

Design and Development of Tourism Geographical Information System of Semarang City Based on Android Mobile

A Shobirin¹, G Aryotejo², Danang³

^{1 2 3} Sekolah Tinggi Elektronika dan Komputer - Jl. Majapahit No.304, Palebon, Kec. Pedurungan, Kota Semarang, Jawa Tengah 50199

achmad.shobirin20@gmail.com

Abstract. The development of information technology that exists today is very rapid, making us to keep abreast of the development of these technologies. Technology is able to present all information quickly and instantly, leaving old patterns such as gathering information manually which may require more time. Information technology today is very effective and efficient as indicated by the speed of processing time and the accuracy of the information needed. One of them is the information about tourist attractions, which is currently increasingly in demand by people who want to vacation with friends, relatives and family. However, the lack of information about the location of attractions that want to be visited, especially for potential tourists from outside the area of Semarang, make the author interested in design and creating the Semarang City Geographic Tourism Information System Based on Android Mobile to facilitate the search for the nearest route to the desired tourist attraction. The method used is using the Geographic Information System based on the data from the Semarang City Culture and Tourism Service. The Semarang City Tourism Geographic Information System Based on Android Mobile is a solution to problem solving as a medium to obtain information and tourism locations in the Semarang, which is applied in Android Smartphone devices, especially for the people from outside the city of Semarang.

Keywords: Geographic Information System, Semarang City Tourism, Android, GIS, Information Technology

1. Introduction

The city of Semarang is the capital of Central Java Province, Indonesia, as well as the fifth largest metropolitan city in Indonesia after Jakarta, Surabaya, Bandung and Medan. As one of the most developed cities in Java in economy, trade, services, industry and tourism as well as being an *interland* in the Central Java region [1]. Semarang is one of the cities that has a maintained cultural heritage. The rapid development in the city of Semarang can be seen from the slogans "Visit Central Java 2018" and "Let's Go Semarang Tourism" which raises a positive impact for the development of tourism. Historic buildings, family tourism, culinary tourism, religious tourism and nature tourism that has been in demand can be an alternative visit by foreign and domestic tourists in the city of Semarang [2].

There are many tourism attractions in the city of Semarang such as Kota Lama / Kota Tua Semarang, Blenduk Church, Lawang Sewu, Kleteng Sam Poo Kong, Kauman Grand Mosque, Tugu Muda and Goa Kreo. The search for an attractions location certainly requires a position in the delivery of geographical information from a tourist attraction. Currently the most widely known online map is Google Maps, which can be accessed easily through various types of web-based and mobile information systems with

the help of the internet. Therefore, by combining the things above it is expected to produce a mobile GIS application that can facilitate the tourists in determining the desired tourist destination, especially in the city of Semarang [3].

The lack of information about the location of tourist attractions is a hindrance for potential tourists, especially those outside Semarang. Information about Semarang tourism still uses print media, which is less effective because it is only limited to certain places and certain events. Modern people who are interested usually seek information from the internet, usually about attractions in the city of Semarang, events in the city of Semarang, Semarang City News, history of the city of Semarang, souvenir shops and hotels in the city of Semarang. Along with the rapid development of technology, the use of the internet can be done anywhere, whether through computers or mobile devices.

Based on the above problems, to help tourists find tourist locations and information on the city of Semarang, a tourism application was made on an Android-based mobile device. This application will provide information about attractions and their information. In addition, this tourism application also displays a map that can help tourists find a route to the tourist destination to be addressed through the Google Maps API and to display / find out the position of the current user by using GPS. In this study, the application development procedure uses the R&D method based on the steps developed by Borg & Gall consisting of Research and information collecting, Planning, Develop preliminary form of product, Preliminary field testing, Main product revision, Main field testing, Operational product revision, Operational field testing, Final product revision, Dissemination and implementation.

2. Methods

The model that will be developed is based on the Research and Development (R&D) model of Borg and Gall. The design development with the R&D design of Borg and Gall has the aim to develop and validate the product. The Development and Research Model (R&D) has 10 steps including Research and information collecting, Planning, Developing preliminary forms of products, Preliminary field testing, Main product revision, Main field testing, Operational product revision, Operational field testing, Final product revision, Dissemination and implementation. The system development carried out in this study only reached the six stages to produce the final product in the form of a prototype, so it did not reach the product implementation stage. To arrive at the product implementation stage further research can be carried out. The six steps of the R&D model are described in Figure 1.

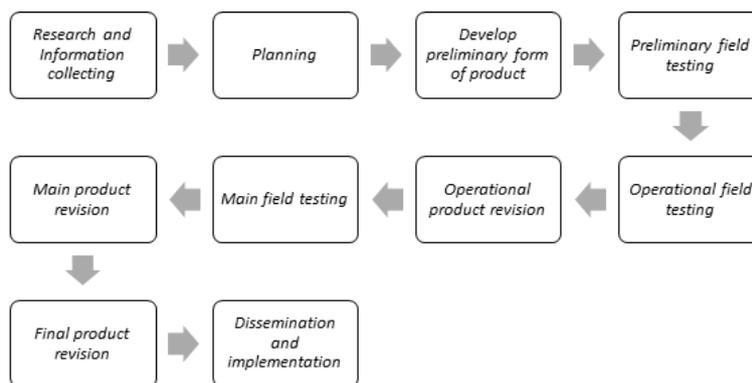


Figure 1. Research and Development Model

3. Results and discussion

3.1. The design of Tourism information system

The following describes the application design before applied to the programming language. The design of the application is to arrange the layout of the components in the application. The components in question are buttons, images, images and other important components.

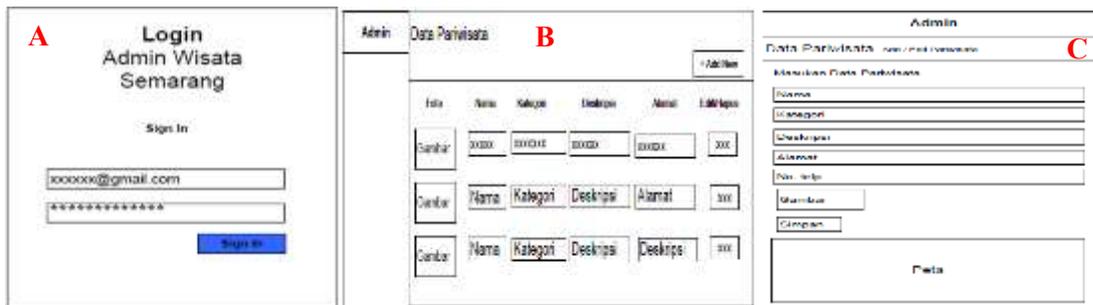


Figure 2. Layout Design for Tourism Information System; (A) Android’s main page, (B) Tourism Data Layout, (C) Tourism Data Input Layout

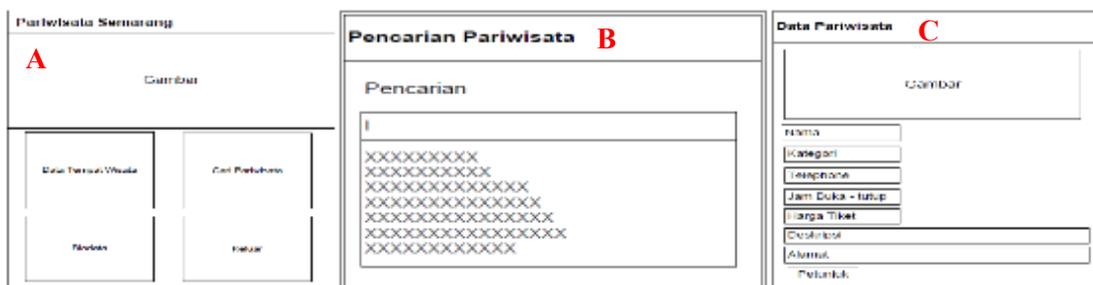


Figure 3. Layout Design for Tourism Information System on Android; (A)Main Page, (B) Tourism Data search Layout, (C) Tourism Data Input Layout



Figure 4. Layout Design for Tourism Information System on Android; Tourism Route page

3.2. The implementation of Tourism information system

This chapter contains the results of the design and implementation of the tourism information system. After carrying out each stage in the method, we developed an android application based information system to access the tourism information of Semarang.

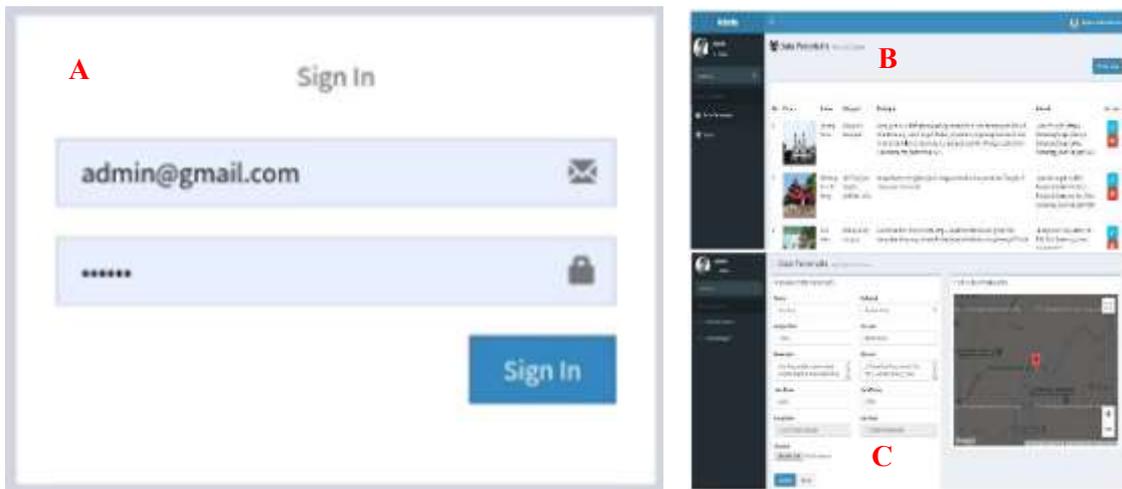


Figure 5. Tourism Information System administrator site; (A) Admin login page, (B) Main Menu page and (C) Admin page for Tourism Data Input

Figure 2(A) above shows the login page for administrators that used by the administrator to enter the system by using email and password. After the admin has successfully logged in, it will shows the admin page used to display, submit, edit and delete tourism data, as depicted in Figure 2(B). Administrator can submit tourism data using admin page for tourism data input in figure 2(C) like names, categories, opening and closing hours, location on the map and photos.

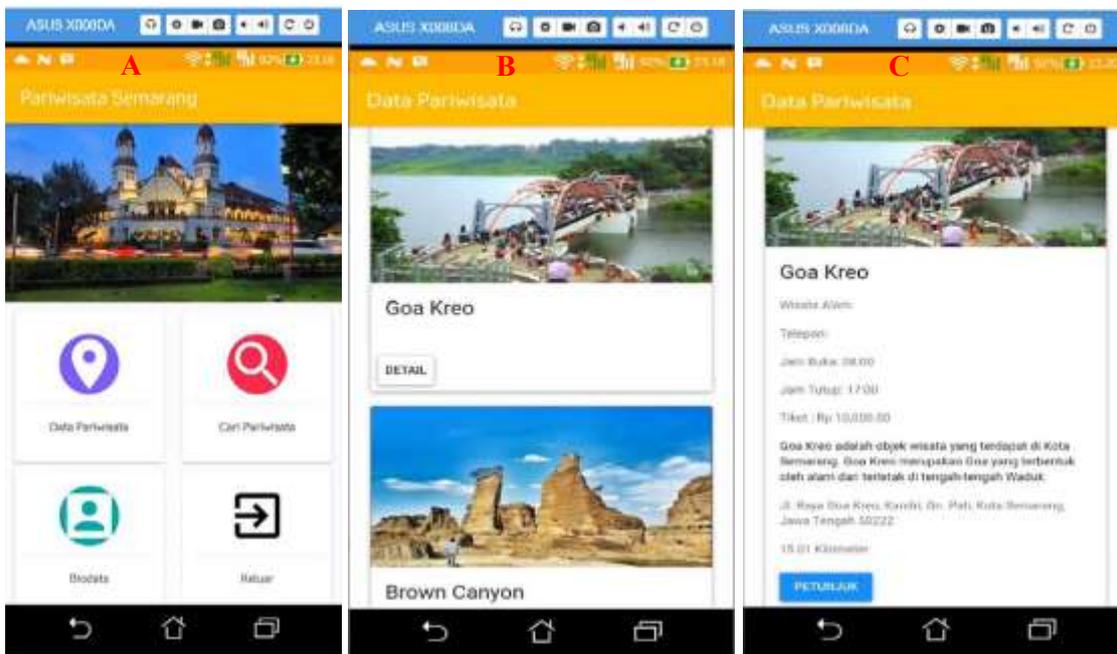


Figure 6. Tourism Information System on Android; (A) Main page, (B) Tourism site list and (C) Description of tourism site

Figure 3(A) shows the main display of tourism applications on android. There are four buttons consisting of tourism data, search for tourism, biodata and Exit. Tourism data button displays the tourism site list as depicted in figure 3(B). Detailed information for each tourism attractions as tourism name, category, telephone, opening and closing time, ticket price, description, address and estimated distance from the user's current location, as shows in figure 3(C), can be accessed by using detail button on the tourism site list.

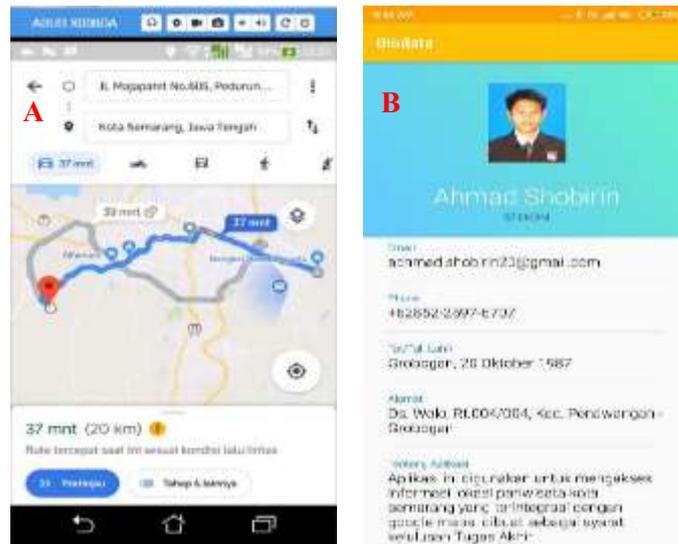


Figure 7: Tourism Information System on Android; (A) Tourism Route page and (B) Admin biodata

The tourist route page displays the step-by-step route, the total time and distance that must be taken from the user's place to the tourist destination. The biodata page contains information about the Semarang-based tourism geographic information system application. The information displayed in the form of a description of the application and Application developer biographies.

4. Conclusion

Based on the description of the chapters above and after conducting a field trial the results of the Semarang Mobile-Based Android Mobile Geographic Information System Design for Tourism Users can be summarized as follows:

1. Design and Development of Geographic Information Systems for Semarang City-Based Tourism, Android Mobile is an application that can display information and locations of Tourism in the city of Semarang to users.
2. Design and Development of Semarang City-based Android Mobile Geographic Information System is able to provide location information of Semarang city tourism map with the search for the nearest route.

This system has limitations such as:

1. The application requires internet connection to search for a list of tourism places and search for the nearest route via GPS.
2. This research is focused and limited to the search for tourism locations in the city of Semarang.

Based on the results of research and design of applications that has been built, the suggestions for further research are:

1. This application is expected to be developed further to expand tourist areas in this case not only the Semarang area but also the Central Java.
2. A feature that can be developed for further research is the use of Google maps to appear in more

than one tourism location so that application users can see Semarang city tourism instructions with the option of multiple tourism points directly.

Acknowledgements

This research is supported by Departement of Information System of Sekolah Tinggi Elektronika dan Komputer (STEKOM) Semarang under the supervision of Research Institutions and Community Service of STEKOM Semarang, Indonesia.

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