Expert System for Diagnosing Lovebird Bird Disease

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Abstract--- Lovebird is one of the chirping birds that is popular in the community now, besides its melodious voice and beautiful color. Not a few farmers who want to try cultivating this type of birds, but some of the farmers who just started are less likely to understand what kind of disease can attack Lovebird. Farmers can even have lose about this. Therefore, the expert system to diagnosis Lovebird disease is made. The expert system to diagnosis Lovebird disease is a web-based application, while in its design using SDLC/WATERFALL, taking one of the samples of the disease is worm disease. With the expert system in diagnosing the disease, it is expected to help the farmers to know and handle the affected Lovebird and also the results of the possible percentage will be displayed also in this expert system.

Keywords--- Expert System, SDLC, Lovebird Bird, PHP MySQL.

I. INTRODUCTION

1.1 Background

For living creature, health is important especially for lovebird which is now being popular in Indonesian society. There are a variety of diseases that can attack Lovebird. Some of them can lead to death. Therefore, to overcome it we must know the type of disease and the way to handle it. [1]

Based on the article about chirping birds in Indonesia (Indobird 2012) which stated that one of the most widely preserved chirping birds is lovebird compared to other chirping birds. In Indonesia 20 % of people in 2012 chose Lovebird birds as a pet in comparison with other types of chirping birds that reach 20% while other birds like 19% canaries, 17% kacer birds, Murai Batu 11%, Pleci 15%, Anis 7%, Lanniya 11%. It proves that the farmer Lovebird pretty much in Indonesia [2].

Mahmud & Ali (2014) with an expert system can provide information to users about the types of diseases that attack their lovebird (first diagnosis) based on the symptoms given and provide information on how to prevention. [3]

In this expert system of Lovebird diagnosis, researchers used a web-based application to diagnose the type of Lovebird disease where taken one of the samples of the disease. Researchers will also provide complete and updated symptom data. As well as education about the type of lovebird bird. Based on the explanation above, this research was done to help the breeders and to facilitate the lovebird breeders in diagnosing the symptoms that occur in

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lovebird and know the way of treatment. With the problem of disease in Lovebird, this research aimed to produce an application system for the diagnosis of Lovebird bird disease, using SDLC method. Hopefully it can help the breeder to know what disease is attacking lovebird bird.

1.2 Problem Formulation

Based on the background above, there are several problems that can be known is how to determine what disease is attacking lovebird and how handling it correctly, that is by using an expert system application to diagnose diseases and know how to treat and treatment based on symptoms.

1.3 Objectives

Based on the background that has been shown before, the purpose of this journal was to build an expert system application to diagnose disease in Lovebird, using Web-based application programming, as well as providing solutions to the disease that has been diagnosed based on symptoms.

1.4 The Advantages of Research

    a.   To determine type of disease that affect Lovebird and give the solution and also treatment

    b.   To give education and understanding to community or breeders about the disease of Lovebird bird.

II. THEORETICAL BASE

2.1 Expert System

Kusrini (2006) states The expert system is a branch of artificial intelligence and is also a science that emerged as the current development of computer science. This system is a computer system that can match or emulate the ability of an expert. [4]

Arhami (2005) states that The expert system is a branch of the artificial intelligence that makes extensive use of knowledge that is specific to solving human level problems by an expert and is designed to imitate an expert's expertise in answering questions and resolving problems in all parts, an expert is someone that has expertise in certain specific part, experts who have knowledge or special abilities that others do not know or are able to his parts. [5].

From the above explanation, the researcher concluded that the expert system is designed to solve a certain problem by emulating the work of the experts. With this expert system, the ordinary people can solve a fairly complicated problem that can only be solved with the help of experts.

2.2 Lovebird

Lovebird is a type of grain-eating bird. The color, sound and funny behavior make Lovebird be one of the choice as a pet. But Lovebird birds are also prone to disease. There are many people who do not know how to handle lovebird disease. Identifying diseases that attack lovebird birds can be known from the physically visible symptoms. [6]

2.3 Types of Lovebird Disease

The disease that attacks Lovebird & symptoms, among others:

1. *Worm Disease*

Symptoms: decreased appetite, liquid-shaped dirt, messy feathers, not passionate, easy sleepy, weak, weight loss

2. *Bird Lice Disease*

Symptoms: decreased appetite, restlessness, reduced sound frequency, frequent bite the feathers, lots of lice on feathers, weight loss

3. *Stools Bacteria Disease*

Symptoms: decreased appetite, liquid-shaped impurities, cloudy-colored, foul-smelling, decreased bird activity [3]

2.4 PHP, Database Mysql, dan Xampp Understanding

PHP stands for Perl Hypertext Preprocessor is a code/script that will be executed on the server side (Deni sutaji, 2012:2). The server-side nature means that scripting is done on the server, only then the results are sent to the browser. The PHP programming language is a programming language that works in a Web server (MADCOMS, 2008:1). The second is Mysql, MySQL is derived from one of the main concepts in the database since a long time ago, namely SQL (Structured Query Language). And the last one is XAMPP, XAMPP is a tool that provides a software package into a single piece of package. By installing XAMPP It is no longer necessary to install and configure the Apache, PHP and MySQL Web server manually.

III. THE METHODS OF RESEARCH

3.1 Data Collection

The steps that will be conducted in this journal are as follows:

A. *Observation Methods*

Observation is a method of collecting disease data of Lovebird by conducting observations directly to the object that will be examined by analyzing the running system that exists at the research site in Pringsewu district. At this time the breeders are experiencing problems related to the diseases attack their livestock.

B. *Interview Methods*

Interview method is a method of collecting information about the disease in Lovebird by performing face to face and asking directly between researchers and resources or data sources. Data were collected and information was encouraged by asking a question orally on the breeder, to ask for explanations and answers of the questions provided and to make notes on the things that the breeder disclosed.

The guidelines of the interview were semi-structural. By first asking for a series of questions, then one by one explored more deeply by asking for more information. According to one of the breeders in Pringsewu district so that Lovebird farthest from a variety of diseases should maintain the cleanliness of the cage every day.

C. *Literature Review Methods*

The technique of collecting reference data through books and research journals of literature review is conducted according to related issues, the literature study is also conducted by knowing the information system to be applied.

By studying and reading the literature that has relate with the problem that will be the object of research.

3.2 SDLC/Waterfall

The model used for the designing of the expert system diagnosis of rice pest is SDLC. According to Muhammad Muslihudin the SDLC method in system engineering and software engineering is the process of creating and modifying systems as well as the models and methodologies used to develop these systems. SDLC is also a pattern taken to develop the software system, in the development of the SDLC method has several phases, as follows:

1. **Planning Phase**

This phase aims to identify and prioritize what information systems will be developed, the objectives to be achieved, the duration of implementation and, considering the available funds and who to carry out.

2. **System Design Phase**

The benefit of system design is to provide a complete description of the blue print, as a guide (guidelines) for programmers in creating applications. The design process will translate the requirements of a software design that can be estimated before coding.

3. **System Creation (Coding and Testing)**

Coding is a design translation in the familiar language of the computer. This phase is the real phase of working on a system. After coding is completed, it is conducted a testing to the system that has been created, it aims to find errors on the system and then can be repaired.

4. **System Implementation**

Before implementation, perform the preparation of hardware, software, rooms and other supporting facilities.

5. **System Maintenance**

The maintenance step of the system cover all the necessary processes to ensure the continuity, smoothness, and completion of the system that has been operated. The software will inevitably change, the changes can be due to an error, because the software must adapt to the environment (peripheral or new operating system), or because the customer needs the functional development.

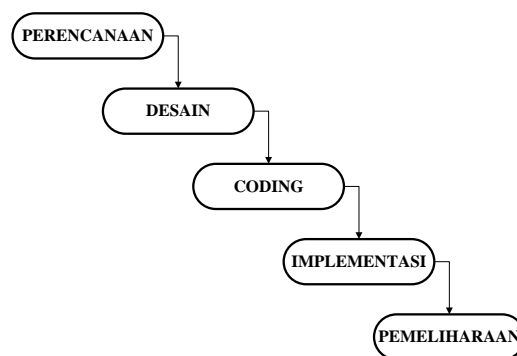The developments in this waterfall method can be seen in the figure below. [7]

Figure 3.1: SDLC Method

3.3 Research Framework

a. *Flowchart Design*

Flowchart is images in the form of the flow diagram of the algorithms in a program, stating the direction of the program's flow. [8]
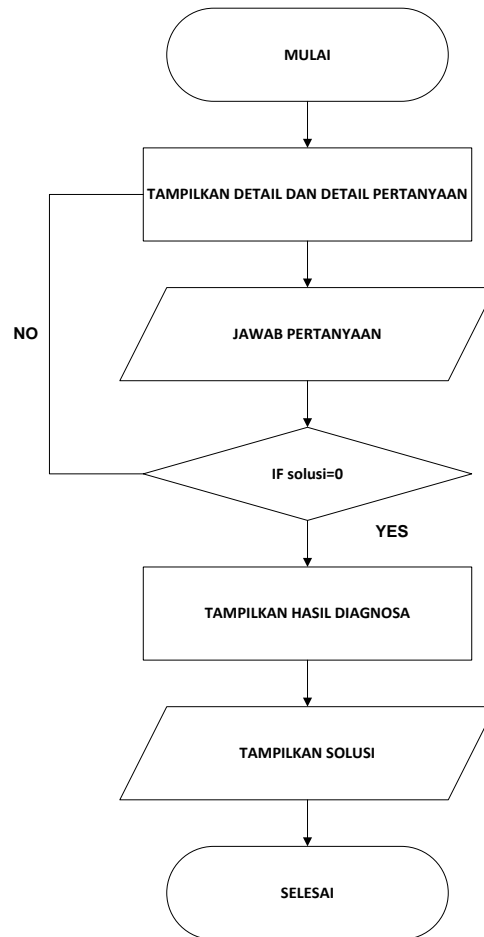

Figure 3.2: SDLC Diagnosis Process Flowchart

In this research the researchers will explain how the expert system works to diagnose, the lovebird disease that will be developed. When the system starts, the system will display a question to the user and then the system will answer a question. If the system does not auto-answer the system will return to the first step, if the system answered the question then it will appear the result of the diagnosis, then the system will also show the solution to the user. In the system of disease diagnosis of rubber plants is depicted using a flowchart, an overview of the flowchart above. [8]

IV. DESIGN AND IMPLEMENTATION

4.1 System Design

a. *Use Case*

It is an image of the system functionally, so that users can understand the usability of the system that built.
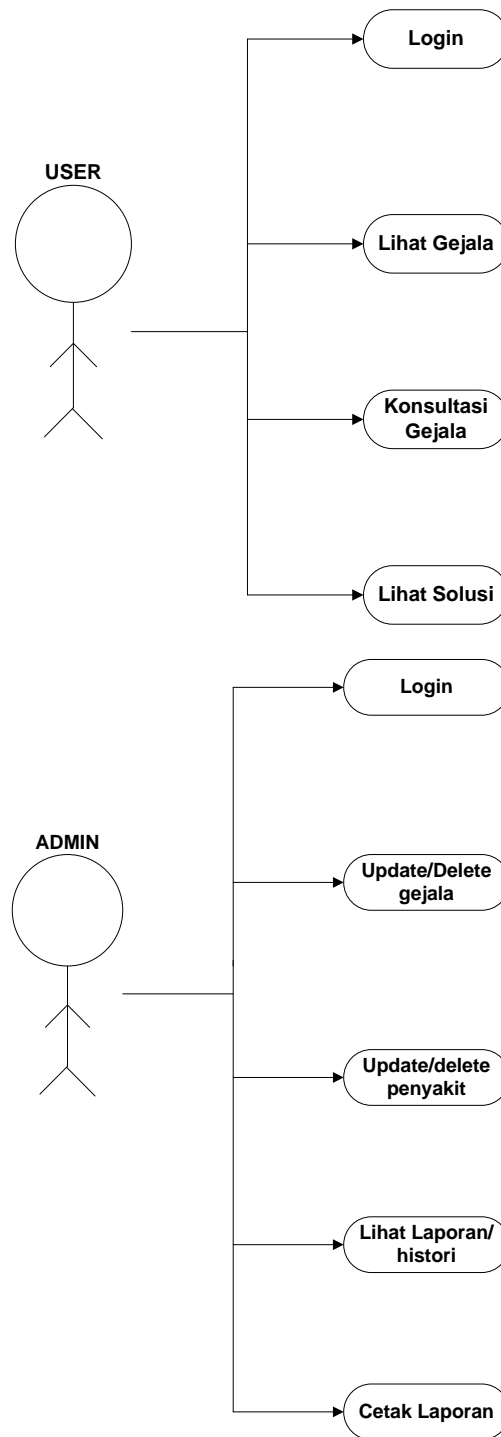
Figure 4.1: Use Case Diagram

User: The role of user in this program can see the disease, consultation, and see the solution of the program.

Admin is a program manager in an application. The task of admin here is admin login, insert/delete symptom

b.   Class Diagram

The diagram Class is to connect a table to the other tables.
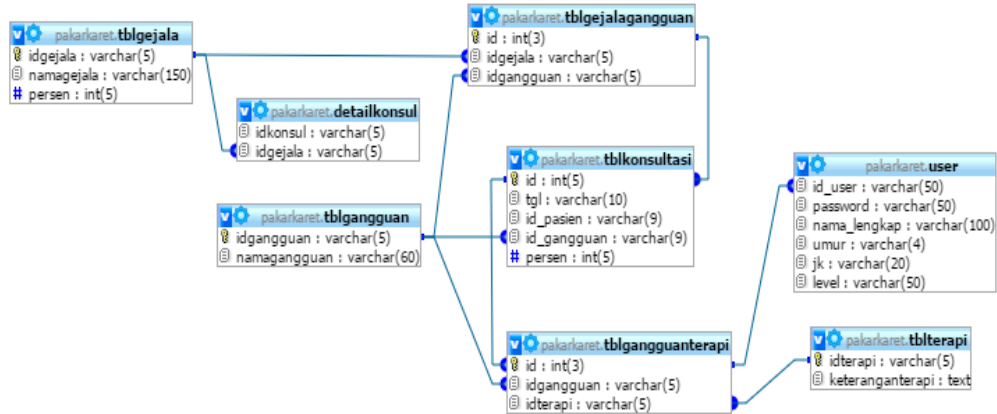
Figure 4.2: Class Diagram

4.2 Interface Design

This sub-chapter describes the design of the application program for the system of diagnosis disease in Lovebird, which is built to provide solutions to the symptoms of the disease.

A. Login Menu

Display the login page before going to the form page menu.

HEADER	
HALAMAN LOGIN	
PILIH LOGIN	
USERNAME	
USERNAME	
REGISTRASI	LOGIN

Figure 4.3: Login Form Display

B. Symptoms Form Menu
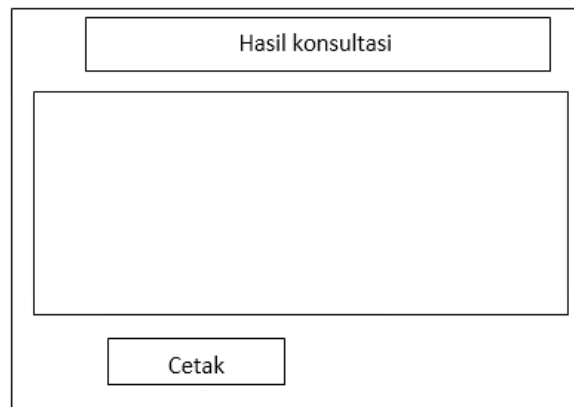
After successful enter, in this form it will show a symptom caused. This is the sketch display

HEADER
FORM KONSULTASI
MENU GEJALA

Figure 4.4: Symptom Form Menu

C. *Diagnostic Form Menu*

This display contains the diagnostic processes of disease in Lovebird.

Figure 4.5: Diagnosis Form Menu

4.3 Implementation

In this implementation researchers will show how the final design or the result of a expert system application to diagnosis disease in the Lovebird bird that have been designed following the appearance of the application:

A. *Login Menu Display*

m The login menu will appear when you sign in/login. Before login User is expected to enter the registration menu first. In this menu the user will input the username or password to login to the next menu.

Figure 4.6: Login Menu Display

B. *Symptom Menu Display*

On second menu is a display of some symptoms that will be diagnosis.

Figure 4.7: Symptom Menu Display

C. *Diagnosis Process Display*

First step to diagnose Worm disease in Lovebird user will checklist the symptom, then click diagnostic order. Then the diagnosis results will come out with solution/prevention from that disease.

Figure 4.8: Diagnosis Process Display

The result of this research was a Web-based application, and it's manual. In addition, the results of this research did not miss from the data obtained in like presented in the previous chapters of observation, interviews, literature review. The result of the application was for the process of diagnosing lovebird disease that can be run according to what we want.

4.5 System Test Results

The research also performed an analysis of the application implementation by giving questionnaire a few questions given to 30 people. Of the 30 respondents who filled in questionnaire and testing the application that made as many as 70% of people or as many as 21 people answered "and 9 people remaining answered "No" and were less satisfied with this application.

V. CLOSING

5.1. Conclusion

From the results of the research and discussion, it can be withdrawn a conclusion as follows:

1. The expert system for diagnosing Lovebird disease is made as a tool to determine the disease suffered by the user.
2. Public can utilize this system easily to find out the possible diseases that attack Lovebird.
3. Expert system of Lovebird disease can be easily added or updated data based on the knowledge of an expert.

5.2. Suggestions

The following are the suggestions of authors to develop applications system experts' diagnosed Lovebird bird disease namely:

a. The application is expected to help in implementing it by Lovebird Farmer.
b. Need to add data for the type of disease and its symptoms so that the information owned will be wider and recommended for the next researcher to be able to develop this system.

System development can be done using mobile Web, or Android-based applications following the future technological developments.

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