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Expert System Disease Diagnosis and Drug Relation Amor Pharmacy

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ABSTRACT

The development of information and communication technology today has a major influence on various aspects of life, even human behavior and activities now depend a lot on information and communication technology. One example is the use of expert system-based technology. The development of expert system-based applications has been in great demand since 1950, with a fairly wide coverage area. Expert systems in organizations are aimed at adding value, increasing productivity and managerial areas that can draw conclusions quickly. In this study an application was developed "Expert System for Disease Diagnosis and Drug Relation". This application was built to be an alternative in diagnosing a type of disease based on the symptoms felt by the user, so that the user finds a solution to the problem at hand. From the results of tests carried out using the black box method, it can be concluded that this application can function well. And can provide convenience for users in diagnosing diseases and recommending what drugs are suitable for people with the disease.

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1. Introduction

Health effort is any activity to maintain and improve health and the place used to organize it is called a health facility. Health facilities and infrastructure have a very large role in every region in Indonesia. However, in reality there are still many areas in Indonesia that still lack health facilities and infrastructure, as is the case in one area in Binamu sub-district, Jeneponto district. The existing health facilities and infrastructure in this area are still very limited, such as experts or expert doctors. Likewise pharmacies are still few in number with limited opening hours. This is due to the lack of pharmacists on duty, especially in the area there is still a lack of health socialization carried out by the local health office.

Expert System In general, an expert system is a system that seeks to adopt human knowledge to a computer designed to model problem solving abilities like an expert. With this expert system, even ordinary people can solve their problems or just look for quality information that can only be obtained with the help of experts in their fields. This expert system will also be able to assist the activities of experts as experienced assistants and have experienced assistants and have the required knowledge. In its preparation, the expert system combines inference rules with a certain knowledge base provided by one or more experts in a particular field. Database is an integrated collection of computer data. Organized and stored in a way that facilitates retrieval, multiple files can be logically integrated and this is the concept of a database. Data Flow Diagram (DFD) is a diagram that states the notations to describe the flow of data. DFD is used to describe an existing system or a new system that will be developed logically without considering the physical environment in which the data flows or will be stored. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. many files can be logically integrated and this is the concept of a database. Data Flow Diagram (DFD) is a diagram that states the notations to describe the flow of data. DFD is used to describe an existing system or a new system that will be developed logically without considering the physical environment in which the data flows or will be stored. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. many files can be logically integrated and this is the concept of a database. Data Flow Diagram (DFD) is a diagram that states the notations to describe the flow of data. DFD is used to describe an existing system or a new system that will be developed logically without considering the physical environment in which the data flows or will be stored. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. Data Flow Diagram (DFD) is a diagram that states the notations to describe the flow of data. DFD is used to describe an existing system or a new system that will be developed logically without considering the physical environment in which the data flows or will be stored. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. Data Flow Diagram (DFD) is a diagram that states the notations to describe the flow of data. DFD is used to describe an existing system or a new system that will be developed logically without considering the physical environment in which the data flows or will be stored. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system. DFD is a tool used in structured analysis and design methodologies, meaning that DFD can describe the flow of data in a structured and clear system. Furthermore, DFD is also a documentation of a good system.

Entity Relationship Diagram is a diagram that describes the relationship model between stored data designs. This relationship model is needed to describe the data structure of the relationships between data (which may be very complex). UML is a visual modeling method for object-oriented system design tools, or the definition of UML is as a language that has become a standard in visualization, design and documentation of software systems. Delphi is a programming language that has a wide range of capabilities and is very sophisticated. You can create various types of applications with Delphi, including applications for processing text, graphics, numbers, databases, and web applications. In general, Delphi capabilities are components and a reliable programming language, thus allowing you to make application programs according to your wishes, with sophisticated appearance and capabilities. To simplify programming in creating application programs, Delphi provides very complete programming facilities. The programming facilities are divided into two groups, namely objects and programming languages. In summary, an object is a component that has a physical form and can be seen (visually). Objects are usually used to perform certain tasks and have certain limitations. While the programming language is briefly referred to as a collection of texts that have a certain meaning and are arranged with certain rules and to carry out certain tasks. Delphi provides very complete programming facilities. The programming facilities are divided into two groups, namely objects and programming languages. In summary, an object is a component that has a physical form and can be seen (visually). Objects are usually used to perform certain tasks and have certain limitations. While the programming language is briefly referred to as a collection of texts that have a certain meaning and are arranged with certain rules and to carry out certain tasks. Delphi provides very complete programming facilities. The programming facilities are divided into two groups, namely objects and programming languages. In summary, an object is a component that has a physical form and can be seen (visually). Objects are usually used to perform certain tasks and have certain limitations. While the programming language is briefly referred to as a collection of texts that have a certain meaning and are arranged with certain rules and to carry out certain tasks. Objects are usually used to perform certain tasks and have certain limitations. While the programming language is briefly referred to as a collection of texts that have a certain meaning and are arranged with certain rules and to carry out certain tasks. Objects are usually used to perform certain tasks and have certain limitations. While the programming language is briefly referred to as a collection of texts that have a certain meaning and are arranged with certain rules and to carry out certain tasks.

Illness is an abnormal condition in the body or mind that causes discomfort, dysfunction, or pressure/stress to the person who is affected or in close contact with it. Sometimes the term is used generically to describe injuries, disabilities, syndromes, symptoms, behavioral disorders, and ordinary variations in structure or function, while in other contexts it may be considered a distinguishable category.

There are various types of diseases that threaten humans. This disease can be caused by germs, bacteria, viruses, toxins, organ failure to function, and also by hereditary/hereditary diseases. A condition can be verified objectively, but the assumption that a "symptom" is a disease depends on the value of society.

2. Method

2.1 Method of collecting data

Data sources are divided into two, namely primary data and secondary data. Primary data is data obtained by researchers directly (from first hand), while secondary data is data obtained by researchers from existing sources.

2.2 System Design and Method

In this study, the application planning method used is Waterfall. The Waterfall model is a classical model that is systematic, sequential in building software, where the process is gradual and must wait for the previous stage to be completed then start the next stage.

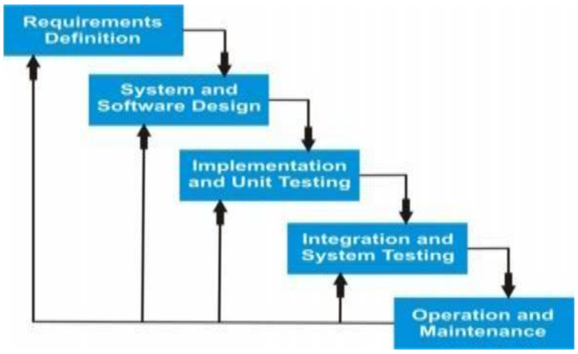

Figure 1. Research framework

a. System Requirements

The stage where determining the requirements for all system elements, then allocating some subset of these requirements for the device. The system overview is important when the software must interact with other system elements such as hardware, people and databases. Requirements System covers a set of requirements at every top level of design and analysis.

b. Analysis

The stage where we translate user requirements into system requirements specifications or SRS

(System Requirements Specifications). This system requirement specification captures everything that is needed by the system and can be continuously updated iteratively during the system development process.

c. Design

This stage begins with a problem statement and ends with design details that can be transformed into an operational system. This transformation includes all design development activities.

d. coding

Refine the details of the design to the deployment of the system according to user requirements. This transformation also includes the design of the equipment used, operating procedures, description of the people who will use the system and so on.

e.

The implementation that will be used includes the application process in accordance with the initial design, and making a prototype to find out the shortcomings or problems encountered.

f. Evaluation

The evaluation used in making the application is system evaluation. Evaluation of the system by conducting experiments on the application and looking for existing deficiencies and fixing them (Pressman, 2001).

3. Results and Discussion

3.1 Test result

Based on the test plan, the following tests can be carried out:

a. Testing on Main Menu

TABLES 1.
MAIN MENU TEST RESULTS

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push App Login Button	Displays the Login form	Choice of actions according to expected	Succeed
Push User Data Button	Displaying the user data form	Choice of actions according to expected	Succeed
Push Drug Data Button	Displaying drug data form	Action options as expected	Succeed
Push Symptom Data Button	Displays disease symptom data form	Action options as expected	Succeed
Push Disease Data Button	Display disease data form	Action options as expected	Succeed
Push Role Data Button	Display the role data form	Choice of actions according to expected	Succeed
Push Diagnostic Process Button	Showing the form diagnostic process	Choice of actions according to expected	Succeed
Pressing the About Button	Show credit form	Choice of actions according to expected	Succeed
Push Exit Button	Displays the confirm exit form	Action options as expected	Succeed

b. Testing on the Menu Select the Login Form

TABLE 2.
TEST RESULTS MENU SELECT LOGIN FORM

Cases And Test Results

Action/data input	Which are expected	Observation	Conclusion
Push the button *Login*	*Username*and *Password*correct, *login success*	Action options as expected.	Succeed
Push the button Go out	Back to menu main	Action options accordingly which are expected.	Succeed
Enter Username and Password	Enter username and password succeed	Action options as expected.	Succeed

c. Testing on the Menu Select User Data Form

TABLE 3.
TEST RESULTS MENU SELECT USER DATA FORM

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Pressing the Add Button	Adduser data	Action options as expected.	Succeed
Push Save button	Save new user data	Action options as expected.	Succeed
Push the button *Refresh*	*Refresh*user data	Action options as expected.	Succeed

d. Testing on Drug Form

TABLE 4.
DRUG DATA FORM TEST RESULTS

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Pressing the Add Button	Add drug data	Action options as expected.	Succeed
Pressing the Save Button	Save new drug data	Action options as expected.	Succeed
Pressing the Refresh Button	*Refresh*drug data	Action options as expected.	Succeed
Pressing Delete Button	Deleting drug data	Action options as expected.	Succeed
Pressing the Cancel Button	Back to main menu	Action options as expected.	Succeed

e. Testing on the Symptom Data Form

TABLE 5.
DRUG DATA FORM TEST RESULTS

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push Add Button	Add Symptom data	Action options as expected.	Succeed
Push Save button	Saving new Symptom data	Action options as expected.	Succeed
PushKnob *Refresh*	*Refresh*Symptom data	Action options as expected.	Succeed
Push Delete Button	Delete Symptom data	Action options as expected.	Succeed
Pressing the Cancel Button	Back to main menu	Action options as expected.	Succeed

f. Testing on Disease Data Form Games

TABLE 6.
DISEASE DATA FORM GAME TEST RESULTS

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push the button Plus	Adding Disease data	Action options as expected.	Succeed
Push the button save	Save new Disease data	Action options as expected.	Succeed
Push the button *Refresh*	*Refresh*Disease data	Action options as expected.	Succeed
Push the button delete	Deleting Disease data	Action options as expected.	Succeed
Push the button cancelled	Back to main menu	Action options as expected.	Succeed

g. Pupup Pause Testing on Form Data Rule

TABLE 7.
PUPUP PAUSE TEST RESULTS ON FORM DATA RULE

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push Add Button	Add data Rules	Action options as expected.	Succeed
Push Save button	Saving Rule data	Action options as expected.	Succeed
Push Refresh button	Refresh Rule data	Action options as expected.	Succeed
Push Delete Button	Deleting Rule data	Action options as expected.	Succeed
Push Cancel button	Back to menu main	Action options as expected.	Succeed

h. Testing on the Diagnostic Process Form

TABLE 8.
TEST RESULTS ON THE DIAGNOSTIC PROCESS FORM

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push the button Diagnosis	Showing the form diagnostic results	Action options as expected.	Succeed
Push the button cancelled	Back to menu main	Action options as expected.	Succeed

i. Testing on the Exit Form

TABLE 9.
TEST RESULTS ON THE EXIT FORM

Cases And Test Results			
Action/data input	Which are expected	Observation	Conclusion
Push OK button	Exit the app	Action options as expected.	Succeed
Push Cancel button	Back to menu main	Action options as expected.	Succeed

4. Conclusion

Based on the implementation and the results of the tests that have been carried out, it can be concluded that this application is running well according to its function. This application runs on a

Windows-based desktop which is expected to make it easier for users to diagnose diseases and recommend what drugs are suitable for sufferers of the disease. The application of this expert system is not only for diagnosing disease, but can also be a supporting tool for the creation of better health management, indirectly increasing efforts to treat disease symptoms. This application has drawbacks, namely an expert system that is designed only on a desktop basis, and the types of diseases diagnosed are only diseases that are common in the tropics.

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