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Website-Based Outpatient Registration Information System at Dokter Bersama Clinic Bojong Gede.

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Abstract

Dokter Bersama Clinic is one of the individual health business entities in Bojong Gede District. However, since the outbreak of the COVID-19 pandemic, the clinic has experienced a decline in income and has temporarily stopped operating. Some time later this pandemic began to decrease and then entered the new normal. The purpose of this study is to reduce the queue for registration crowds of patients who will seek treatment at the clinic and build a website-based outpatient registration system without having to crowd in queues either during the COVID-19 pandemic or after the new normal period. The writing method used is the waterfall method which is classic and easy to use so that it fits with the system design created. The expected results in the Website-Based Outpatient Registration Information System at the Dokter Bersama Clinic Bojong Gede are to help register treatment without having to queue, provide registration information for patients how many queues are running and patients can also choose a treatment schedule according to doctor's practice hours via online registration and Helping admins and doctors make it easier to manage patient registration with an online system.

Keywords : Information System, Patient Registration, Website Based

Introduction

The medical record is information both written and recorded regarding the identity, diagnosis and medical actions given to patients for inpatient, outpatient, or emergency services (Prawiradirjo et al., 2018). The medical record itself is very necessary in the patient registration process, especially for outpatients who will register or who have registered, because the presence of medical records can make it easier for clinics or hospitals to find out the history of the patient himself.The Joint Doctor's Clinic is one of the privately owned health business entities in Bojong Gede District. The clinic has been established since 1991 to provide services to the surrounding community. However, since the enactment of the new normal, the Joint Doctor's Clinic must make adjustments to the system that is already running, especially in its registration system. Adjustments that must be made by the Joint Doctor's Clinic are such as reducing the queue of patient crowds and providing a sense of security for patients who will do outpatients, but the existing outpatient registration system is still carried out conventionally, such as patients having to come directly to the clinic for treatment. register, so that it can cause the queue of patients to register. As for the management of the registration data itself, it is still done manually, namely the clinic admin still has to look for patient medical record data in the ledger, so that it is less effective and efficient because it takes a very long time.Based on the above problems, an information system is needed in the registration process to managing the patient's medical record data, namely by creating a web-based application that is made using the PHP programming language and for data storage media using a MySQL database. Making the website aims to overcome the problems found at the Joint Doctor's Clinic, so it is hoped that it can provide a solution so that outpatients no longer need to queue in the registration process, and can also provide convenience for clinic admins to manage patient medical record data easily and efficiently. fast. Based on the above background, the problem is formulated as follows: 1) How to reduce crowds for patient registration at the Bojong Gede Joint Doctor Clinic? 2) How to create an outpatient registration system without space and time restrictions at a website-based Joint Doctors Clinic?. Purpose The objectives to be obtained in this study are as follows: 1. Reducing the queue for registration crowds of patients who will seek treatment at the Joint Doctor's Clinic in Bojong Gede. 2. Build a website-based outpatient registration system without having to crowd in queues at the Joint Doctor's Clinic

Methodology

Seeing the problems faced by the Joint Doctors Clinic in the Bojong Gede area during the COVID-19 pandemic, this thesis report has the following implementation method:

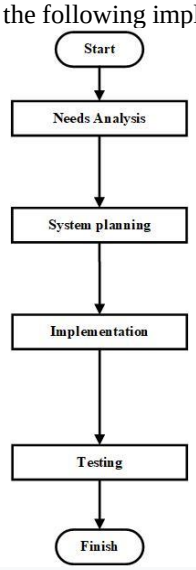

Figure 1. Implementation Flowchart

1)Analyzing the need for a registration system at the Joint Doctors Clinic starting from the needs of patients, admins and doctors.2) Designing an online patient registration system at the Joint Doctor's Clinic using UML (Unified Modeling Language).3) Implement by creating a web-based patient registration information system application at the Joint Doctor's Clinic. 4) Testing the web-based patient registration information system application using blackbox testing.

System Modeling

The model used in the development of this system is the waterfall model. The waterfall model is divided into five stages (Sukamto & Salahuddin, 2018), which are as follows:

Software Requirements Analysis

At this stage, an analysis of the ongoing outpatient registration system is carried out to obtain information about the registration procedure, and also analyzes the collection of user requirements at each level of the system. The need for this registration system begins with analyzing the needs for patients to make it easier for patients to register. This stage also analyzes the need for admins to manage the data provided for patient registration, and also the need for doctors to manage examination data.

Design

At the design stage of this system, the design is carried out using UML diagrams consisting of Activity Diagrams and Use Case Diagrams. As for the design process of the database design using Entity Relationship Diagram (ERD).

Code Generation

The programming languages used by the author are Hyperlink Text Markup Language (HTML), JavaScript, Cascading Style Sheets (CSS) on the client side and for serverside using Hypertext.

Testing

At this stage, the aim is to avoid errors during input and ensure the output produced is as desired. This testing phase uses black box testing. Several input forms were tested with black box testing.

Support

The support or support stage to maximize the program requires adequate hardware and software. The following are computer hardware specifications including an Intel I3 Processor, 500 GB Hard Drive, and 2 GB RAM. The applications used (Software) are Windows 10, XAMPP, and Google Chrome Web Browser.

Testing Method

The test method performed on this outpatient registration information system uses Black Box Testing. "The black box testing method is a test carried out by providing a number of inputs or inputs to the application to be processed according to its functional requirements" (Priyanti & Awaludin, 2016). This test is carried out on several input forms, such as registration forms, admin logins, and others.

Result

Needs Analysis

The results of the research at the Joint Doctors Clinic in Bojong Gede include: functional requirements analysis, user analysis, system input analysis, system output analysis, ongoing system analysis, proposed system analysis, system design and system implementation.

Functional Needs Analysis

The system requirements explain the things needed by the system to be built including:

1) Can do online registration anywhere by the patient without any limitations of space and time. 2) Can reduce queues in large numbers at the clinic without having to worry during this Covid-19 pandemic. 3) Can facilitate the treatment of patients at the clinic.

User Analysis

User analysis is divided into two parts, namely admin and patient. can be seen in the table below:

Admin Needs Analysis

Table 3: Admin Needs Analysis

Actor	Description
Admin	1.Login 2.Managing Doctor Data 3.Manage Doctor's Practice Schedule 4.Managing Polyclinic Data 5.Checking Patient Data 6.Manage Registration Data

Patient Needs Analysis

Table 3: Patient Needs Analysis

Actor	Description
Patient	1. Register 2. Login 3. Print Registration Certificate 4. Checking the Examination Result Data

Doctor Needs Analysis

Table 4: Doctor Needs Analysis

Actor	Description

Doctor	1. Login 2. Input the Examination Result Data 3. View Patient Data 4. View Registration Data

System Input Analysis
In this system input is divided into 2, namely:
Admin
a) Admin Data b) Patient Data c) Polyclinic Data d) Registration Data
Patient
a) New Patient Registration Form b) Old Patient Registration Form
Doctor
a) Patient Examination Data

System Output Analysis
The output of this system consists of:
1) Information on Evidence of Patient Examination Results 2) Information on Patient Registration Evidence

Ongoing System Analysis
The ongoing system analysis explains the systematic activities that occur in the patient registration process at the Joint Doctors Clinic in Bojong Gede. In the running system analyst can be seen in Figure 2 can be seen below:

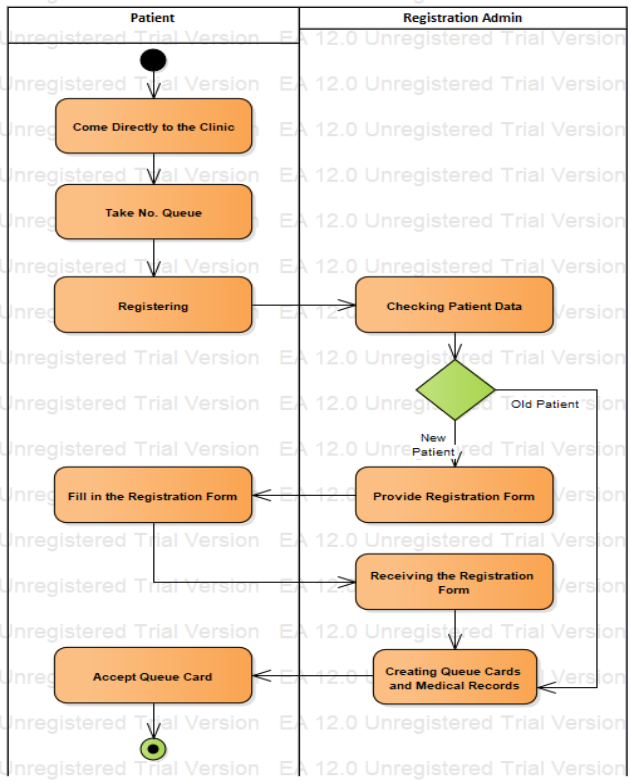

Figure 2. Ongoing System Analysis

Proposed System Analysis

In the picture of the proposed system process, it is expected to facilitate patient registration, which can be seen in Figure 3. below:

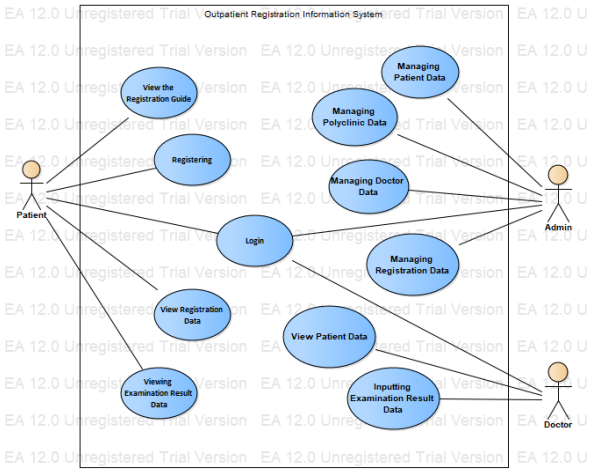

Figure 3. Use Case Diagrams

System planning

Activity Diagram Design (Activity Diagram)

Activity Diagram (activity diagram) is an activity diagram is a special type of status diagram that shows the flow of an activity to other activities in a system. These diagrams are especially important in modeling the functions of a system and emphasize the flow of control between objects.

Activity Diagram Patients Doing Registration

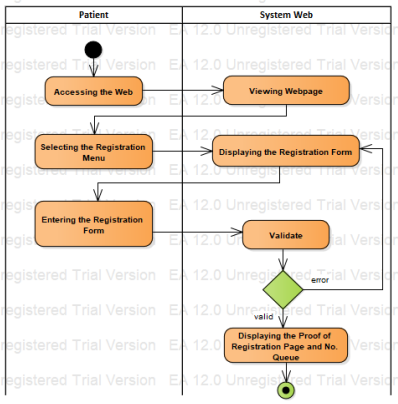

Figure 4. Activity Diagram Patients Doing Registration

Activity Diagram Admin Manage Registration Data

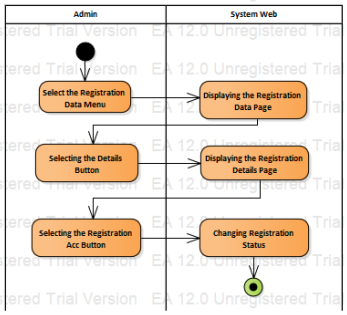

Figure 5. Activity Diagram Admin Manage Registration Data

Activity Diagram Doctors Input Patient Examination Result Data

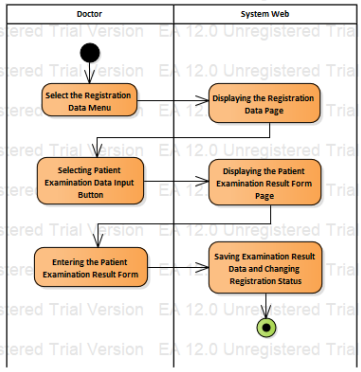

Figure 6. Activity Diagram Doctors Input Patient Examination Result Data

Entity Relationship Diagram (ERD)

Entity Relationship Diagram is a notation of ERD data modeling activities describing the relationship between entities or a set of information that has the possibility of being connected between entities and other entities. Below is the system ERD system in Figure 7:

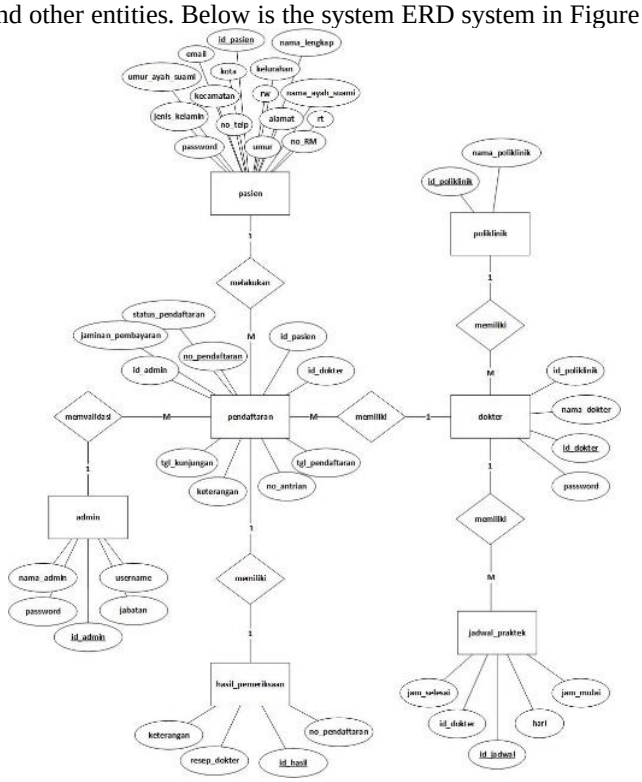

Figure 7. Entity Relationship Diagram (ERD)

Implementation and Unit Testing

In this design seeks to start a new system flow. This design is done after getting the design flow that is built so that you can find out what must be done. With the patient registration application at the Joint Doctor's Clinic in Bojong Gede, it can help register patients wherever they are.

Database Design

The table design is a design that will be created in the database to meet the requirements defined in the modeling face. Below is the proposed table design:

Patient Table

Table 6: Patient Table

Field	Type	Length	Description
id_pasien	Char	10	*Primary Key*
no_rm	Varchar	10	No. Medical records
nama_lengkap	Varchar	30	Full name
umur	Int	3	Age
jenis_kelamin	Enum	10	Gender
no_telp	Varchar	12	No. Telephone
alamat	Text	100	Address
rt	Varchar	4	Neighbourhood
rw	Varchar	4	Hamlet
keluarahan	Varchar	50	Urban village
kecamatan	Varchar	50	Sub-district
kota	Varchar	30	City
nama_ayah_suami	Varchar	30	Name of Father or Husband
umur_ayah_suami	Int	3	Age of Father or Husband
email	Varchar	30	*E-Mail*
password	Text	40	*Password*

Registration Table

Table 7: Registration Table

Field	Type	Length	Description
no_pendaftaran	Char	13	*Primary Key*
id_pasien	Char	10	ID Patient
id_dokter	Char	8	ID Doctor
id_admin	Int	4	ID Admin
jaminan_pembayaran	Varchar	30	Payment Guarantee
tgl_pendaftaran	Date	10	Registration date
tgl_kunjungan	Date	10	Date of Visit
keterangan	Text	100	Information
status_pendaftaran	Enum	7	Registration Status
no_antrian	Char	4	No. Queue

Examination Results Table

Table 7: Examination Results Table

Field	Type	Length	Description
id_hasil	char	13	*Primary Key*
no_pendaftaran	char	13	No. Registration
keterangan	text	100	Information
resep_dokter	text	100	Doctor's prescription

Doctor Table

Table 8: Doctor Table

Field	Type	Length	Description
id_dokter	char	8	*Primary Key*
id_poliklinik	char	4	ID Polyclinic
nama_dokter	varchar	30	Doctor's Name
password	varchar	100	*Password*

Polyclinic Table

Table 9: Polyclinic Table

Field	Type	Length	Description
id_poliklinik	char	4	*Primary Key*
nama_poliklinik	varchar	30	Polyclinic Name

Admin Table

Table 10: Admin Table

Field	Type	Length	Description
id_admin	int	4	*Primary Key*
nama_admin	varchar	20	Admin Name
username	varchar	10	*Username*
jabatan	varchar	30	Position
password	text	40	*Password*

Practice Schedule Table

Table 11: Practice Schedule Table

Field	Type	Length	Description
id_jadwal	char	4	*Primary Key*
id_dokter	char	8	ID Doctor
hari	varchar	10	Day
jam_mulai	time	8	Starting Hours
jam_selesai	time	8	Hours End

Interface Design

The interface design in this report is as follows:
Patient Registration Form
This page is used by patients to register treatment at the clinic.

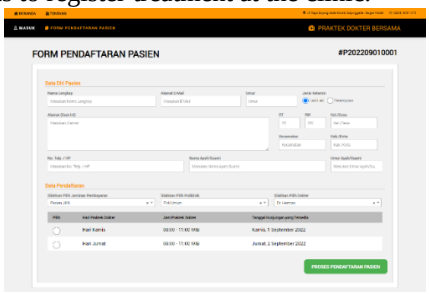

Figure 8. Patient Registration Form

Admin Login Form
This page is used by the admin to enter the system first by entering the username and password.

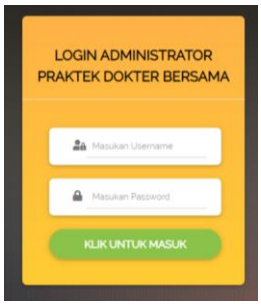

Figure 9. Admin Login Form

Doctor Login Form
This page is used by doctors to enter the system first by entering the doctor's id and password.

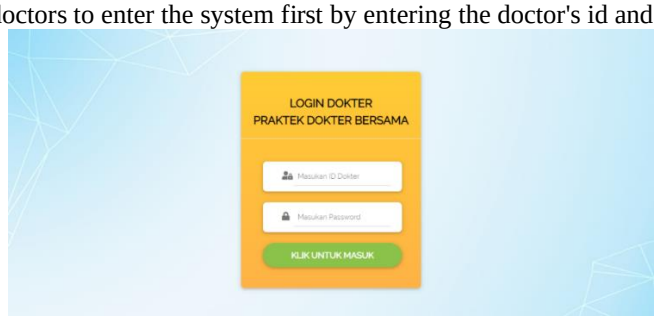

Figure 10. Doctor Login Form

Unit Test
Testing of programs made using blackbox testing that focuses on the program's input and output processes, which consists of:
Testing on the Patient Login Page

Table 11: Practice Schedule Table

No.	Testing Scenario	Test Case	Expected results	Test result	Conclusion
1	All fields in the patient page login form are not filled in, then click Enter.	*Email*: (Empy) *Password*: (Empy)	The system will refuse login and display the message "E-Mail Can't Be Empty", "Password Can't Be Empty"	According to expectations	Valid
2	Type your email and other fields are not filled in, then click Enter	*Email*: (tirta @gmail.com) *Password*: (Empy)	The system will refuse login and display the message “Password cannot be empty”	According to expectations	Valid
3	Type in an incorrect email and password then click Enter	*Email*: (tirta @gmail.com) *Password*: (abcd)	The system will refuse login and display the message “Login Failed”	According to expectations	Valid
4	Type in the appropriate email and password then click Enter	*Email*: (tirta @gmail.com) *Password*: (12345)	The system will accept to login and display the message "Login Successful"	According to expectations	Valid

Conclusion

Based on the results of research conducted at the Joint Doctor's Clinic in Bojong Gede, it can be concluded that:

1) The results of the implementation that have been applied to the clinic help register treatment without having to queue. 2) Provide registration information to patients how many queues are running and patients can also choose a treatment schedule according to the doctor's practice hours through the online registration3)Helping admins and doctors make it easier to manage patient registration with an online system

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