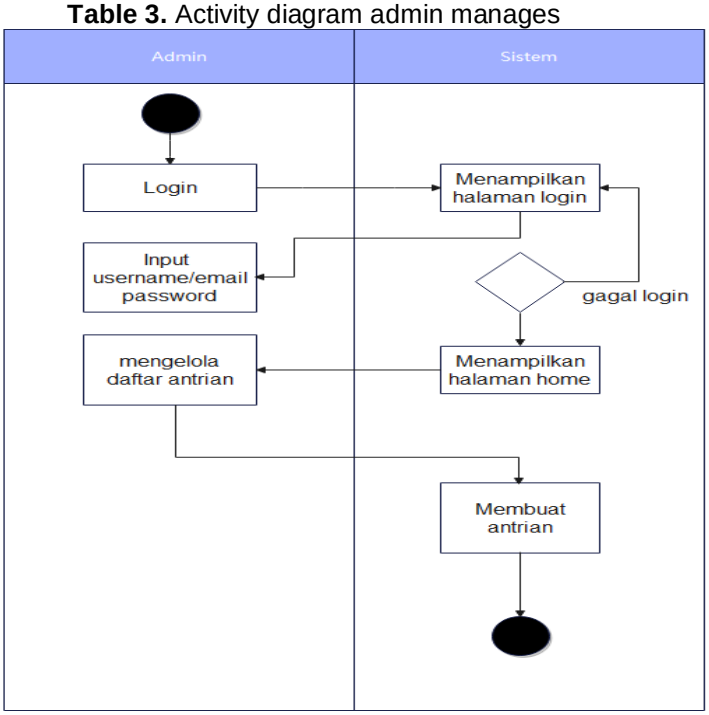


Table 3. Activity diagram admin manages



System Design Design

The following is a design of an online queuing system

1. Login Page Design

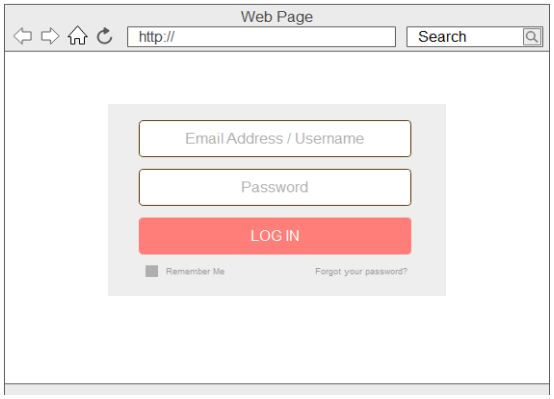


Figure 5. Login Page Design

2. Home Page Design

Figure 6. Home page design

3. Registration page design

Figure 7. Registration Page Design

4. Queue Number Page Design

Figure 8. Layout of Queue Number Pages

5. Queue Management Page Design

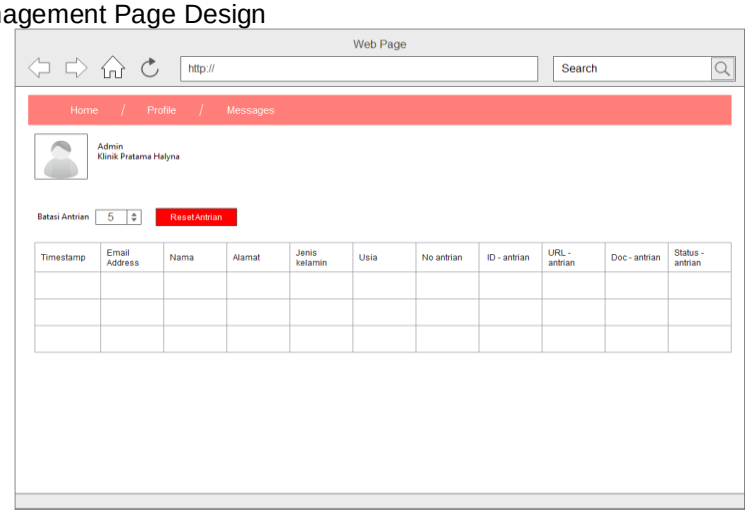


Figure 8. Queue Management Page Design

4. CONCLUSION

Based on the results of the presentation of the research report above, then from: Based on the description of the previous chapters, from the research on Design and Development of Online Queue Administration Systems in Health Services, several conclusions were drawn, namely; The Online Queue Administration System in Health Services makes it easy for patients to register. With the Online Queue Administration System, you can save paper because the queue number is sent via email. The Online Queue Administration System makes it easier for admins to manage queues

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