DEVELOPMENT OF NIAS ISLANDS TOURISM APPLICATION BASED ON ANDROID

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ABSTRACT

. This technological development has shown an interesting phenomenon. Can be used in any field, one of them in the field of tourism in terms of promotional purposes. Many kinds of tourism in the Nias Islands are many unknown to tourists. For this reason, an application is needed for tourists / prospective tourists visually in which there is more important information related to tourist attractions. This application is made using the Java programming language and PHP and MySql as a data storage medium. Judging from the capabilities and features of an increasingly sophisticated smartphone and the support of the Android operating system, this study intends to develop applications that contain various things about Nias Islands tourism such as information on tourism objects and their location, information on tourist attractions such as lodging, hospitals, gas stations , restaurants, places of worship, and the use of Google Maps to show the location of attractions. Based on the results of testing using the black box method, it can be concluded that the system built can run well with the functionality of seeing information and tourist attraction locations in the Nias Islands, information on supporting tourism objects such as lodging, hospitals, gas stations, restaurants, houses worship, and information on activities held in the Nias Islands.

Keywords : Nias Islands, *Smartphone,* Android, Google Maps, Tourism

1. INTRODUCTION

The Nias Islands which are located in the west of the island of Sumatra and are administratively located in the territory of North Sumatra Province with a total area of 284.78 km2 and have 4 districts and 1 city namely Nias Regency, South Nias Regency, West Nias Regency, North Nias Regency and Gunungsitoli City. The Nias Islands are very famous for the beauty of its exotic beaches which attract the attractiveness of prospective local and foreign tourists. Supporting sectors of the natural tourist attractions are also supported such as culinary tours (restaurants), accommodation (hotels) transportation, ATMs and gas stations. The tourism sector is very helpful in helping the development of a region both in the income of a region to be better known by the wider community..

Ministry Of Tourism Arief Yahya said, Nias has great potential in the tourism sector in the form of nature, culture and man made, including world-class surfing locations, maritime panoramas that offer white sand beaches, and unique cultural attractions. stone in Bawomataluo Village, Fanayama District, South Nias [1]. However, all of this potential has not been optimally developed as seen from the number of foreign tourists visiting Indonesia and foreign tourists to Nias per year is still less than 25,000 and the tourism sector's contribution to the GDP is less than 5% and Regional Original Revenue (PAD) from 4 regencies and 1 city is only around Rp. 50 billion [1]. After the questionnaire from 155 tourists / prospective tourism respondents from the nias islands and outside the nias islands and obtained by 67.5% said it was difficult to find information about other tourist objects or other supporting objects such as restaurants, places of worship and routes between locations. Submission of information about tourism promotion currently in the Nias Islands is carried out through print media, electronic media to social networks such as Facebook still cannot help in providing information about Nias island tourism. So it takes an application that can help the wider community in facilitating access to information in determining the travel planning in the Nias Islands. Therefore, through the design and manufacture of Tourism Applications, it is expected to be able to assist prospective tourists in determining the travel plans.

On smartphones, the operating system is the most widely used by users, namely Android, and is predicted in the future more and more smartphone vendors will use Android as their operating system so that the utilization of Android technology is more flexible. In this case the author uses a Mobile application using Android and internet network facilities to be able to access the application. Applications in the form of mobile android is the right solution in answering the lack of an existing system. Almost all circles have these devices so it is very easy to deliver the information needed.

From the above problems the authors are interested in studying more about the existing problems and expressed in the form of Final Assignment with the title "Development of the Nias Island Tourism Application Based on Android".

Based on the context that has been disclosed above, then to overcome these problems an Android-based Nias Islands Application system is needed by utilizing technology on smartphones. The purpose of this research is as follows :

1. With this application can help prospective tourists in planning their tour to Nias island.
2. With this application can help tourists to travel such as routes between locations, find out other tourist objects and know the tourism support sectors such as houses of worship, hospitals, gas stations.
3. Make it easy to deliver every event and event information to the community quickly.

2. RESEARCH CONTENTS

2.1 Analysis of Problem

The Nias Islands are one of the tourist areas with very many tourism objects. Currently, there are several tourist objects that are known by the community, for example Hombo Batu, which is famous for Lompat Batunya, Sorake Beach, which has been held by international surfing competitions, so that the place is known by the public which is not directly proportional to other tourist objects because of lack of information. which has an impact on the uneven number of visitors in each tourist attraction. Also, there are still many tourists who find it difficult to route between attractions and find other tourism supporters such as restaurants, gas stations, houses of worship, hospitals.

To meet these needs, a system will be built that can provide convenience in obtaining information about tourism in the Nias Islands so that it can facilitate tourists and prospective tourists in making their tour.

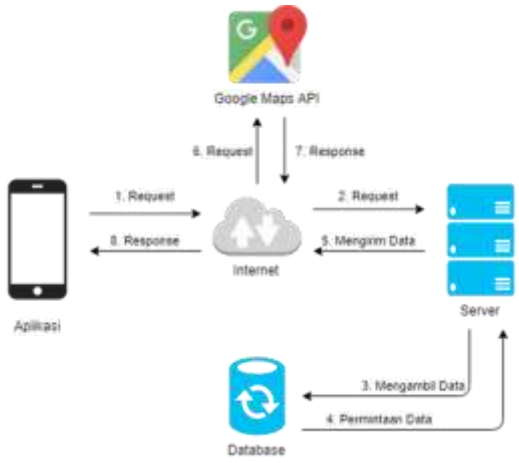
2.2 Analysis of System

In this section, an analysis of the current system will be carried out. The results are used to identify and evaluate various weaknesses, problems, needs and constraints contained in conventional systems contained in user needs. From the analysis process will be able to produce various suggestions for improvements to the system that will be used as the basis for designing applications that will be built. Currently information on existing tourist attractions is obtained by word of mouth or usually obtained through websites on the internet. And sometimes what is given to prospective tourists can occur errors, or lack of accurate data obtained. Besides that the information that will be obtained is not easy and practical, which at this time is information that is easily available that is needed by prospective tourists. Development of Android-based tourism applications is intended as a means of finding and sharing information between users.

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2.3 Analysis of System Mobile Architecture

System data flow analysis is an analysis that serves to describe in detail how the system works.



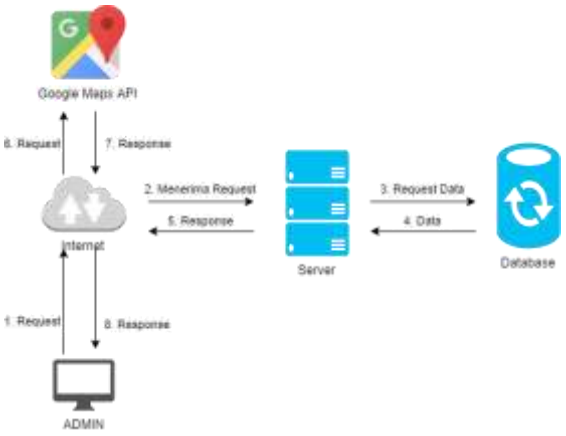
Picture 1. System Mobile Architecture

This analysis includes:

1. The application requests the server
2. The server receives data requests from a mobile device.
3. After processing the server retrieves data from the database
4. Make a request to access the Google Maps API.
5. After the server receives the requested data the data will be returned in JSON form to the mobile device

2.4 Analysis of System Web Architecture

System data flow analysis is an analysis that serves to describe in detail how the system works.



Picture 2. System Web Architecture

This analysis includes:

1. Admin, in this case the Web user requests as needed
2. The server will then process the request
3. Make a request to Google Maps.
4. Results from processing data are returned to the user.

2.5 Analysis of Technology

Technology analysis aims to find out what technologies will be used in a system that is built. The technology used in the system is built, among others.

2.5.1 GPS

The technology used in this application is GPS technology with type A-GPS. This technology will determine the position of smartphones with high accuracy. The reason for the high accuracy is the basis for researchers to choose A-GPS as a GPS that is used in applications that are built. The following is the explanation of the technology contained therein:

1. The user's position is determined from the user's network data either via the internet or via a GSM signal to the nearest BTS.
2. Accuracy is less precise because the distance of users from the nearest BTS can also be hundreds of meters.
3. function to speed up positioning if there is no signal from satellite GPS
4. Can not navigate online, only direction suggestion (recommending a specific direction).

Divided into 2 types of Network Location:

1. Google Location Services: user location data can be determined via the network pinpoint location of the google network whether it's browser, lattitude, or user version offline maps.
2. GPS EPO Assistance: stands for "Extended Prediction Orbit", as the name implies satellite orbit where users often loggin will be stored and reloaded so that it will be much faster to determine the GPS locking. EPO data is widely available on the internet

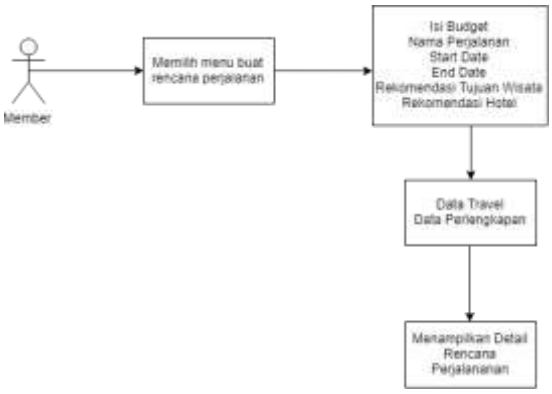
2.5.2 Google Maps API

API (Application Programming Interface) developed by Google will be used in the system built. The purpose of this API is to get a digital map service that will be used on the application. In this API, the service that can be used in addition to displaying digital maps in the application is the use of markers, polygons, and overlays to the base map, as well as changing the appearance of certain map areas to users. All of these objects provide additional information about the location of the map, and allow user interaction with maps. These features are used by researchers to support application needs. The Google Maps Android API technology will be useful in building systems in functional related to the location of an object in a digital map. This technology is always used by researchers to support system functionality.

2.6 Analysis of Making Travel Planning

In this analysis process, it can help the user in making the design of a tour that will be carried out. The Requirements and Business Process Analysis can be viewed from the point of view of prospective tourists and tourists in following the tour itinerary as follows:

1. Obtain recommendations for tourist destination as the main destination.
2. Plan the length of time to go and go to the destination of the destination.
3. Get recommendations for lodging that will be used as a stay in accordance with the duration of the stay in Nias.
4. Fill in the travel data, the default equipment data for potential tourists.
5. Displays the details of the trip plan.



Picture 3. Making Travel Planning

2.7 Analysis of Software Requirements Specification on Mobile Platform

The software requirements specification of the system that is built is divided into two, namely the specification of functional requirements and non-functional requirements specifications. Functional requirements specifications will discuss the system that must be provided. Following is the specification of functional requirements in the following table:

Table 2. Functional Requirements Specifications on Mobile Platform

Code of SKPL	Functional Requirements Specifications
SKPL-F-001	The system provides facilities for users to register into the system.
SKPL-F-002	The system provides facilities for users to display a list of tourist locations.
SKPL-F-003	The system provides facilities for users to log into the system.
SKPL-F-004	The system provides facilities for users to display routes between
SKPL-F-005	The system provides facilities for users to choose favorite.
SKPL-F-006	The system provides facilities for users to rate

SKPL-F-007	The system provides facilities for users to comment
SKPL-F-008	The system provides tourist recommendation facilities for users.
SKPL-F-009	The system provides facilities for listing events that will be held for users
SKPL-F-010	The system provides facilities for making travel plans
SKPL-F-011	The system provides logout facilities for users who have logged out

Table 3. Specifications of Non-Functional Requirements on Mobile Platforms

Code of SKPL	Non Functional Requirements Specifications
SKPL-NF-001	The system is built using a Mobile system.
SKPL-F-002	The system built is recommended to use the Android operating system version 6.0.1 Marshmallow.
SKPL-F-003	The system is built utilizing the GPS function.
SKPL-F-004	The system is built with hardware specifications that meet minimum requirements.

2.8 Analysis of Software Requirements Specification on Web Platform

The software requirements specification of the system that is built is divided into two, namely the specification of functional requirements and non-functional requirements specifications. Requirements Functional specifications will discuss the system that must be provided. The following are the functional requirements specifications in the following table:

Table 4. Functional Requirements Specifications on the Web Platform

Code of SKPL	Functional Requirements Specifications
SKPL-F-001	The system provides facilities for the admin to log into the system.
SKPL-F-002	The system provides facilities for admin to fill in the data
SKPL-F-003	The system provides facilities for the admin to delete data
SKPL-F-004	The system provides facilities for the admin to change data

Table 5. Non Functional Requirements Specifications on the Web Platform

Code of SKPL	Non Functional Requirements Specifications
SKPL-NF-001	The system is built using a web system.
SKPL-F-002	The system built is recommended to use the Windows 10 system.
SKPL-F-003	The system is built using the browser application, Google Chrome
SKPL-F-004	The system is built with hardware specifications that meet minimum requirements.

2.9 Analysis of Non Functional Requirements

Nonfunctional needs analysis describes the outside needs of the system needed to run the application to be built. The non-functional needs to run android-based tourism applications include hardware requirements, software requirements, and users who will use the application. Nonfunctional needs analysis is intended so that the application to be built can be used as needed.

2.9.1 Analysis of Hardware Requirements

Hardware requirements analysis shows the hardware requirements recommended in application development. The standard hardware specifications on the laptop used by developers to build tourism applications and hardware specifications on Android smartphones used by users can be seen in the following table:

Table 5. Hardware Requirements

Laptop		
No	Hardware	Specification
1	Prosesor	Intel Core i3-3110M CPU @2.40GHz
2	Memori	RAM 4 GB
3	Graphic Card	Intel® HD GRAPHIC 4000
4	Hardisk	500 GB
Smartphone Android		
No	Hardware	Spesification
1	GPS	A-GPS
2	Memori	32 GB

2.9.2 Analysis of Software Requirements

Software requirements analysis shows the software requirements recommended in application development. The standard software specifications on the Laptop that are used by developers to build Tourism applications and standard software specifications on Android smartphones used by users can be seen in the following table:

Table 6. Software Requirements

Laptop		
No	Software	Specification
1	Sistem Operasi	Windows 10
2	Tool Pembangun	Android Studio, Xampp
Smartphone Android		
No	Software	Specification
1	Sistem Operasi	Marshmallow 6.0.1

2.9.3 Analysis of Users Requirements

User needs analysis shows the minimum requirements of user characteristics in operating the system that is built. The following are the needs of users in operating the system.

Table 7. Users Requirements

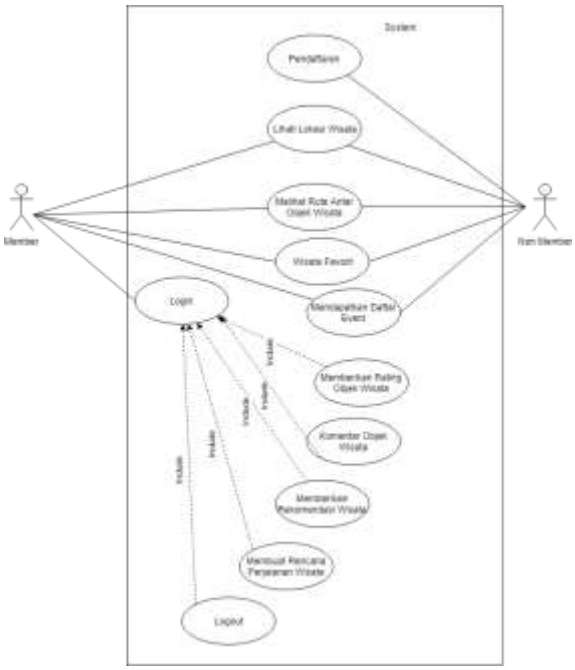
No	Users	Characteristic
1	Admin	1. Able to operate the computer properly. 2. Having the ability to delete databases
2	Member	1. Able to operate an Android smartphone. 2. Understand Indonesian language and understand basic English.
3	Non Member	1. Able to operate an Android smartphone. 2. Understand Indonesian language and understand basic English.

2.10 Analysis Functional Requirements in Mobile Platform

Functional needs analysis can be defined as planning and sketching of several elements that are separated into a unit that is complete and functioning. The analytical method used in system development is OOAD (Object Oriented Analysis And Design). This OOAD method of functional needs is carried out using the UML (Unified Modeling Language) diagram. There are several diagrams in the UML tools that are commonly used to describe functional systems, including Use Case Diagrams, Activity Diagrams, Sequence Diagrams and Class Diagrams..

2.10.1 Use Case Diagram

Use Case Diagram is used to describe the interaction between actors with activities contained in the system that is built, so that system users about the usefulness of the system to be built. The Use Case Diagram on the system is built.

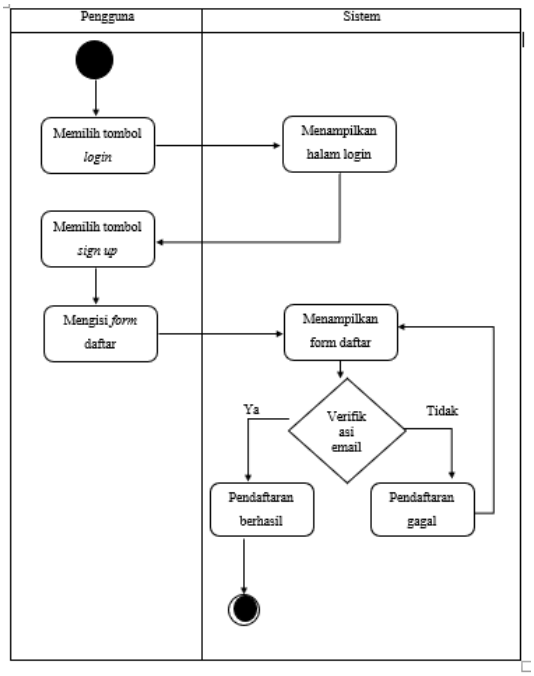


Picture 4. Use Case Diagram

2.10.2 Activity Diagram

Activity Diagram is a diagram that describes the work flow of the sequence of activities in a process that refers to the existing use case diagram. The following is an explanation of each activity diagram.

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Picture 5. Activity Diagram Pendaftaran

2.10.3 Class Diagram

Class is a specification that when instantiated will produce an object and is the core of object-oriented development and design. Class describes the

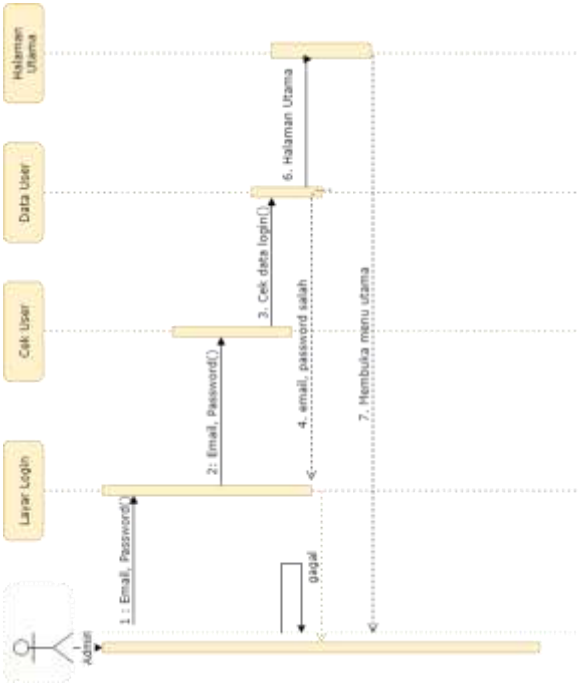
state (attributes or properties) of a system, also offers services to manipulate the situation



Picture 6. Class Diagram

2.10.4 Sequence Diagram

Sequence diagrams are diagrams that display interactions between objects in a system that are arranged in a sequence or time series. Interaction between these objects in the form of users, displays, etc. in the form of messages / messages. Sequence diagrams are used to describe a scenario or series of steps that are carried out as a response to an event or event to produce a particular output.



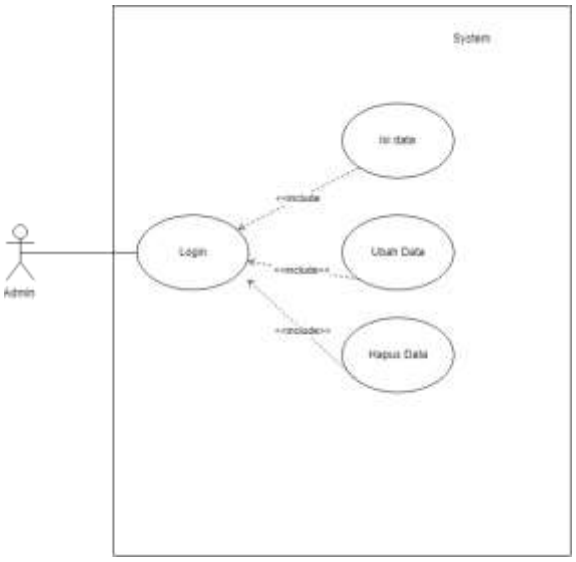
Picture 7. Sequnce Diagram Login

2.11 Analysis Functional Requirements on Web Platform

Functional needs analysis can be defined as planning and sketching of several elements that are separated into a unit that is complete and functioning. The analytical method used in system development is OOAD (Object Oriented Analysis And Design). This OOAD method of functional needs is carried out using the UML (Unified Modeling Language) diagram. There are several diagrams in the UML tools that are commonly used to describe functional systems, including Use Case Diagrams, Activity Diagrams, Sequence Diagrams and Class Diagrams.

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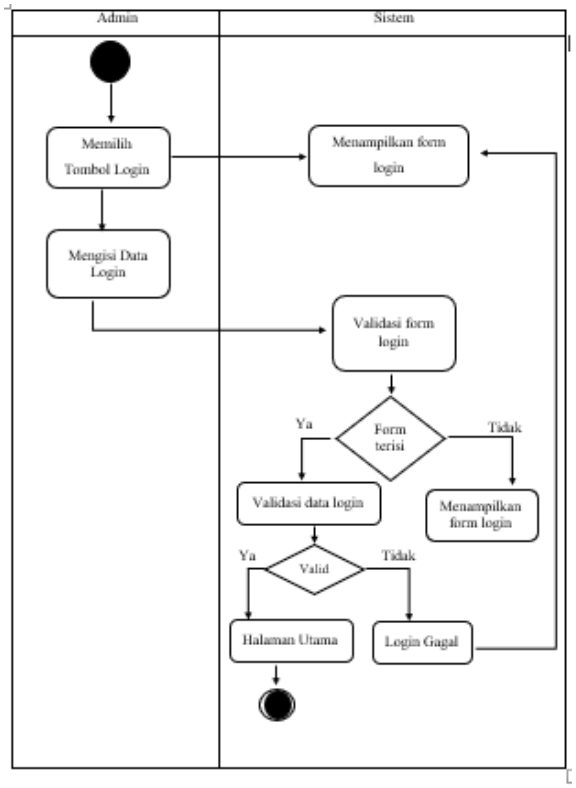
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Picture 8. Use Case Diagram

2.11.2 Activity Diagram

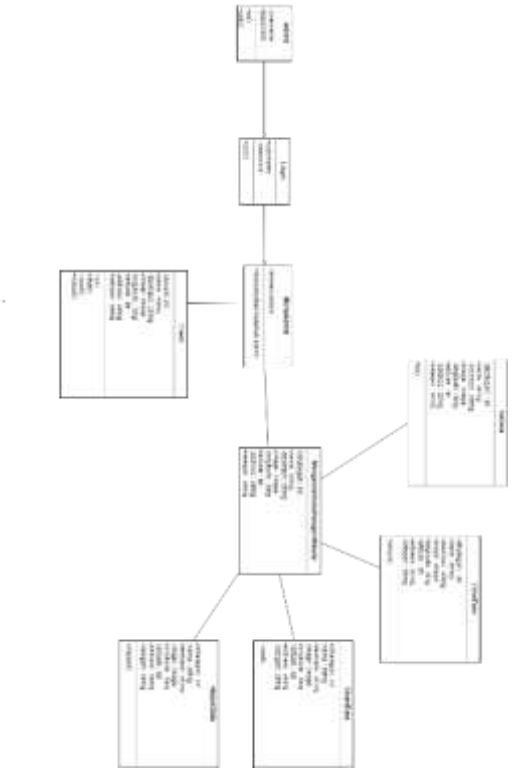
Activity Diagram is a diagram that describes the work flow of the sequence of activities in a process that refers to the existing use case diagram. The following is an explanation of each activity diagram.



Picture 8. Activity Diagram Login

2.11.3 Class Diagram

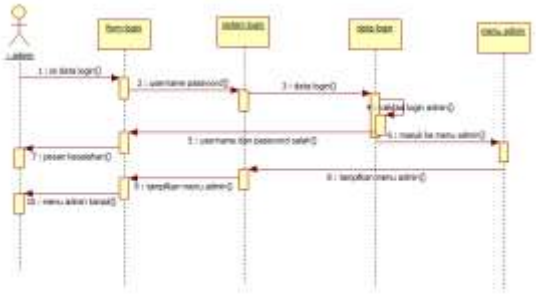
Class is a specification that when instantiated will produce an object and is the core of object-oriented development and design. Class describes the state (attributes or properties) of a system, also offers services to manipulate the situation



Picture 9. Class Diagram

2.11.4 Sequence Diagram

Sequence diagrams are diagrams that display interactions between objects in a system that are arranged in a sequence or time series. Interaction between these objects in the form of users, displays, etc. in the form of messages / messages. Sequence diagrams are used to describe a scenario or series of steps that are carried out as a response to an event or event to produce a particular output.



Picture 10. Sequence Diagram

2.12 Testing

The method used in the questionnaire is the Likert scale. The Likert scale is a psychometric scale commonly used in the questionnaire and is the most widely used scale in the survey. Likert scale is taken from the name Rensis Likert. When answering questions on a Likert scale, respondents determine the level of their agreement to a statement by choosing

one of the 5 options available. The five available scale options usually have formats such as:

1. Strongly Disagree
2. Disagree
3. Simply Agree
4. Agree
5. Strongly Agree

To find out the final result of an existing scale, a formula is needed to calculate the final result. The formula is: final result = total score / Y * 100. With Y is the highest value with the respondent.

3. CLOSING

With the creation of the Nias Islands Tourism application in the search for information built on the Android platform it can be concluded that:

1. GPS technology implemented in the application can make it easier for users to determine and find the location to be addressed.
2. This application can provide information on the distance to the location of the object to be visited.
3. This application can help prospective tourists in planning their tour trips

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