



Original Article

Development of A We-Based Clinic Information Service System Application Using PHP And MySQL

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Abstrak:

This research, titled "Development of a Web-Based Clinic Information Service System Application Using Php and MySQL" aims to optimize efficiency and service quality at Atlantic Clinic through the implementation of a web-based information system. Analysis and testing indicate that the current conventional service method is no longer adequate, leading to inefficiencies in service processes. The newly designed system enhances administrative efficiency by accelerating patient data recording and retrieval. Additionally, the queue system provides better time estimates for patients, while the medical record system ensures the security and accuracy of patient data. The integrated cashier system improves payment transaction efficiency, reducing billing errors. Master data management, which includes medication, medical procedures, doctors, and users, becomes more structured and accurate. The implementation of this system is expected to bring significant improvements to the quality of service at Atlantic Clinic, making it more modern, effective, and efficient.

Keywords: Clinic application, Waterfall, PHP, MySQL

Introduction

The Clinics are healthcare facilities that play a crucial role in maintaining and improving public health. However, at Atlantic Clinic, the service system is still manual, including patient registration, queues, and payments. This leads to inefficient services, increased waiting times of 15-30 minutes on average, and a high risk of data recording errors.

The development of information technology enables information system-based solutions to overcome these problems.

Web-based clinic information systems can increase efficiency by up to 40% in administrative and service processes. Based on interviews with the clinic, the number of patient visits reaches 30-50 people per day, and most of the time is spent on manual registration and data recording. Therefore, the development of a web-based clinic



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information service system is necessary to speed up administrative processes, improve patient data security, provide modern and integrated services.

The clinic needs to know what the community needs in order to provide an integrated health service, particularly with regard to the caliber of services offered. An information system is required by an organization focused on providing public health services in order to maximize community services [Tjong, 2020].

Hasri Awal has also researched web-based technology; his research indicates that the web-based clinical service information system that was developed has been successful in offering the community the best possible service information [Awal, 2023].

Iswanto and associates accomplished the same thing, demonstrating how web-based apps have improved Gocare clinic services [Susila et al., 2021].

Methods

This study employs the waterfall model for system development to create a healthcare service application design.

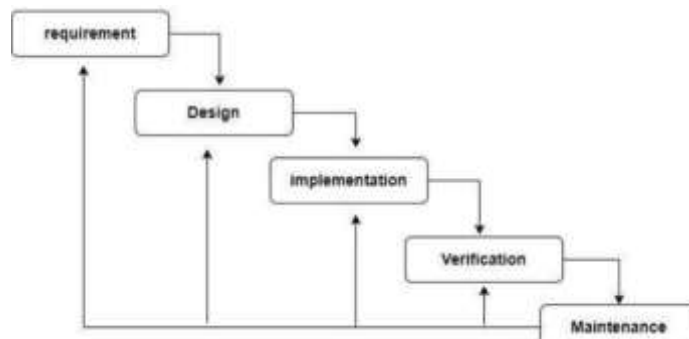


Figure 1. Waterfall Method

This research employs qualitative data collection methods, comprising interviews, observations, and a literature review. Interviews were conducted with the clinic head, administrative head, and staff at Atlantic Main Clinic to determine the application's requirements. Observations were also made at the clinic to gain insight into its operational systems. Furthermore, a review of relevant literature was undertaken, focusing on web-based application development for healthcare services.

Research Result

Clinical Service System Problems

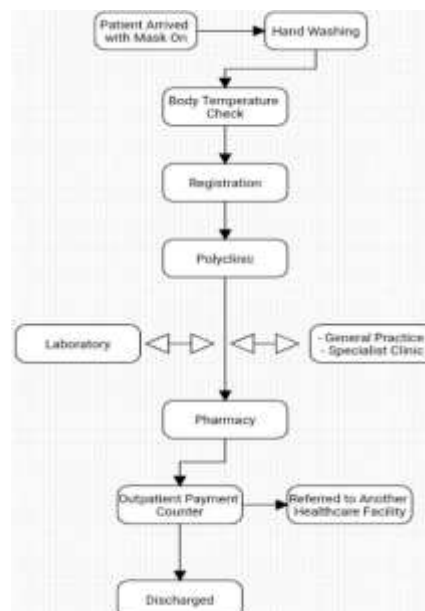


Figure 2. System Currently Implemented at The Atlantic Main Clinic

The current system remains conventional, leading to inefficiencies and ineffectiveness in patient care. Patients often face uncertainty about waiting times. Registration processes, whether for new or returning patients, involve manual bookkeeping, which can be time-consuming and prone to errors. Physical medical records are also at risk of being lost or damaged. Furthermore, payment processing requires administrators to recall costs of medications and services, which can be cumbersome.

Result

System Design Workshop

The author utilized UML to design the Atlantic Clinic healthcare application system, creating UML diagrams such as use case, activity, sequence, and class diagrams that outline the system's structure and database design. The class diagram delineates the system's structure by specifying the classes, attributes, and methods employed in system development.

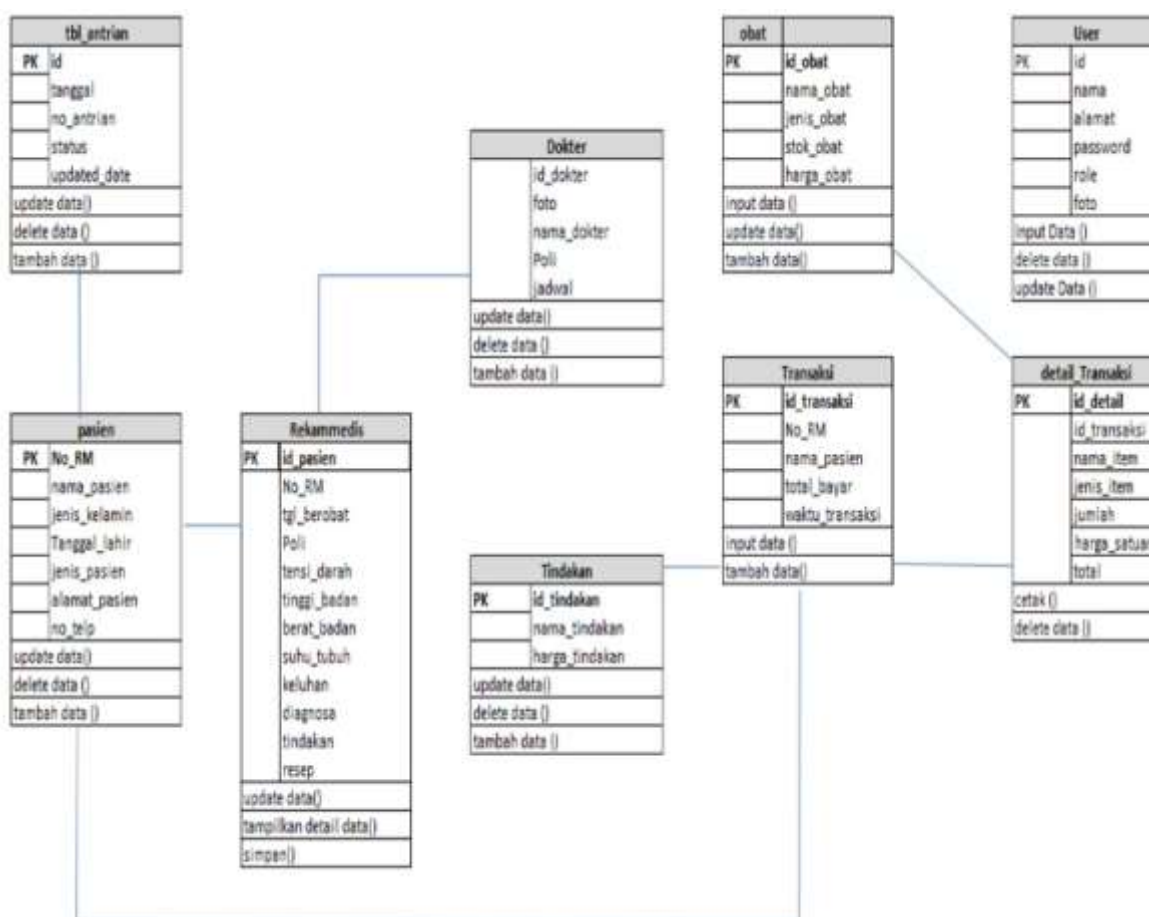


Figure 3. The Class Diagram Design Implementation at Design Workshop

The class diagram design illustrates the data structure and relationships between entities in the clinic's information system. Each class corresponds to a database table, comprising attributes and methods (functions).

If the class diagram is represented as an ERD diagram, it will look like this:

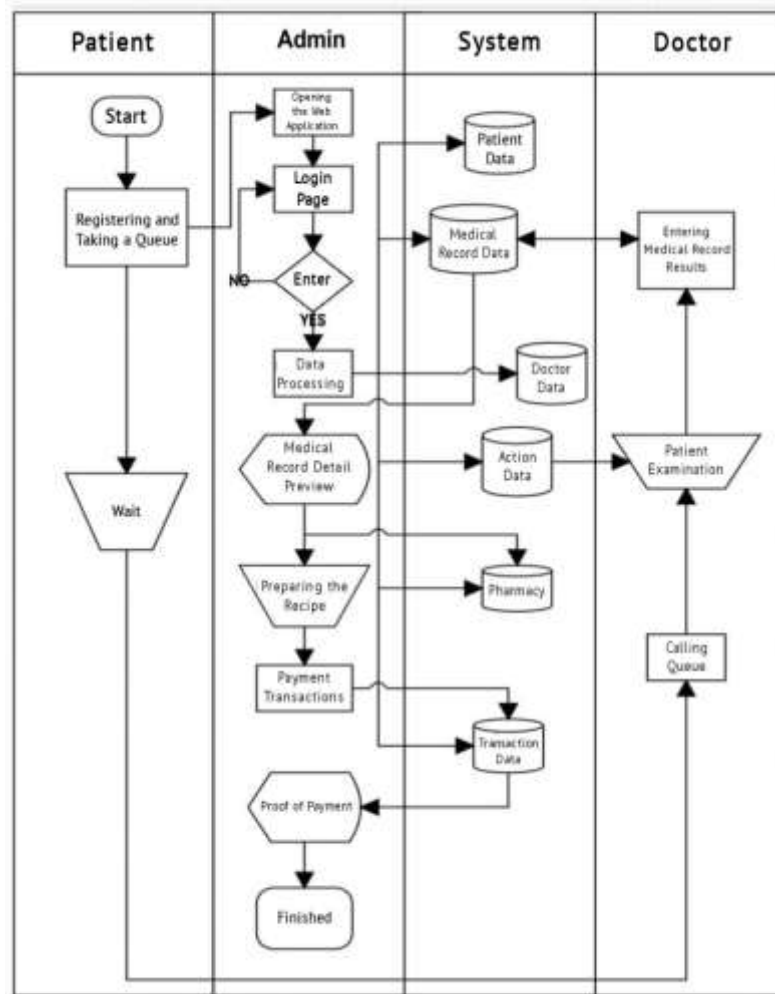


Figure 4. Web-based System to be Implemented by the Author at Design Workshop using ERD

Screen Display

1. Login page view

The login page is the first page users will see, featuring a username and password input form for system access verification. If users forget their credentials, they will need to contact the admin or super user for assistance.



Figure 5. Login Form Page

2. Main page display

The main page appears after users have been verified, featuring a queue system that allows users to take a queue number and receive voice notifications for queue calls.



Figure 6. Home Page

3. Queue number display

The queue number page, part of the main queue interface, displays the current queue number and features a button to retrieve the latest queue number.



Figure 7. Queue Number Display

4. Display Call queue

The queue call page, part of the main queue interface, features a call function that allows users to call customers or patients by queue number, with voice announcements.

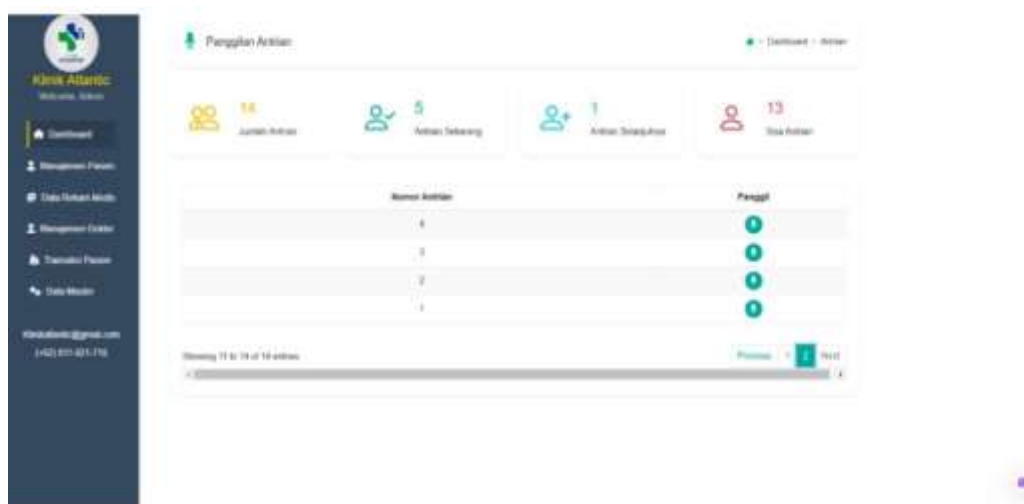


Figure 8. Call Queue View

5. Display patient data page

The patient data page provides a comprehensive management interface, featuring search functionality for efficient data management, as well as options for new registrations, editing, and deleting patient data.



No RM	Nama Pasien	Jenis Kelamin	Tanggal Lahir	Umur	Jenis Pasien	Alamat Pasien	Aksi
10	ANANDITA	Perempuan	2017-03-10	8	SW	Jl. TONGKOR BAKAT LAMAR 10	[Edit] [Hapus]
1001	HERMUDA	Laki-laki	2003-04-12	22	SW	Perumahan KIRUNGT	[Edit] [Hapus]
1002	AL FARRUQTIN	Laki-laki	2002-09-27	22	SW	KP. BERUK BUKIT BUKIT BUKIT	[Edit] [Hapus]
1004	ALFARUQTIN FARRUQTIN	Perempuan	2002-09-10	22	SW	Jl. KIRUNGT 1001	[Edit] [Hapus]
1005	SWATI PRADITYA	Laki-laki	2000-08-02	24	SW	Jl. KIRUNGT 1002	[Edit] [Hapus]
1007	ANANDITA	Perempuan	2019-07-16	6	SW	Jl. KIRUNGT 1003	[Edit] [Hapus]
1010	LELI KIRUNGT	Perempuan	2000-07-20	24	SW	KP. BERUK BUKIT BUKIT BUKIT	[Edit] [Hapus]
1012	ALFARUQTIN	Laki-laki	2000-08-02	24	SW	Jl. KIRUNGT	[Edit] [Hapus]
1015	SWATI PRADITYA	Laki-laki	2000-08-11	24	SW	KIRUNGT BUKIT BUKIT BUKIT	[Edit] [Hapus]
1020	AL FARRUQTIN	Laki-laki	2000-08-11	24	SW	Jl. KIRUNGT 1004	[Edit] [Hapus]
1021	AL FARRUQTIN	Laki-laki	2019-08-10	6	SW	Jl. KIRUNGT 1005	[Edit] [Hapus]

Figure 9. Patient Data Page

6. Display of the Patient Registration Pop Up Form

The registration form pop-up enables users to quickly add new patient records.



Figure 10. Pop Up Form Registrasi Pasien

7. Display the Patient Edit Pop Up form

The patient edit form pop-up display is part of the patient data page feature, this feature displays a pop-up form for users to update or make changes to patient data.



Figure 11. Patient Edit Pop Up Form

8. Display of medical record data page

The medical record page allows users to efficiently manage records, with features including search, add new records, edit, view detailed information in a pop-up, and download PDF for printing.



No. RM	Tanggal Berobat	Poli	Keluhan	Nama Pasien	Catatan	Diagnosis	Aksi
2140	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]
2100	2023-08-23	Poli Ward	Demam, batuk, pilek	BERNICA, DYPNA	Demam, batuk, pilek, demam, batuk, pilek, demam, batuk, pilek	Asamosis	[Edit] [Hapus] [Cetak]

Figure 12. Medical Record Data Page

9. Display a pop up form to add a new medical record

The new medical record pop-up form enables users to quickly input new patient medical history.



Figure 13. Pop Up Form Add New Medical Record

10. Medical record edit pop up display

The medical record edit pop-up form enables users to easily update and correct medical records.



Figure 14. Pop Up Form Edit Medical Records

11. Pop up display of inspection results

The pop-up form shows examination results for patients, providing easy access to medical information.



Figure 15. Inspection Result Pop Up

12. View pdf medical records

The medical record PDF display is part of the medical record management feature, this feature directs users to download or print medical records in PDF format if needed.



Figure 16. Medical Record PDF View

13. Doctor information display page

The doctor's display page is a doctor's schedule information page for users to find out the schedule, doctor's name, and available clinics.



Figure 17. Doctor Information Display

14. Payment cashier page

The cashier page enables users to process patient transactions, with features including a service cart, patient search, and payment processing.



Figure 18. Payment Cashier Page



Figure 19. Patient Search Feature

15. Transaction data page

This page provides a comprehensive view of patient transactions, allowing users to search, delete, and print transaction records in PDF format.



Figure 20. Transaction Data Page

16. Drug and action master data page

This page manages medicine and treatment data, offering search, edit, and delete capabilities, along with a form to add new data and a submit button for processing.

Figure 21. Drug and Action Master Data Page

17. Doctor master data page

This page provides doctor data management capabilities, featuring search, add, edit, and delete functions.

Figure 22. Doctor's Master Data

A feature that displays a new data add form, the feature has an input column for users to fill in doctor data along with a save button to save doctor data.

Figure 23. Doctor Registration Pop Up Form

The edit doctor data feature is a feature that displays a doctor data edit form, the feature has an input column for users to fill in doctor data along with a save button to save doctor data.



Figure 24. Pop Up Form for Editing Doctor Data

18. User master data page
This page provides comprehensive user management capabilities, including search, add, edit, and delete features.



Figure 25. User Master Data

The new registration feature provides a form to add new user data, with input fields and a save button to store the user information.



Figure 26. Add User Pop Up Form

The edit user data feature is a feature that displays a form to edit user data, the feature includes input fields for users to fill in updated user data, accompanied by a save button to store the doctor data.



Figure 27. Pop Up Form Edit User

Testing Scenario

System testing ensures the system is ready for use. The test results show that data entry and clinical data management can be completed in just a few minutes. Additionally, the simple interface makes the system easy to learn.

Conclusion

The developed website-based clinical information system successfully integrates clinic operational processes comprehensively, from patient registration to payment processing. The testing results show that the system runs well and its features can speed up services, minimize recording errors, and maintain patient data confidentiality and integrity. This system also provides convenience for the clinic in data management and improves overall service quality.

Suggestion

For optimal system development, it is recommended to develop a mobile application for patients, integrate automated notifications via WhatsApp or email, add database backup and restore modules, optimize responsive interface displays, and integrate digital payment systems to enhance convenience and practicality for patients.

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