Designing Indonesian Geographic Application

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Abstract: Assessment of geographic concept and skills confirm the failure of our educational system to provide students with an adequate understanding of geography. Information regarding Indonesian geographic is highly needed by many people especially the users, thus they are able to understand the accurate placement of a subject which is related to geography. This application requires regional data to be search by the user. This research used a descriptive method by collecting data in detail, in-depth and actual. The method is adapted from the knowledge and facts found in the field. Therefore, the aim of this research can be achieved; furthermore, this research is able to describe the position of an object systematically. The designed application is expected to help the users understand the location of an object or a place that they want to find and help the user to find detailed information about the area which include the name of the province, name of city and other information.

1. Introduction
Indonesian Geography is a branch of science that describes the earth surface, climate, demographics, flora, fauna, and seed obtained from the natural resource [1]. One of the disciplines in geography is knowledge about a map. Map has educational value to answer the question "where" from various aspects and geographic characteristics [2]. Based on its geographical location, Indonesian archipelago is located between the Asian continent and the Australian continent, as well as between the Indian Ocean and the Pacific Ocean. Therefore, Indonesia is in a cross position which has a significant relation to climate and economy [3]. Indonesian territory stretches from Sabang to Merauke. Indonesia shares land and maritime borders with several countries, namely Malaysia, Australia and Papua New Guinea [4].

Geographical systems are developing rapidly and manual maps are rarely used since they are less interactive. As a result, users feel bored easily when searching for a particular location manually [5]. Maps are universal tools. In other words, it can be utilized by anyone for various purposes [6]; however, maps should be used only for a positive purpose. Maps are not only beneficial to find out the location of a place, but also to know the specific landscape of an area, and to be used as road guidance as well as teaching aid [7]. With this diversity, an interactive application is needed to help the users and at the same time provide education in understanding the layout and conditions of areas spread across Indonesian islands.

The produced application is based on android because it is user-friendly, interactive and easy to be developed [8]. The application design must fulfill the users need and have an educational value which facilitates the users. One of the conveniences obtained from this application is knowing the accurate location of a city in a province in Indonesia.

2. Method
This method used descriptive method in analyzing human groups, objects, condition, thought or a set of events in the present [9]. The aim of this research is to make description, portrayal, or representation systematically, factually and accurately regarding facts, characteristics and the relationship between phenomena which can be seen in Figure 1.
Figure 1. Research Framework of Geographic Indonesian Application

The design method used in this research is waterfall method [10] with several stages, namely:

a. Requirements analysis and definition
   Service system, constraints, and objectives are determined and discussed with the users. Then, it is defined in detail. It functions as system specifications.

b. System and software login
   System requirements are allocated for both hardware and software which form the overall framework

c. Implementation and unit testing
   A series of programs to implement the software

d. Integration and system testing
   Integrating the program units into a series of complete programs and testing the program in order to analyze whether they meet the users' requirements.

e. Operation and maintenance
   Implementing and correcting the errors that are not found in the previous stages.

3. Results and Discussion
   Object orientation method is used to design this geographic application and each actor interacts with the created system. Actors created should be based on functions that contained in the system, therefore use can be maximized. It can be seen in Figure 2.

Figure 2. Use Case Indonesian Geography Application
In this case describes the interaction among admin, user, and system which have several features that can be adjusted by the users. The interaction consists of several interrelated functions. It can be seen in Figure 3.

**Figure 3. Activity Diagram Indonesian Geography**

Diagram above shows a series of designed application that allow to choose based on the users need. Admin has access to add or update the contents of the available menu. Users can see the search results in a form of city and province; therefore, users are able to know the location of a city see Figure 4.

**Figure 4. Main Display**
The main display of this application contains an available menu which can be chosen based on the need. The user can choose the menu that they want to know from this geography application, according to their needs by pressing the menu see Figure 5.

![Figure 5. Pictures in Provincial Menu Selection](image)

There are various names of provinces that user can choose in the menu selection. The user can choose the provinces found in Indonesia and find several regions that are located in the province. The page above shows a map of Indonesian Province along with an explanation about the capital and major cities in west java. West Java province covers several cities or regions that are quite well known by users. Application about geography contains all related knowledge about Indonesian geography. There are help buttons which enable the users to find the information easily.

4. Conclusion
With this application, we expected that the users can easily find the location interactively. This application is equipped with buttons and easily used by the users; it can be used properly according to the purpose.

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