Advanced Health Control Consultation Application at Clinic B White C Based on Android

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Abstract

Health information is a very important part of everyday life, where health information is obtained through direct consultation with doctors. However, in the midst of the Covid-19 pandemic that hit, we are required to continue to follow the health protocols recommended by the government by keeping a distance from each other or social distancing. Consultations are carried out face-to-face with doctors and conventional consultation methods prolong the meeting time between doctors and patients. Based on interviews conducted with several patients in several clinics, patients obtain health information by visiting the clinic and consulting directly with doctors. The purpose of this research is to build an Android-based Health Control Consultation application with an Information Technology approach, which is a form of service application. This application was built so that patients can find out health information through questions and answers via e-consul. Patients enter questions about health problems or health problems in text form, then the e-consul will respond to patient questions. So that it can facilitate someone in health consultations and obtain information on health problems and provide first aid information when a symptom or disease occurs. The E-consul application is also equipped with articles so that doctors can also share information from their knowledge with patients. This application is built by utilizing mobile-based application technology.

Keywords: E-consul, Mobile Application, Covid-19

Introduction

Health is a state of complete physical, mental and social well-being and not merely the absence of disease (World Health Organization). Meanwhile, according to health is a dynamic balanced state, influenced by genetic, environmental and daily lifestyle factors such as eating, drinking, sex, work, rest, to managing emotional life. Once the importance of health, so to know a person's health consult a doctor(Susdarwono, 2020). Consultations carried out at this time are still carried out conventionally, namely a prospective patient visits a health center or hospital for a health check. Health checks are carried out by means of prospective patients providing information about their current health to doctors who are in the hospital(Verhagen et al., 2022).

Consultation is a second order intervention strategy that includes the relationship between professional assistants, consultants, clients, consultants and the target system's support needs(Nissen, 2019). A consultant is someone from outside the client's operating system environment, (a system defined as an individual, group organization or other social unit function), trying to help the client and target positive change. Usually this relationship is temporary and involves all groups which will be productive if it is based on volunteerism.

However, in the midst of the Covid-19 pandemic that hit, many people did not comply with the health protocols recommended by the government, to keep their distance and reduce activities outside the home(Sarnoto et al., 2022). Therefore, conventional or face-to-face health consultations are not effectively carried out in the midst of the Covid-19 pandemic considering the lack of public awareness to comply with health protocols and also conventional consultation methods prolong the meeting time between doctors and patients. The distance to come to the hospital and the queues

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are quite long at some hospitals. The problem with conventional methods makes someone sometimes lazy to go to the hospital.

Seeing from conventional problems, it is necessary to consult methods that are more effective than conventional methods. According to in today's medical consultations do not have to be done face-to-face but can also be done online (online). To overcome distance and time, an online method is needed. The online consultation method can help the government to limit the movement of people outside the home and speed up consultations between prospective patients and doctors, but this system does not yet have an information system that can provide information about skin care, only a chat between patients and doctors(Supriyanto et al., 2020).

Along with the dynamics in everyday life, health and fitness have become an important need for humans(Antar et al., 2019). Various kinds of technology have been developed to support various conveniences in terms of health and fitness, one of which is Android. Android is an operating system based on Linux and developed specifically for smart phones (smartphones) and tablet computers with touch screen devices. The Android operating system was first developed by Android, Inc(Haris et al., 2018). Android is currently the most widely used operating system and the mobile operating system that gets the highest sales(Heinonen & Strandvik, 2020).

As one of the most widely used operating systems on smartphones, it has several advantages, including: First, the large Android user base, especially in developing countries. This provides a wide open market opportunity for developers. Second, Android has good software components and has app support. This allows users to freely explore various applications on their mobile devices. Third, Users can access many applications through the application repository.

The purpose of this study is to implement an online consultation method and have an information system regarding skin care and provide information to cover the shortcomings of conventional methods. For this reason, research innovations are needed that can be useful and provide solutions in answering the problems above. From the various problems above, the authors are interested in choosing the title in this study, namely " Advanced Health Control Consultation Application at Clinic B White C Based on Android".

Method

The development of software technology requires the language used to model the software that will be made and the need for standardization so that everyone in various countries can understand the modeling of the software(Wang et al., 2020);(Karyono & Agustina, 2019). The method used in this research is the SWOT analysis method. This analysis describes the advantages and disadvantages of the system built as shown in the table below.

Table 1. Application of the SWOT Analysis Method.

Strengths	Weaknesses	Opportunities	Threats
1. The availability of applications that can make it easier for doctors and patients to exchange information in real time. 2. The results of the consultation can be used as an initial diagnosis before going to the hospital. 3. The application built is based on Android, which is owned by almost all circles.	1. Doctors cannot check the patient's physical condition. 2. Using the firebase database so that to open the application, even if you don't want to consult, you must be connected to the internet.	1. Ease of accessing doctor's information or vice versa 2. Get Health information	1. This application can be hacked by irresponsible people. 2. The firebase service used is the spark version (free), this firebase service can be down if it is accessed by many users simultaneously.

Building an information system requires some software as a support in building a system. The software used is as follows:
1. Android Studio: Android Studio is an IDE (Integrated Development Environment) for android application development. Android studio is software that is open source (free).
2. Firebase: Firebase is a Google-owned database that has provided a real-time NoSQL database with a JSON (JavaScript Notation) data structure that can be easily accessed via web code in hybrid apps. In addition to real-time data base, it also provides user authentication features (using email and password), storage (as file storage space) and cloud messaging (can be used to send notifications).
3. Android Virtual Device: is an emulator for running android applications.
4. Android SDK: API (Application Programming Interface) tools needed to start developing applications on the Android platform using the Java programming language that can run on various computers, including mobile phones or now commonly known as smartphones.
5. While the database in this study uses MySQL to store data that is managed in the application. In this application there are 4 tables in the database, namely admin, division, reports and responses. Later on, the table will store the data entered by the client.

Results and Discussion

Result
1. Black Box Test Results

Black box testing is done by ensuring the function of each command in the application can run smoothly and then given to the user to test the application.

Table 2. Login Features

No	Scenario Test	Test Case	Expected results	Test result
1	Username and password are not filled then click the login button	Username : (blank) Password : (Blank)	The system will refuse and display the message "please fill in username and password"	According to expectations
2	Type in a blank username and password then click the login button	Username : (Filled) Password : (Blank)	The system will reject and display the message "password has not been filled in"	According to expectations
3	Type in a blank username and password then click the login button	Username : (blank) Password : (Filled)	The system will reject and display the message "Username has not been filled in"	According to expectations
4	Type in username and password but it doesn't match	Username : (Incorrect) Password wrong)	The system will refuse and display the message "Incorrect username and password"	According to expectations
5	Type in the appropriate username and password	Username : (Correct) Password : (Correct)	The system will receive login access then display the admin page	According to expectations

2. Questionnaire test results

In the questionnaire distributed by the author, there are 4 questions and 10 respondents, as follows:
   a. Have an attractive appearance?
   b. Easy to use app?
   c. Consistency of application display on every screen display?
   d. Website speed to access data?

Recommendations for improving the design of an interface can be provided by investigating usability based on the assessments made by respondents. The research conducted usability testing on the online catalog system. The stage is that respondents are asked to complete tasks, then respondents are asked to provide comments on the system that has been tested. In this study, the results of usability testing can be used as recommendations for system improvement. How to calculate the percentage of the diagram from 10 respondents for each question is the number of voters multiplied by

100 then divided by the number of respondents (results to percent are multiplied by 100). The explanation can be seen in table 3.

Table 3. Explanation of Formula

Respondent's choice	Number of voters (people)	Results (%)
Strongly disagree	0	0%
Don't agree	0	0%
Disagree	0	0%
Agree	1	10%
Strongly agree	9	90%
Total	10	100%

Following are the results of each of the statements above according to the respondents:

a.   Have an attractive appearance
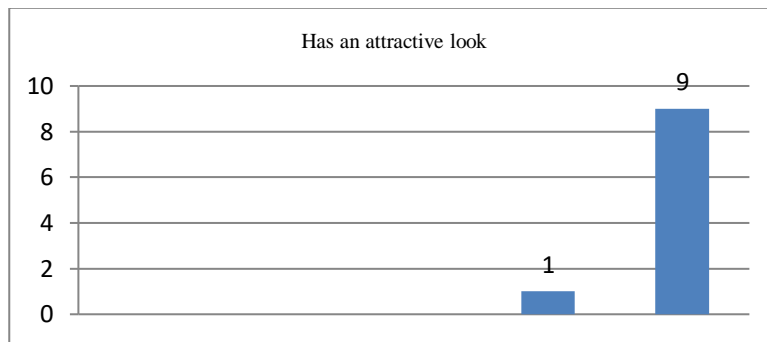
Figure 1. User Interface Display Assessment

Figure 1 shows that from 10 people there are 0% of people who strongly disagree, 0% of people who disagree, 0% of people who strongly disagree, 0% of people who 10% agree and 90% of people who strongly agree that the application has attractive appearance.
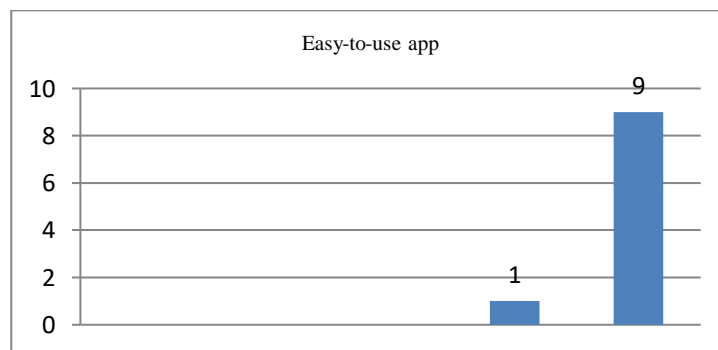
b.   Easy to use app

Figure 2. Feasibility of Use Assessment

A successful mobile application from the user's perspective is all about fun and friendly application interactions. Visually the application should be eye-catching, ensuring a balance between User Experience and User Interface. Figure 4.2 shows that out of 10 people there are 0% of people who strongly disagree, 0% of people who disagree, 0% of people who strongly disagree, 0% of people who 30% agree and 70% of people who strongly agree that the application is easy to use.

Discussion

Android-based application developed as a medium that can help users find out their health information and this is very important in everyday life(Adam et al., 2021). In essence, technology was created to make it easier for humans to carry out their activities and provide comfort for their users(Taiwo & Ezugwu, 2020). The development of an increasingly modern era creates various kinds of increasingly sophisticated technology that makes almost no field of human life free from its use, especially communication technology which is currently able to provide transformation for human life. The following is a display interface that can explain the appearance of the application.

1. Homepage

Homepage is the most important page on a website because it is the main page and the page that is indexed first by search engines before other pages on a website, while in this system it is the page that appears first when the user visits the application(Sharma et al., 2019). In this section is the initial view that is accessed by the user, where there are several menus such as.

Figure 3. Homepage

2. Consultation Page

The consultation page is a user or client interaction with a doctor who then chats in real time. One of the main menus in this online consultation application is that on the registered user menu there is a consultation menu. This consultation menu aims to input some information addressed to doctors. Such information includes name, email, telephone number, address, destination, content of the question or consultation message.
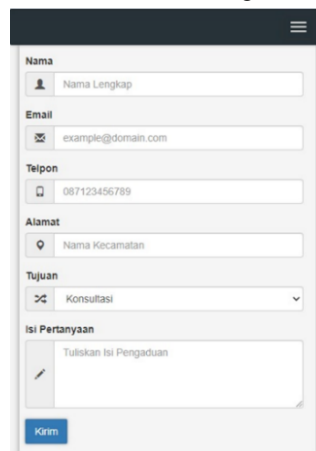

Figure 4. Consultation Page

3. Login Page

The login page is the admin entrance to access the dashboard page, which then the admin interacts with the user.
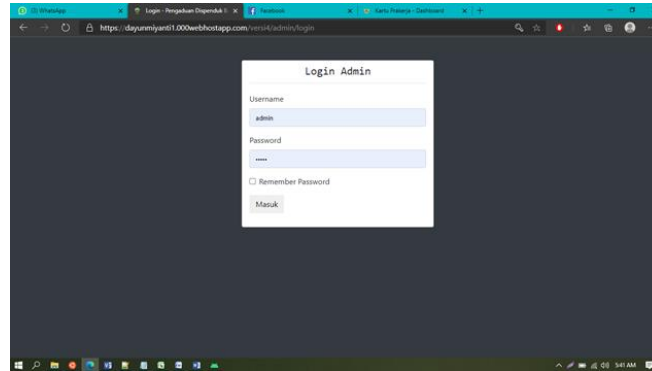

Figure 5. Login Page

4. Dashboard Page

The dashboard page is a page for admins to interact with the system, as well as on the client. Dashboard is the main page and this page contains important information that can make it easier for us to find information.
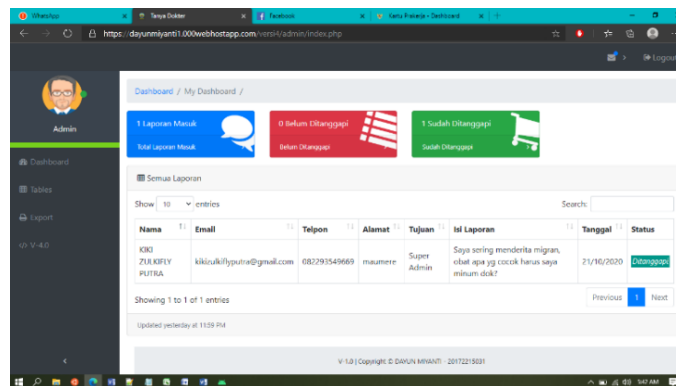

Figure 6. Dashboard page

5. Feedback Page

Response page, is a page that is on the admin side, to answer consultation questions from patients or clients regarding the complaints they feel.
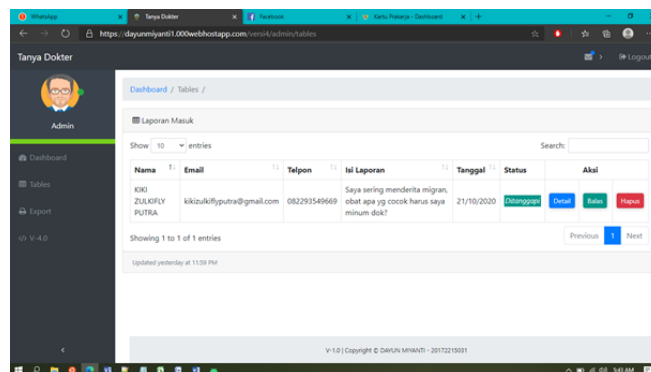

Figure 7. Responses page.

6. Consultation print page

The printed page of the consultation or recap, is a page that serves to print, import into excel or pdf.
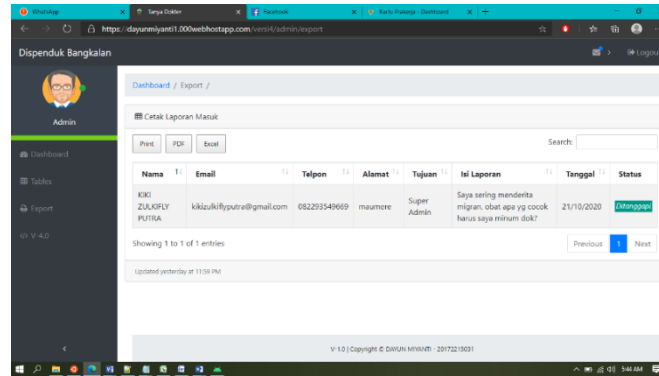

Figure 8. Print page

Conclusions and Suggestions

Conclusions

The results of the design of a health consultation application at the B White C clinic using website technology, which then on the user or client display is converted into an Android application, which can later make it easier for the client or patient to use the application. In addition, implementing this application on the B White C clinic can help beauty doctors to diagnose online, by answering incoming messages that have been sent by patients.

Suggestions

1. The system is made using 2 technologies, namely php native and android studio native, it is hoped that in the future it will be developed using only 1 technology, namely using native android studio.
2. The system built has limitations in replying to messages from patients to doctors. Because communication in the system created by the author can only be done 1 time consultation communication. If you want to do a consultation again, the patient must enter the main consultation menu.
3. Added a chat forum to facilitate access between doctors and prospective patients to get information about health in advance.

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