

## Application Development Android-based Tourism Case Study of North Sulawesi Province

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### ARTICLE INFO

*Keywords:* Android, Google Maps, Mobile Devices, Tourism, Rapid Application Development

*Received :* 05, March

*Revised :* 10, April

*Accepted:* 15, May

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### ABSTRACT

North Sulawesi Province, which is often called North Sulawesi, is a province located at the northern tip of Sulawesi Island. North Sulawesi has 11 regencies and 4 cities and Manado City is the capital of this province. Based on Law Number 13 of 1964, on August 14, 1959 the North Sulawesi Province was formed so that day was determined as the anniversary of the Province. Some areas in Sulawesi North is also a barometer of national tourism development. The tourism sector has become a mainstay sector not only for the provincial government, but also for the participation of all layers of society. Technological developments that are increasing rapidly can now cover all fields, one of which is in the field of Information Systems such as the Android application which has been used to display tourist information and tourism support facilities such as hotels, transportation, souvenir shops, and other things. To make things easier, Android also provides access and integration with the Google Maps service. The process of making this application uses the Rapid Application Development (RAD) method which consists of 3 phases, namely Requirements Planning, RAD Design Workshop, and Implementation. For the continued development of the Android-based Tourism Location Based Service application in North Sulawesi Province by adding other features that are more supportive.

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## INTRODUCTION

Tourism development in a tourist destination must be based on clear planning, development and management directions so that all the potentials of a tourist destination can be optimally empowered to improve people's welfare. To get optimal results, tourism development is not only carried out by one party but is a collaboration of various parties, both businessmen (private), community leaders and local government parties.

North Sulawesi Province is a province which is located at the northern tip of Sulawesi Island. North Sulawesi has 11 regencies and 4 cities and Manado City is the capital of this province. Based on Law Number 13 of 1964, on August 14, 1959 the North Sulawesi Province was formed so that day was determined as the anniversary of the Province. [1]. Several regions in North Sulawesi are also barometers of national tourism development. These areas are expected to become the mainstay of the tourism sector by the local government and also the people of North Sulawesi.

Besides being famous for the beauty of its beaches, North Sulawesi is also known for the beauty of photogenic hills, delicious special food and there are also many tourist attractions that can make tourists amazed by their beauty and uniqueness. The large selection of tourist objects in North Sulawesi Province can make tourists confused about choosing tourist destinations starting from the closest to existing transportation in North Sulawesi, in connection with that the author is trying to develop an Android-based application to search for tourist attractions in Sulawesi Province. North[2].

This application was made with the aim of making it easier for tourists who want to visit and find recommendations for places in North Sulawesi. In addition to recommendations for tourist attractions, this application also develops various features, such as search, culinary, transportation, lodging or hotels, as well as souvenir shops.

## THEORETICAL REVIEW

### A. *Tourism*

Tourism is one of the mandatory things that humans need. By doing tourism, humans can momentarily unwind, get tired, relieve stress, and for a moment forget about problems experienced both at home and at work or college and school. Based on Law no. 9 of 2009 tourism is a variety of tourism activities and is supported by various facilities and services provided by the community, businessmen, government and local government<sup>[3]</sup>.

### B. *Smartphone*

A smartphone is a mobile phone with a built-in microprocessor, memory, screen and modem<sup>[4]</sup>. A smartphone is a multimedia mobile phone that combines the functionality of a PC and a handset to produce a luxurious gadget, which includes text messages, cameras, music players, video games, email access, digital television, search engines, personal information managers, GPS features, internet telephony services. and there are even phones that double as credit cards.

### **C. Android**

Android is an operating system used in smartphones and tablet PCs. Its function is the same as the Symbian operating system on Nokia, iOS on Apple and BlackBerry OS. Android is not tied to just one mobile brand, several well-known vendors who already use Android include Samsung, Sony Ericsson, HTC, Nexus, Motorola, and others. Android was first developed by a company called Android Inc., and in 2005 it was acquired by the Internet giant Google.

Android is based on a modified Linux kernel, and each release is codenamed after a food dish. Android is sold cheaper than Blackberry or iPhone even though the features (hardware) offered by Android are better. Some of the main features of Android include WiFi Hotspot, Multi-touch, Multitasking, GPS, accelerometers, Java support, supports multiple networks (GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE & WiMAX.) as well as the basic capabilities of mobile phones in general.

### **D. GIT**

GIT is software (software) for version control management an application project created by Linus Torvalds. Design view on GIT itself, inspired by Monotone and BitKeeper. GIT is basically designed as a tool that can be used by other front end like StGIT or CoGITo. You can operate GIT through the GUI (application) or CLI (commands using text), and one example of an application that supports GIT is Android Studio. GIT can also run in several other applications and some of these applications require a plugin to run for example Notepad.

### **E. GITHUB**

GITHUB or github.com is hosting for open source projects that use the GIT revision control system tool. So GIT is a tool for revising code, while GITHUB is the web hosting. So GITHUB's web hosting function is to store and work on software projects that are the same as sourceforge.net, GITHUB can be said to be a social network for software developers. With GITHUB, it can facilitate the collaboration of programmers who are far apart in building an application using an internet connection. Programmers only need to set up the connection between GIT and the repository on GITHUB so they can manage the files on GITHUB.

## **METHODOLOGY**

### **a. Research Locations**

The locations of the case studies in this study are various tourist attractions and tourism supporting facilities in North Sulawesi Province.

### **b. Research Data**

In this study the data collected to support research work:

#### **1. Primary Data**

Primary data obtained from the media or journals regarding tourism information in North Sulawesi.

## 2. Secondary Data

Secondary data obtained through intermediary media indirectly comes from journals, e-books, and other information related to making applications.

### C. Development Stages

The software engineering model used is the RAD model (Rapid Application Development). RAD is one method of developing an information system with a relatively short time [8]. RAD has 3 main stages, namely:

#### 1. Requirements Planning

This phase is the process of collecting information in accordance with the research to be developed. All the information needed is collected to become data used in the manufacturing process.

#### 2. Design Workshops

This phase is the phase for designing and improving the application or system that has been described. This phase is described by the description of Business Modeling, Data Modeling, Process Modeling, Application Development, and Testing.

##### a. Application Development

At this stage several preparations were made to build the application in the form of an overview. The application built is a mobile application.

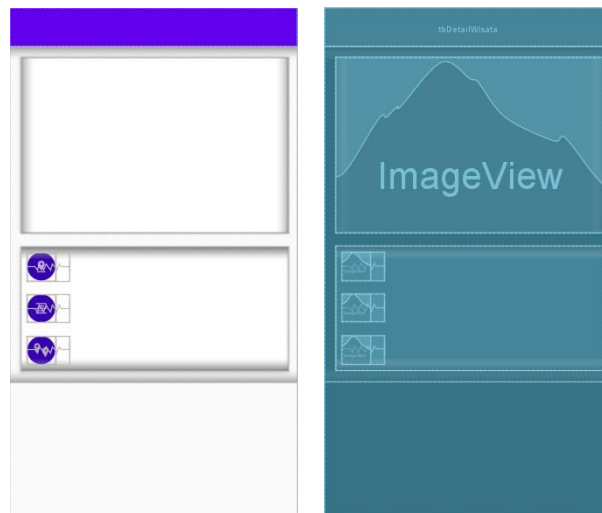


Figure 1. Face-to-face Design

##### c. Trial

At this stage, application testing is carried out using the Black Box method. Black box testing, also known as behavioral testing, focuses on the functional requirements of the software.

## 3. Implementation

In this phase, all designs of the system that have been made and approved are developed into a program.

## RESULTS

After carrying out all the stages of the Rapid Application Development method referred to in the previous stage, proceed with the results of the design carried out based on the initial goal of this development, which is to develop a Mobile-based Tourism application with the Android operating system.

- a. Face to face Application
  1. Main Activity Display

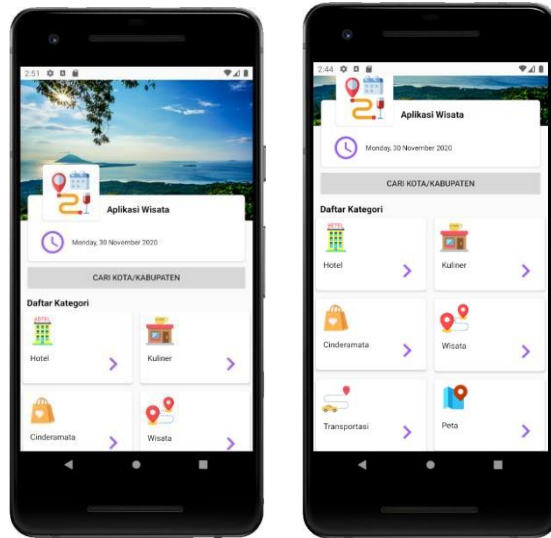


Figure 2. Main Activity Display

This view will appear after the emulator is run. In this main activity there is the application name, date, search menu, and the existing category menu. The search menu contains categories of hotels and tourist attractions based on the City/District you are looking for. The content list contains the image, object name, object address and the user's distance to the object. The category list menu has categories such as Hotels, Culinary, Souvenirs, Travel, Transportation, as well as menus Map.

2. Display Search Menu

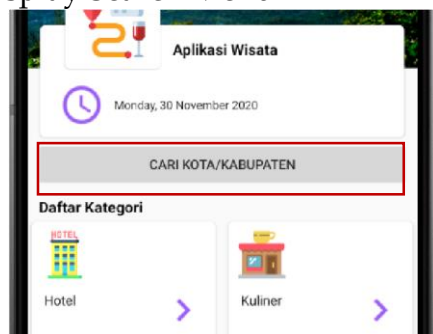


Figure 3. Display Search Menu Activity

The search display on the main activity is below the date. With the words search for the city/district.

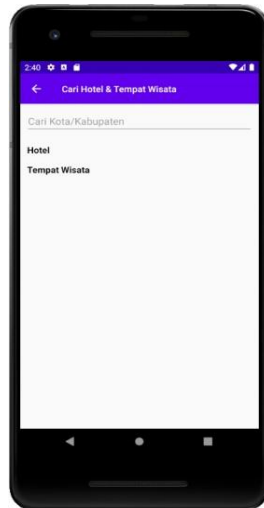


Figure 4. Search list page.

Figure 4 shows the search list page when it is first opened. What will be displayed are hotels and tourist attractions.

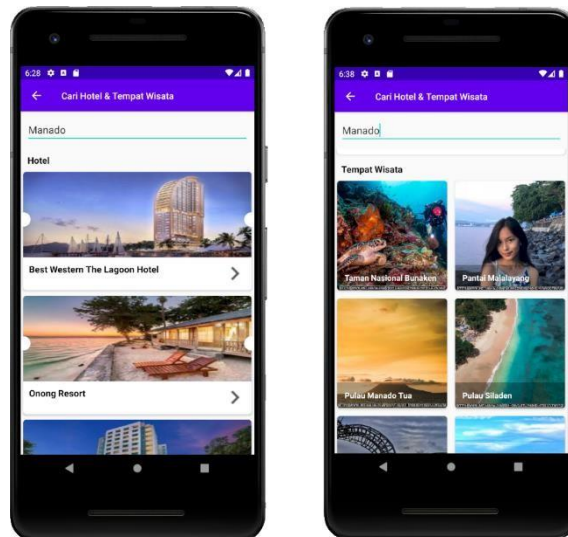


Figure 5. Manado City Search Results

This Search Menu contains categories of Hotels and Tourist Attractions that are searched by City/Regency name. On this menu, if we search for Manado City, what will be displayed are Hotels and Tourist Attractions in Manado City, as well as when we search for other Cities/Districts in North Sulawesi.

### 3. List View Display

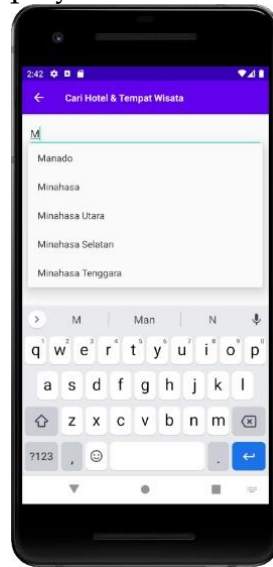


Figure 6. List View Display

This list view displays City/District on the search menu and is sorted alphabetically a-z.

### 4. Display Page List

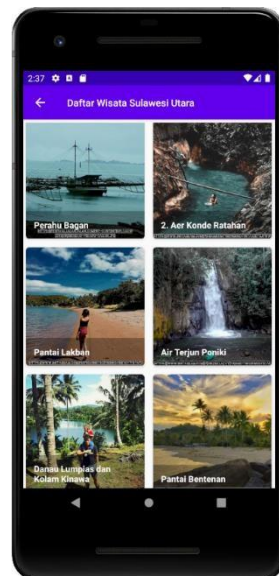


Figure 7. Display Page List

Figure 7 displays the Tour List Page after being accessed. The name of the place along with the picture of the tourist spot will be displayed.

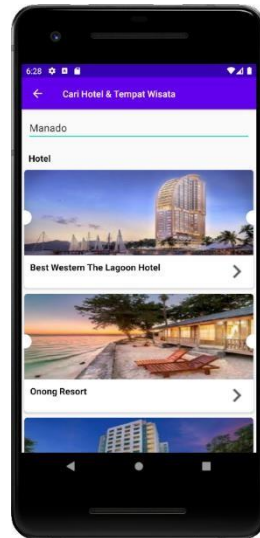


Figure 8. View Hotel List Page

Figure 8 displays the Hotel List Page after being accessed. The hotel name and hotel image will be displayed

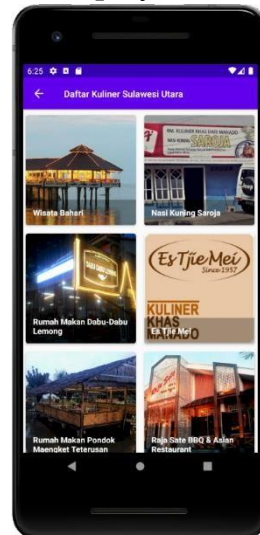


Figure 9. Culinary List Page Display

Figure 9 displays the Culinary List Page after being accessed from the main activity. The name of the culinary place along with the picture of the culinary place will be displayed

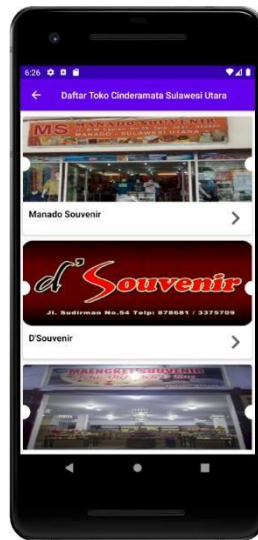


Figure 10. Shop List Page Display Souvenir

Figure 10 displays the Souvenir Shop List Page after being accessed from the main activity. The name of the souvenir shop along with the picture of the souvenir shop will be displayed.

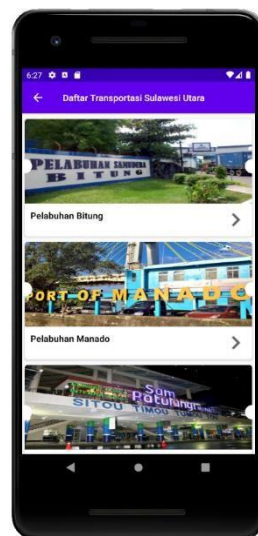


Figure 11. Display Page List Transportation

Figure 11 displays the Transportation List Page after being accessed from the main activity. The name of the transportation along with a picture of the place of transportation will be displayed.

In Figure 7-11 displays the Tour List Page, Hotel, Culinary, Souvenirs, Transportation, which contains the name of the place along with the picture, intending to attract the attention of the application user's eyes.

## 5. Display Activity Details



Figure 12. Activity Detail Display

Figure 12 displays the details of a tourist spot which contains a map linked to Google Maps, a description of the place, as well as the specified distance between the place and the nearest transportation.

## 6. Map feature display

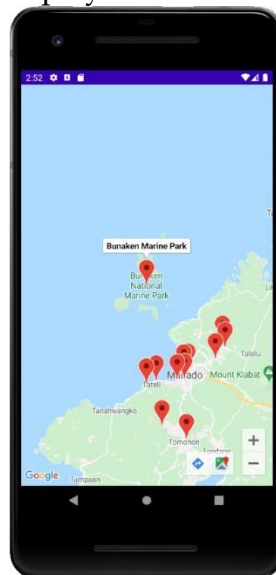


Figure 13. Map feature display

Figure 13 shows map features that are integrated with Google Maps. This feature displays points of tourist attractions that are also included in the list of tourist attractions.

### **B. Testing**

This test is carried out on several features that have been set and aims to be able to find out whether the application that has been made can run properly or is appropriate. Black box testing focuses on the functional specifications of the software. The application is said to be able to function properly when the

input is given and the output gives results according to the system specifications that have been made.

Table 1. Test recap

Test Items	Test Scenario	Test result	Information
Main course	Users can view and select the existing menu list in application	Can be seen on Figure 2	Succeed
Menu Search	Users can search for tourist attractions and hotels according to the city/district they are looking for	Can be seen on Figure 5	Succeed
List View feature	Users can see the list view clearly	Can be seen on Figure 6	Succeed
Feature List Page	Users can see information about the name along with the picture	Can be seen on Figure 7-11	Succeed
Feature Details Activity	Users can view information regarding addresses, descriptions, and distances from transportation	Can be seen on Figure 12	Succeed
Feature Maps	User can view the map containing dots integrated address point with Google Maps.	Can be seen on Figure 13	Succeed

## CONCLUSIONS

Based on the results of research that has been developed in Android-based Tourism Application Development in North Sulawesi Province, an application has been produced that can introduce and provide distance information along with information about Tourism in North Sulawesi Province.

## RECOMMENDATION

Suggestions for the further development of Android-based Tourism Applications in North Sulawesi Province by adding other features that are more supportive so that they become interactive applications as well and make the application a Location Based Service application.

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