



Android-based Introduction to Indonesian Heroes Application

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ABSTRACT

Currently, information technology has developed rapidly and it is very easy to access or find information about anything. However, information about Indonesian heroes is still largely dominated by the print media and lacks interest. This makes youth and children now more interested in things such as online games and watching YouTube because they are easy to access. The current research aims to build an Android-based Application to Introduce Indonesian National Heroes. By utilizing Android-based technology because Android is now widely enjoyed by all circles. This application is designed and built with the JavaScript programming language and uses the React Native framework. The method used to build this application is the waterfall method. Testing is done by blackbox testing method. The results obtained from blackbox testing are all components running well and working according to the test plan. When the application receives the wrong input then the notification is invalid and vice versa if the application receives the input correctly then the notification is valid, with these results the purpose of making the application has been achieved and is expected to increase knowledge and interest to learn about history, especially about national heroes in Indonesia.

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1. INTRODUCTION

Nowadays, humans are very dependent on technology. This makes technology as a basic need for everyone (Muhyidin et al, 2020). Starting from adults to the youngsters, experts to layman also use technology in various aspects of their lives. Today's technology has developed rapidly. Unlike in the past, technology is very influential in aspects of human life and plays a role in the lives of the wider community, one of which is the role of technology in education, especially in the teaching and learning process (Magfirah et al, 2022). Learning the history of Indonesian independence is very important to learn to instill the values of nationalism from an early age. One important part is to know Indonesian freedom fighters known as National Heroes (Nugroho et al, 2021). Indonesia

has many heroes who have fought for independence. They fought to take up arms to expel the invaders from Indonesia. The current independence cannot be separated from the struggles and sacrifices made by the heroes. Unfortunately, many young generation of Indonesia today do not know the heroes who have fought for the independence of Indonesian nation.

In general, the introduction of national heroes in schools still uses semi-permanent media such as books, articles, magazines, and other print media which are conveyed directly by the teacher to the students. This makes students less time in learning, so understanding to know the heroes is still lacking. Considering that young people and children are now more interested in things that are currently popular, such as online games and watching YouTube because they are easy to access. Thus, triggering a lack of knowledge of information about Indonesian heroes. By utilizing the technology that is currently developing, this current research is carried out in the introduction of Indonesian national heroes by creating a media application to produce a learning tool that is more effective and efficient. An application is a software or program that is designed and generated via a computer to perform certain jobs (Rahmansyah & Darwis, 2020).

One of the studies that has been carried out by Indarti (2017) in building an application for the introduction of National Heroes in Java obtained satisfactory results from system testing, where the application for the introduction of national heroes in Java attracted students' interest in learning using interactive multimedia. This is also a benchmark in the design of application of national heroes introduction that can be widely used by general public.

Based on the background above, this research aims to bulid an Android-Based Introduction to Indonesian Heroes Application to make it easier for young people to know Indonesian heroes. Android provides very broad access to users to use the necessary libraries and tools that can be used to build better applications (Arridha et al, 2022). In addition, this application is expected to attract the interest of users to study the material contained in it. Thus, this application can be used even if the user moves easily and can be used anywhere (Arridha et al, 2022).

2. RESEARCH METHOD

A. Design Method

The method used in this research is the waterfall method. The waterfall method is a sequential software development process, where the process continues to flow from the downward phase (such as a waterfall) through the phases of requirements (needs analysis), verification (testing), and maintenance (Putra, 2017).

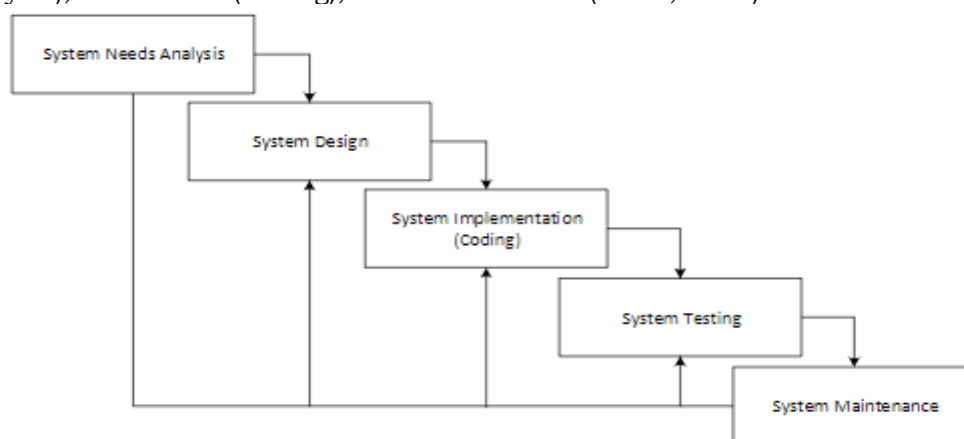


Figure 1. The Stages of Waterfall Method

1. System Needs Analysis

The software in this needs analysis aims to analyze the needs needed in the design, either in the form of documents or other sources that can assist in determining solutions to existing problems.

2. System Design

Design is needed with the aim of how the system will fulfill the purpose it was created or created. System design consists of activities in designing the result of which is a specification of the system.

3. Coding

The next stage of the waterfall method is writing or implementing program code using various tools and programming languages according to needs. At this implementation stage, it focuses more on technical matters, where the results of the software design will be translated into a programming language.

4. System Testing

At this stage, the modules that have been made are combined and this test is carried out to find out whether the software made is in accordance with the design and the functions of the software have errors or not.

5. System Maintenance

System maintenance is the process of repairing applications from any errors or bugs, security gaps, improving application performance, ensuring applications can run in the new scope.

B. Data Collection Techniques

This research was conducted at the Department of Archives and Library of Fakfak Regency as a place to collect data. The stages of data collection used in this research are Literature Studies (Putra, 2016). Literature study is a technique of collecting data by controlling the reviewer's study of books, records and reports that have to do with the problem to be solved. Literature study is an important step where a researcher determines the research topic (Nasir, 2023), then what the researcher does is conduct a study of data related to the research topic. In collecting data the researchers collected information from the relevant literature. Sources of literature obtained from the internet (complete list of 168 heroes of the Republic of Indonesia, Indonesian National Heroes, Ministry of Social Affairs RI) researchers took 5 new heroes data and also the title of heroes that had been officially determined through a presidential decree. Researchers also look for references related to research titles from journals and researchers take data on 163 heroes from the book (Jejak-Jejak Pahlawan Adhesives of the Indonesian Nation).

C. Blackbox Texting Method

Black Box Testing focuses on the functional specifications of the software. The tester can define a set of input conditions and perform tests on the program's functional specifications. Blackbox testing is not an alternative solution to White Box Testing but is more of a complement to testing things that are not covered by White Box Testing (Hendawan, 2019). Black Box Testing tends to find the following:

- a. Incorrect or non-existent function
- b. Interface errors
- c. Errors in data structure and database access

d. Performance errors

e. Initialization and termination error Blackbox test results

D. Application Design

1. Application Overview

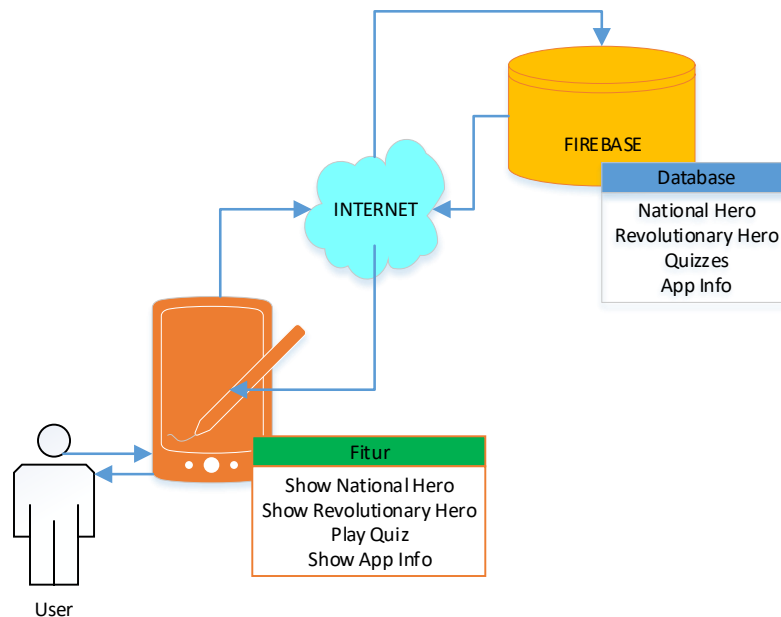


Figure 2. Application Overview

Figure 2 shows an illustration of how the application works with users and Firebase. Firebase is used to store this application database such as hero data, quiz questions, and application info.

2. Use Case

Use case is a model of behavior for the information system made. Use Case describes an interaction between one or more actors and the information system that has been built. On the other hand, use cases are used to find out what functions exist in an information system and who has the right to use those functions (Mustaqba et al, 2015).

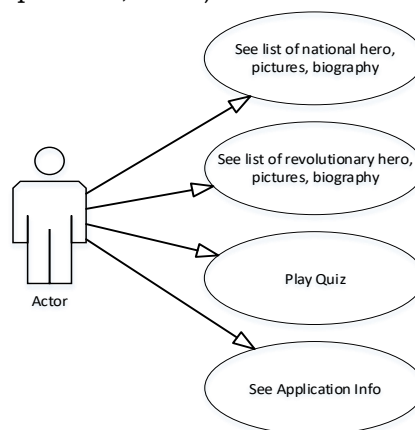


Figure 3. Use Case

The figure 3 illustrates that users can access and view a list of national heroes' names along with biographical and biographical images, see a list of revolutionary heroes' names along with biographical and biographical images, users can play quizzes and can also view application info.

3. Flowchart

Flowchart plays an important role in deciding a step or functionality of a programming project that involves many people at once. In addition, using the process flowchart of a program will be clearer, concise, and reduce the possibility for misinterpretation. The use of flowcharts in programming is also a great way to connect technical and non-technical needs (Kurniawan, 2011).

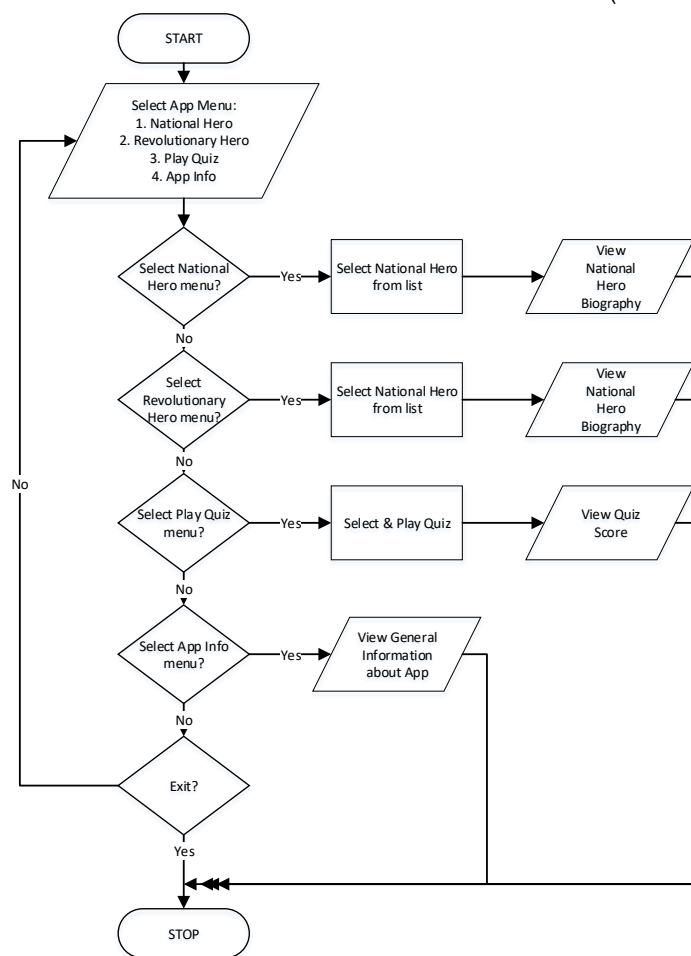


Figure 4. Flowchart

The followings are the explanantion of flowchart in the figure 4:

- The main page has several application menu options, namely the National Heroes menu, the revolutionary heroes menu, quiz menu and application info menu. Click on one of the menus and go to the detail page of the menu you clicked on.
- Click on the national hero menu and enter a list of national hero names and if one of the national hero names is clicked it displays the biodata and biography of one of the heroes you clicked on.

- c. If you click on the revolutionary hero menu, you will enter a list of revolutionary heroes and if one of the national heroes' names is clicked it will display the biodata and biography of one of the heroes you clicked on.
- d. If you click on the quiz menu, you will enter the quiz questions display, after the quiz questions are answered, the score score will be displayed
- e. If you click on the application info it will display general information about the hero.

4. Activity Diagram

Activity diagram describes the workflow or activities of a system or business process or menu in the software. What needs to be noted here is that the activity diagram describes system activities, not what actors do, so activities that can be carried out by the system (Suendri, 2018).

a. Activity Diagram of National Hero

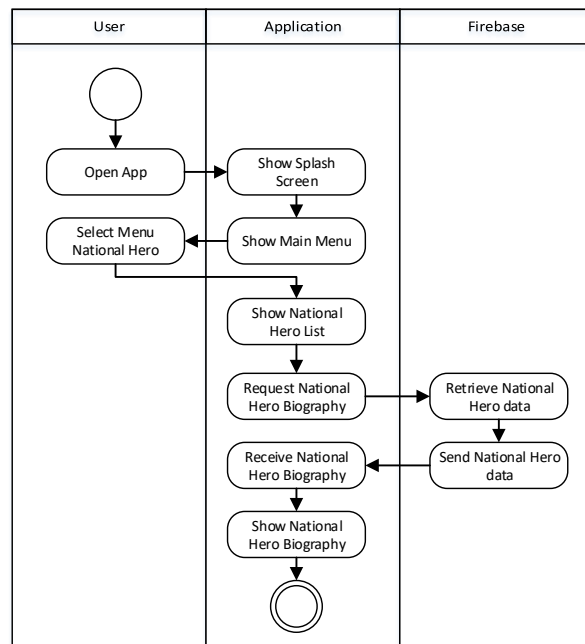


Figure 5. Activity Diagram of National Hero

The figure 5 illustrates the user's activity when viewing the Introduction to Indonesian Heroes Application, which starts from the user entering the application, after which the system displays a splash screen and then proceed to the home menu. After that the user selects the national hero menu, the application displays the details of the national hero menu, and firebase sends the national hero data.

b. Activity Diagram of Revolutionary Hero

The figure 6 shows the user's activity when viewing the Introduction to Indonesian Heroes Application, which starts from the user entering the application, after which the system will display a splash screen and then proceed to the home menu. After that the user selects the revolution hero menu, the application will display the revolution hero menu details, and firebase will send the national hero data.

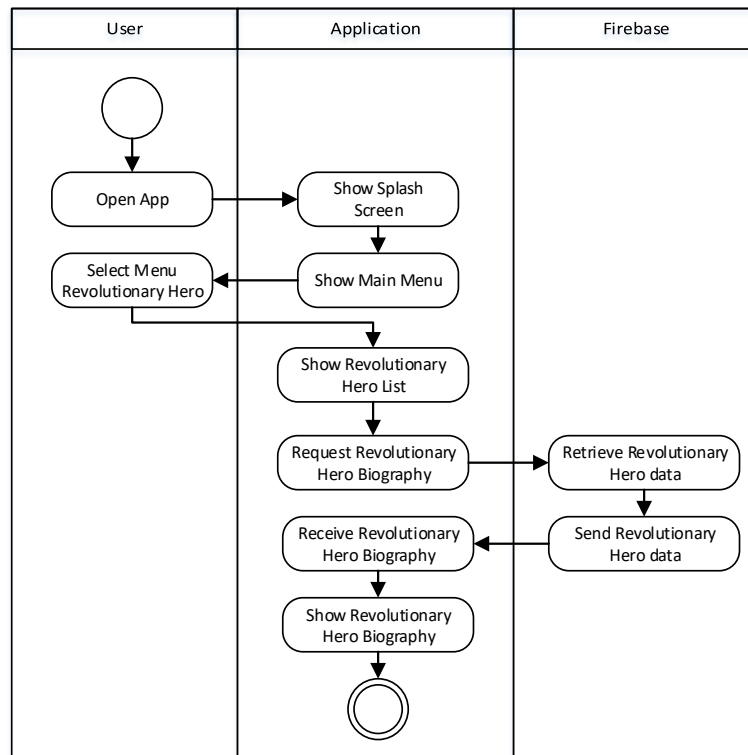


Figure 6. Activity Diagram of Revolutionary Hero

c. Activity Diagram Quiz

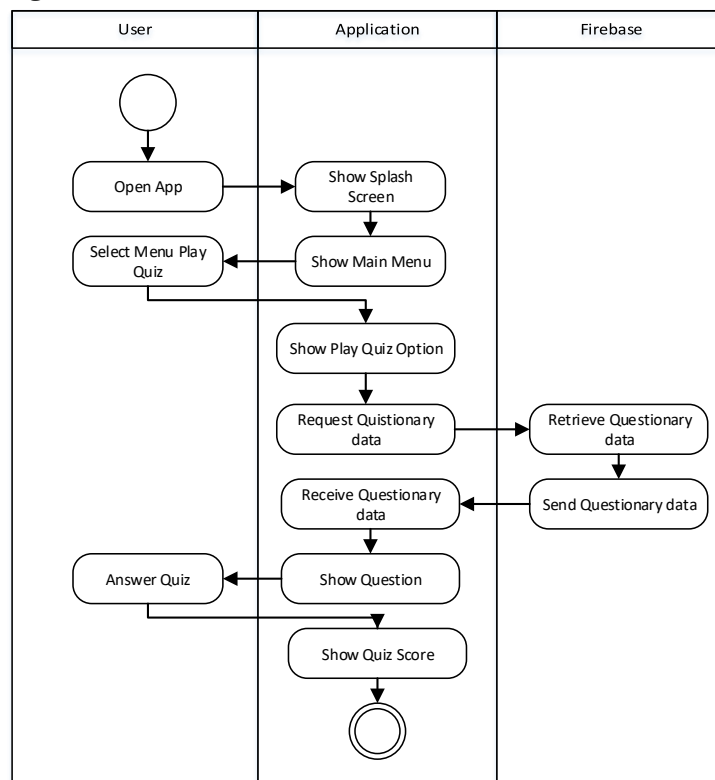
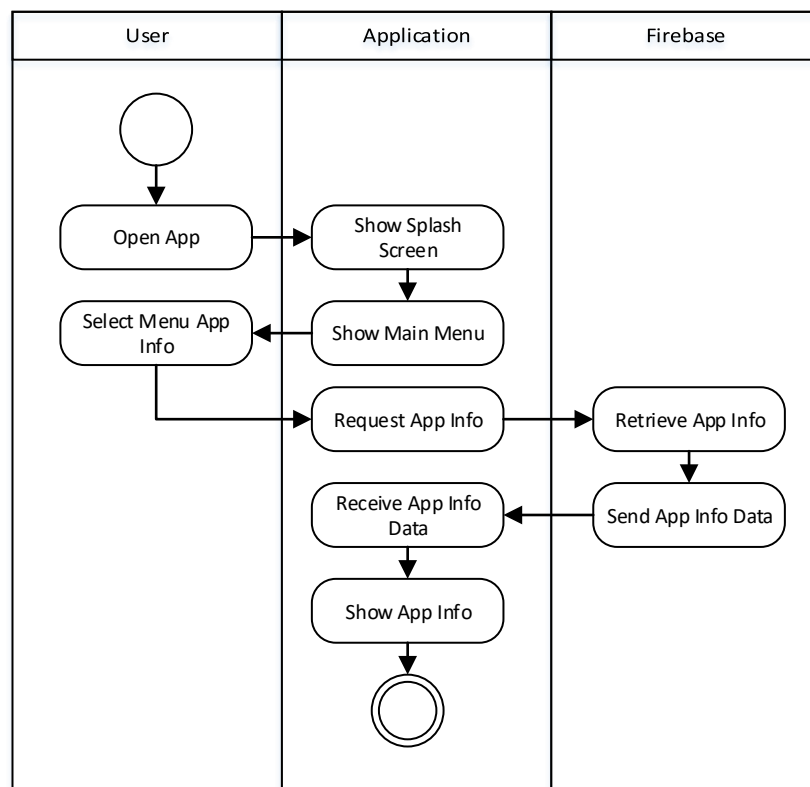


Figure 7. Activity Diagram Quiz

The Figure 7 above illustrates the user's activity when viewing the Introduction to Indonesian Heroes Application, which starts from the user entering the application, after which the system will display a splash screen and then proceed to the home menu. After that, the user selects the quiz menu, the application will display the details of the quiz display and quiz questions, and firebase will send the quiz questions data.

d. Activity Diagram of Application Info



Figuer 8. Actiiviy Diagram of Application Info

The figure 8 illustrates the user's activity when viewing the Introduction to Indonesian Heroes Application, which starts from the user entering the application, after which the system will display a splash screen and then proceed to the home menu. After that the user selects the application info menu and the application will display the application info menu details, and firebase will send application info data.

e. Database Design in Firebase

A database is a collection of interconnected and organized files or a collection of records that store data and the relationships between them. A database is a collection of data stores (can be in very large amounts) stored on a magnetic disk, official disk, magnetic drum, or other secondary storage media (Kurniawan, 2011). Firebase is a service from Google to provide convenience and even make it easier for application developers to develop their applications. Firebase aka BaaS (Backend as a Service) is a solution offered by Google to speed up developer work (Sutarman, 2012). The Firebase Realtime Database feature is a database hosted in the cloud.

Later the data will be saved as JSON and then synchronized in real time to each connected client. When we create cross-platform applications with the Android SDK, IOS, or JavaScript, all clients will share a realtime database instance and then receive the latest data updates automatically (Muhyidin, 2020).

Name	Attribute
National Hero	Id
	Name
	Title
	Category
	Picture
	Origin
	Place/Date of Birth
	Death
	Bio
	Id
Revolutionary Hero	Name
	Title
	Category
	Picture
	Origin
	Place/Date of Birth
	Death
	Bio
Quiz	Id
	Questions
	Responses
Application Info	Id
	General understandin

Table 1. Database Design

3. RESULTS AND DISCUSSIONS

The followings are the displays of application:



Figure 9. Splash Display



Figure 10. Menu Display

Figure 9 is the splash display to run the application, and in Figure 10 is the home menu display where there are four menus that can be accessed by the user.



Figure 11 Heroes Display



Figure 12 Biography Display

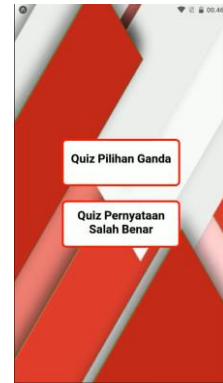


Figure 13 Quiz Display

In figure 11 is the display containing the list of hero names. Furthermore, figure 12 contains images of heroes along with biodata and biographies. Then, figure 13 contains two types of quizzes to get more comprehension about the national heroes.



Figure 14 Multiple Choice Quiz



Figure 15 True-False Quiz



Figure 16. Application Info

Figure 14 shows multiple choice quiz display. This display contains 10 questions that must be answered and there is the score display as well for the correct answer. Figure 15 is the display of true-false quiz. Then, figure 16 is the application info display, this view contains the general opinion about the hero.

1. Application Testing Result

Application testing is a software system execution process to see if the application is in accordance with the desired application specifications.

Cara Uji	Skenario	Hasil	Keterangan
Login App	Move to home page	Display the Splash Screen and the main menu page: National hero Revolutionary Hero Quiz Application Info	Success
National Hero Menu	Move to national hero menu page	Display the National Hero menu page: Hero Names Picture Biodata and Biography	Success
Revolutionary Hero Menu	Move to revolutionary hero menu page	Displaying the National Hero menu page: Hero Names Picture Biodata and Biography	Success
Quiz	Move to quiz menu	Display quiz menu page, two types of quiz menus, namely multiple choice quiz and true false statement.	Success
Multiple Choice Quiz	Move to the Multiple choice quiz page	Display the multiple choice quiz page. Display 10 questions with random questions when playing the quiz. It is mandatory to answer all questions, if one question is not answered it will display an error display and one question is counted as 1 point, after all the questions are answered, the score results will be displayed.	Success
True-False Quiz	Move to the true-false quiz menu page	Display a true false statement quiz page. Displaying random questions when playing a true false statement quiz, if the statement answered is correct then display the answer score that your answer is correct, and if the statement answered is wrong then display your answer score is less precise.	Success
App Info Menu	Move to app info menu page	Display the application info menu page	Success

Table 2. Application Testing

4. CONCLUSION

Based on the results of testing the application using blackbox testing, this Android-Based Introduction to Indonesian Heroes Application has several features that have been tested using the black box method. The results and tests run normally and work according to the test plan. When the application receives the wrong input then the notification is invalid and vice versa if the application receives the input correctly then the notification is valid. Thus, the purpose of making the application has been achieved and can be used to learn and comprehend the role of each National Heroes of Indonesia in their struggling for the independence. Furthermore, this application can make it easier for the younger generation to get to know Indonesian national heroes and not forget their services.

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