Android based information system for eco-site destination

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Abstract. With the rapid development of information and communication technology, the internet has become an essential medium for obtaining or exchanging information without the obstruction of distance, time, and place. The purpose of developing this application is to design the nearest Tourism Location Search Application in South Aceh district based on Android. This application was created using Android Studio. This application provides information about existing tourist objects from location information, facilities, and guidance to reach the location using the Maps method. Users of the application can choose attractions based on categories and the system will provide a guide to the tourist sites that can be visited.

1. Introduction
With the rapid development of information and communication technology, the internet has become an essential medium for obtaining or exchanging information without the obstruction of distance, time, and place. The internet network is widely available and the growth of its distribution is fast so it is very easy to use it in any location quickly and accurately. This is apparent from the increasing number of Android designs that have arisen because of the rapid development of an Android-based virtual world that can provide various conveniences in everyday life.

Likewise in the tourism sector which is one of the potential sectors in Indonesia. One of them is South Aceh Regency which is located in Aceh Province. South Aceh Regency has very varied tourist locations, such as beach tourism, nature tourism, and historical tourism. However, the spread of information about the charm of Tapaktuan tourism is still done manually through the distribution of brochures, posters, newspapers, and others. This is quite peculiar in increasingly rapid technological developments, and therefore it is time for this manual information organization system to be replaced with an information administration system using technology.

This needs to get attention from the local government because the development of the tourism sector will have an impact on increasing the number of domestic and foreign tourists coming to the South Aceh Regency. So that it can improve the productivity of the local community and provide substantial viability for the region and country. Therefore, this research will design an android-based information system that can introduce the potential of beach tourism for tourists visiting Tapaktuan. This Android is designed to be used by the public in search of information about South Aceh Regency tourism.
2. Materials and method

2.1. System
According to [1], the system is something that consists of objects or elements, components related to and related to each other in such a way that the elements constitute a particular processing unit. In a structured approach, a system is defined as a network of interrelated procedures, gathered together to carry out an activity or complete a specific goal.

2.2. Android
According to [2], Android is an operating system application for cellular phones based on Linux. Android provides open programs for developers to create their applications for use by a variety of mobile devices.

2.3. Google maps
According to [3], Google Maps is a popular free service provided by Google. Google Maps is a map of the world that we can use to observe an area. In other words, Google Maps is a map that can be viewed using a browser. Google provides various APIs (Application Programming Interface) that are very useful for web developers. Desktop applications to take advantage of various features provided by Google such as AdSense, Search Engine, Translation, or display Google Maps can also be selected, based on original photos or route map images only.

2.4. Java
According to [4], Java is a programming language that can be run on various computers including mobile phones. This language was created by James Gosling while still joining Sun Microsystems when it is part of Oracle and was released in 1995. This language adopted many of the syntax found in C and C++ but with a simpler object model syntax and minimal down-level routine support [5].

2.5. Google maps API
According to [6], Google Maps is a free service provided by Google. Google Maps is a map of the world that we can use to observe an area. In other words, Google Maps is a map that can be viewed using a browser. We can add Google Maps features on the web that we have created or on our blogs that are paid or free even with the Google Maps API. Google Maps API is a library in the form of JavaScript [7].

2.6. Information system
According to [8], an information system is a system in an organization that meets the needs of daily transaction processing that supports the organization's operational functions that are regulated with the strategic activities of the organization to be able to provide certain external parties with the reports they need. So, an information system is a collection of data that has been organized along with its use procedures that cover much more than just presentation. This term implies an intention to be achieved by selecting and organizing data and arranging its use procedures [9].

2.7. Data collecting techniques
The author conducted a survey directly to the tourist sites, and interviewed representatives of the South Aceh tourism office, and recorded the coordinates of tourism spots. Then take a photolocation to complete the data collected.

2.8. Research method
The research site was conducted in tourist spots and supported by information obtained from the Tapaktuan tourism service for 1 (one) month. This research uses research and development (R&D) methods because this research is a development and making a new prototype. The data taken is a
source or raw material that is very valuable for the process of producing information. Therefore in taking data it is necessary to handle it carefully so that the data obtained has quality and benefits.

While the method of data collection in this study consisted of Field Studies (observation and interviews) and taking references from books that fit the theme of this study.

*Engineering*
In this stage, the author collects the needs of all system elements such as the data used. Where these elements can be extended in the development of tourist information systems in Tapaktuan.

*Analysis*
Then the stage of analysing system requirements is done by gathering requirements with a focus on software, including information, each function. Then provide tools and techniques that can help the writer to determine the needs through a system that has been running on a tourist information system in processing data. The device in question is the use of Data Flow Diagrams (DAD) to compile data input, process, and output vocational functions.

*Design*
At this stage, data structure design, software architecture, procedural details, and interface characteristics are carried out. And designed display screens such as input forms and output forms from the system to be designed.

*Testing*
Before an Android-based tourist information system (Tour Guide) can be used properly, testing must be done first. This series of testers is run together with the actual data from an existing system.

2.9. *System Design*
Flowchart is a chart that shows flow in the program or system procedure logically [10].

![Flowchart admin](image1)

**Figure 1. Flowchart admin**

From the flowchart above, the main menu of the program will appear until there is a response from the program when the user chooses the options on the main menu. By using symbols and information, the flowchart above describes the steps that can be done by the user as follows:

a) Before entering the system, the admin input username, and password.
b) Admin presses the login button to enter the system.
c) After the main menu page appears, several menu options can be selected by the admin
d) Admin enters the data menu to access tourist sites.
From the flowchart image above, the main menu of the program will appear until there is a response from the program when the user chooses the options on the main menu. By using symbols and information, the flowchart above describes the steps that can be done by the user as follows:

a) After opening the main menu page, there are several menu options for users
b) Users can choose the desired menu, according to the existing program.

Use Case is a functional description of a system that will be built so that it can be learned by the following users [11]. Use Case diagram of Android-based Tourist Information System in Tapaktuan.

From the use case diagram above it can be observed that in this system the admin has access rights in the form of login, see all tour data, whereas the user only has access rights to choose the desired tourist location.
3. Results and discussion

3.1. Main menu
Displays the main page of the application with several other menus, including Home, maps, categories, about, and information. This menu displays the first menu entry, with various menus available in it. Tourists can choose from it.

![Main menu interface](image)

Figure 4. Main menu interface

3.2. Map display
When the map item is clicked on by the user, the map will be displayed, the map contains the number of tourist attractions. On this map page, there are coordinate points of attractions, this makes it convenient for tourists to see the location of attractions, on this page the map also displays the name of the tourist location. This display shows the type of tourist destination. In this view, there are two tourism options namely, nature tourism and historical tourism. Choose one of them. In this category this menu displays various natural attractions that can be visited by tourists. The information provided is the tourist information display, tourists can choose the type of tour, namely natural attractions, and historical tourism.

![Map display](image)

Figure 5. Map display
In this category, tourists can choose the type of tour including Ujung Batu Tourism, Lhok Reukam tour, Putri Naga/Panjupian Bathing Tour, Aroya Bathing Tour, Pala Garden Tour, Pante Bidari Tour. There is a description of the distance in kilometers from the location of Tapaktuan to tourist sites. This displays the author's bio-data containing info about the application maker, if there are the latest tourist attractions can contact the application maker. In this view, there is a history of the application owner, by displaying the full name, place of birth date, address, gender, marriage status, religion, phone Number, email, university, and study program.

| Wisata Ujung Batu  | Lokasi di kategori : Wisata Alam |
|--------------------|----------------------------------|
| Menyediakan : Warung makan, pondok-pondok, area p... | Wisata Ujung Batu |
| 10.0 Km | |  |
| Wisata Lhok Reukam | Menyediakan : Warung, dan Aneka permainan Pantai... |
| 7.0 Km | |  |
| Wisata Pemandian Putri Naga/Panjupian | Menyediakan : Warung makan, pondok, Area bermain, ... |
| 6.0 Km | |  |
| Wisata Pemandian Kolam Aroya | Menyediakan : Warung dengan aneka makanan dan minu... |
| 1.0 Km | |  |
| Wisata Taman Pala | Menyediakan : Tempat bermain, tempat berolahraga t... |
| 0.0 Km | |  |

**Figure 6. Location display**

3.3. Admin interface

The login menu is used as system security from abuse of access rights, so data security can be guaranteed. Here the user is asked to enter a username and password. In this admin login, the admin enters "username" and "password" that have been registered to enter. This main menu is the initial admin display which contains the home menu, category, location, user, and logout. Admin can choose the menu icons. On the main web page display, there is a slide menu including, home, category, location, user, and logout, each menu has different data.

**Figure 7. About menu**
The menu displays data in the form of tourism categories in the form of nature tourism and historical tourism. In this menu the admin can add, edit, and delete data in the category. In this category view, admin can add tourism categories in it, we can see as the picture above there is no category, image category, and action, this action intends to edit category and delete options.

The admin can add data on the tourism category if there is a new tourism destination. In the display add a new category, as contained in the previous image, to add this new category that is filled in is the category name and image. In the categorical name, it can be adjusted to the desired name, as well as images, first select the image in the choose file then save if it is correct, and can be edited again.
The menu displays tourism location data that already exists in the system, in this menu the admin can add, edit, and delete data at the location. In this location view, display location no, place name, latitude address, longitude, category, image, edit and delete location data.

![Figure 11. Location menu display](image1)

In the menu, the admin can add, edit, and delete users. In this view, User Data or Username and Password can be edited and deleted.

![Figure 12. User menu data display](image2)

### 4. Conclusions

The conclusions that can be drawn from developing information systems in Android-based Tapaktuan are as follows:

a) This application able to display routes.
b) This application successful to display eco-site information.
c) This application can display distance and travel time.
d) This application also faster and accurate.
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