Design of Android Application System for Coronavirus Disease 2019 (COVID-19) Detection

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Abstract: Coronavirus Disease 2019 or COVID-19 is a new disease that can cause respiratory problems and pneumonia. The most common symptoms of COVID-19 are fever, feeling tired and a dry cough. Meanwhile, Android is an operating system that is widely used to develop mobile applications in recently. Almost everyone has an android smartphone, so that making android applications to help update sources of information and tackle COVID-19 needs to be developed. This android application can help whether someone is infected with corona or not by identifying the symptoms they are experiencing. Application testing uses suitability testing and compatibility testing. Compatibility testing is done by installing applications on five different Android devices. Based on the results of testing the functional suitability and compatibility aspects, the success percentage was 100%.

1 INTRODUCTION

Coronavirus Disease 2019 or COVID-19 is a new disease that can cause respiratory problems and pneumonia. This disease is caused by infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The most common symptoms of COVID-19 are fever, feeling tired and a dry cough. The main method of transmission of this disease is thought to be through respiratory droplets and close contact with sufferers.

Meanwhile, Android is an operating system that is widely used to develop mobile applications in recently. Android has a very large market covering 88% of the world and is expected to continue to grow. Almost everyone has an android smartphone, so making an android application to help prevent and overcome COVID-19 needs to be developed.

This android application is planned to be able to help whether someone is infected with corona or not by identifying the symptoms they are experiencing. This application can also be used to update sources of information and advice about COVID-19 which comes from the Official Website of COVID-19 in Indonesia and the World Health Organization (WHO).

2 EXPERIMENTAL METHOD

The application system will be designed to build using the latest version of Android Studio using an emulator for program execution. Android Studio is the official Integrated Development Environment (IDE) for Android application development. Creating android applications with Android Studio, we can create applications that can run on Smartwatch, Tablet, Android TV and even Android Auto.

Table 1. Specification

Software	Android Studio
Version	3.6.2
Runtime Version	1.8.0_212-release-1586-b04 amd64
VM	OpenJDK 64-Bit Server VM
Language	Java
Min SDK	API 28: Android 9.0 (Pie)
Emulator	Nexus 5X API 28

Android Studio is specially designed for Android development. IDE It is available for use on Windows, Mac OS X and Linux operating systems. Android Studio was chosen because it has many features that make it easier for program makers, especially basic level programmers who want to learn more about Android. Even though the process of using Android

Studio consumes quite a lot of RAM on PC devices, Android Studio has many advantages such as: instant run, smart code editor, fast and feature-rich emulator, flexible versioning system, creating complete and connected applications, and integrated with Firebase and Cloud.

The research method applied in this study uses the development of Luther method and ISO 25010 software testing method. According to Luther has the following stages: Concept, Design, Obtaining Content Material, Assembly, Testing, and Distribution.

2.1   Concept

In this study, an android application will be developed using an android studio which contains information about covid-19. This information is in the form of menu choices, including: Activate Bluetooth, Check Health Independently, Chat Doctors Online, Shopping for Medical Devices, Tips to Avoid Covid19, Covid19 Update Info, Emergency Numbers, and Share.

2.2   Design

In the design stage, a navigation structure will be created which is the relationship between menus. The design stage is shown in Figure 1.
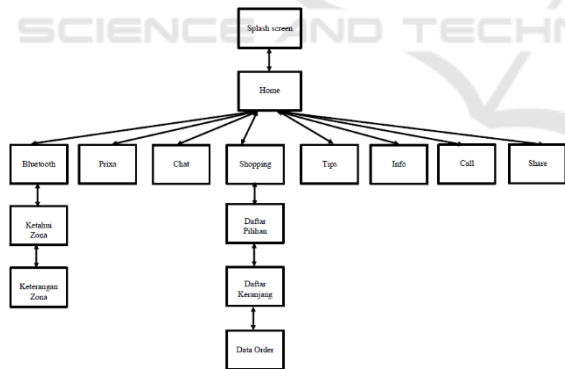

Figure 1. Menu Navigation Structure

2.3   Obtaining Content Material

At this stage, the collection of materials in the form of images, icons, materials, backgrounds and objects needed in making Android applications is carried out. The material is taken from features available on Android Studio and is also sourced from websites that provide free images without copyright.

2.4   Assembly

At this stage, the design that has been done is then implemented into a program script in Android Studio. The layout design in Android Studio uses the xml language, while for the provision of activity actions using the Java Programming Language. Then the database used is firebase.

2.5   Testing

The test is carried out in accordance with ISO 25010 standards. The following is a data analysis technique used in several tests carried out.

a) Functional Suitability Aspects
b) Performance Efficiency Aspects
c) Compatibility Aspects

3   RESULT AND DISCUSSION

Making this android application is planned to be able to help update sources of information and advice about COVID-19 from the official website of the Indonesian COVID-19 and the World Health Organization (WHO).
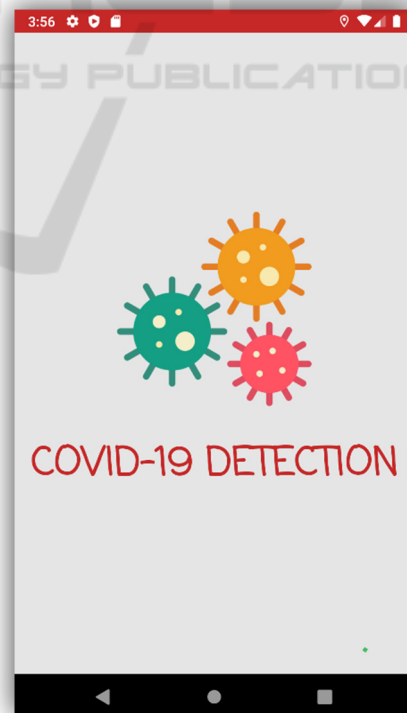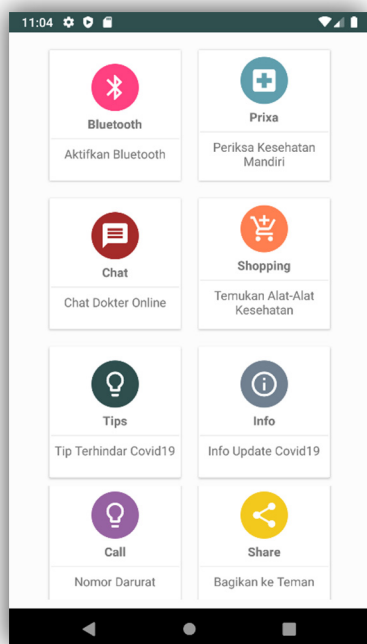

Figure 2. Splash screen

Figure 3. Home

Figure 4. Covid Zone Depok

Bluetooth menu is used for tracing and tracking. In this menu you can also find out the zone status of the area where we live. Prixa menu functions to perform checks independently. Self-examination helps whether a person is infected with corona or not by identifying the symptoms they are experiencing. Chat menu functions to chat with bot doctors online. Shopping menu functions to make purchases of medical devices. The Tips menu contains advice on preventing COVID-19. The Info menu contains data updates on confirmed cases of COVID-19, currently undergoing treatment, those who have recovered, and cases that have died. The Call menu functions to contact the COVID-19 hotline at 119. The Share menu is useful for sharing with friends, family, or other people.

Figure 4 shows the status of the COVI19 zone in each urban village in Depok City.
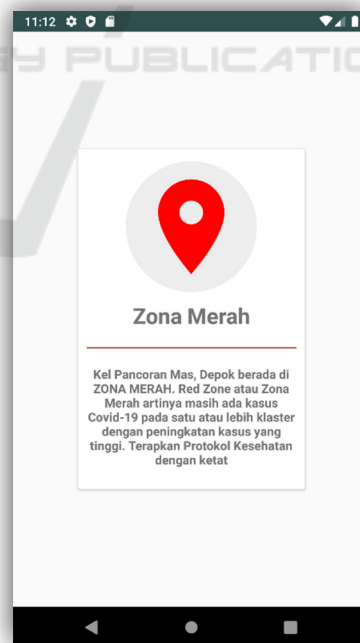

Figure 5. Red Zone Status

Figure 5 explains the status of Pancoran Mas District, Depok which is in the red zone. Red Zone, meaning that there are still cases of COVID-19 in one or more clusters with a high increase in cases.

Figure 6. Recommendation

Figure 6 describes the precautions that need to be taken to avoid COVID19.

3.1 Functional Suitability Testing

Based on the results obtained from functional testing, the following percentage results

success (%) = 11/11 x 100 % = 100%

3.2 Compatibility Testing

Compatibility testing is done by installing applications on five Android devices. The following are the results of the compatibility test presented in table 2.

Table 2. Results of compatibility testing

No	Device	OS Ver	Installation Process	Application Running Process
1	Lenovo	8.0	Installation successful	Runs well
2	Oppo	8.1	Installation successful	Runs well
3	Xiaomi Redmi Note 4x	6.0	Installation successful	Runs well
4	Samsung	9.0	Installation successful	Runs well
5	Asus Zenfone	7.0	Installation successful	Runs well

Based on the results obtained from the compatibility test in table 2, the results of the assessment are presented in table 3 as follows:

Table 3. Assessment of compatibility aspect test

No	Testing	Score	Success	Fail
1	Installation on device	5	5	0
2	Run the application on the device	5	5	0
	Total	10	10	0

Based on the results of testing the compatibility aspect as in table 3 has a success percentage of 100%.

4 CONCLUSIONS

Based on the results of testing the functional suitability and compatibility aspects, the success percentage was 100%.

REFERENCES

Adityo S., Cleopas M. R., Ceva W. P, Widayat D. S., Mira Y., Herikurniawan, Robert S., Gurmeet S., Leonard N., Erni J. N., Lie K. C., Alvina W., Edwin W., Bramantya W., Maradewi M., Firda A., Cynthia O. M. J., Evy Y.,

"*Coronavirus Disease 2019: Tinjauan Literatur Terkini",* Jurnal Penyakit Dalam Indonesia. 2020.

Tio R, Denny K., *"Perancangan Aplikasi Mobile Sebagai Media Promosi Tempat Kost Dan Fasisiltas Pendukung Berbasis Android",* Jurnal Vokasional Teknik Elektronika dan Informatika. 2019.

Nazruddin Safaat H., Pemrograman Aplikasi Mobile Berbasis Android Revisi Ketiga. Bandung, November 2018. Penerbit Informatika.

R. Audina, B. R. Aditya, A. R. Iskandar, and S. Kom, "*Aplikasi Informasi Kegiatan Mahasiswa di Fakultas Ilmu Terapan Universitas Telkom Berbasis Android dan SMS Broadcast*," vol. 1, no. 3, pp. 1823–1833, 2015.

G. W. Sasmito, "*Penerapan Metode Waterfall Pada Desain Sistem Informasi Geografis Industri Kabupaten Tegal*," J. Inform. Pengemb. IT, vol. 2, no. 1, pp. 6–12, 2017.

F. Hadi, S. Arlis, and S. Hariyanto, *"Perancangan Aplikasi Pencarian Labor Dan Lokal Untuk Kuliah Pengganti Di Universitas PUTRA Indonesia 'YPTK' Padang,"* J. Teknol., vol. 7, no. 1, pp. 141–149, 2017.

M. Ridwan, P. Prasetyawan, "Rancang Bangun Aplikasi Permainan Adventure of Frunimal untuk Edukasi Bahasa Inggris Berbasis Android," Jurnal Simetris, vol 8 no 2, ISSN: 2252-4983, November 2017.