

Shortest Route Search for Tourist Attractions in Bandung Using Dijkstra's Algorithm

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Abstract: *Dijkstra's algorithm is one of the algorithms that can solve the problem of finding the shortest route which is a problem in graph theory. Implementation of the system that we use will result in a website application that uses the Javascript programming language. This system uses the Dijkstra algorithm which is very useful for visitors because tourists can find the shortest route that can be taken to and from a tourist destination in the area of Bandung that you want to visit using this system. With the research of the shortest route using the Dijkstra algorithm to find the fastest route of tourist attractions in the city of Bandung, the tourists can add information about the fastest route and finally the tourists can choose the best route that can streamline all costs and find out all the information on tourist objects in This city of Bandung.*

Keywords: *Graph, Javascript, Dijkstra, Tourism*

1. Introduction

This introduction aims to fulfill the big task of the Decision Support System course in the Information Technology S1 study program and work together with partners who will be determined, Because of the many existing tours in Bandung, tourists want to know clear information where the locations of tourist attractions are there and the path that must be taken to get to the location of the intended tourist attractions.

The shortest path search is a problem to find a path between two nodes with a minimum number of weights, in the case of searching the fastest path between two locations on the map to travel between the two locations. One of the methods used to solve the problem of running the shortest path using the Dijkstra algorithm, the Dijkstra algorithm is the algorithm for finding the cheapest path from an initial vertex to the last vertex, this algorithm is based on the greedy technique. The Dijkstra algorithm will search for the shortest path starting from the initial node to the destination node and this algorithm will compare the smallest weight from the initial node to the destination node to find the most efficient path

1.1. Background Software Ideas

Bandung is the capital of West Java province. The city always attracts tourists both domestic and international with culinary tourism, shopping and nature tourism. Very diverse tourist attractions in Bandung, making tourists will not run out of ideas for places to visit. That is why, this city has become one of the main tourist destinations in West Java while on vacation. Its location is fairly close to Jakarta, making it a favorite tourist spot for citizens of the capital. Especially with the existence of a well-known campus to make the city of Bandung become crowded will come from outside the city.

1.2. The Purpose and Benefits of Software Development

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The benefits of this program are by showing the route on the tourist attractions with the shortest possible distance and effectively reach the tourist destination.

Benefits for students from outside Bandung can find out the list of attractions in the city of Bandung and its surroundings

1.3. Limitation of Software Developed

This program will cover several limitations in order to clarify the scope of the program being made.

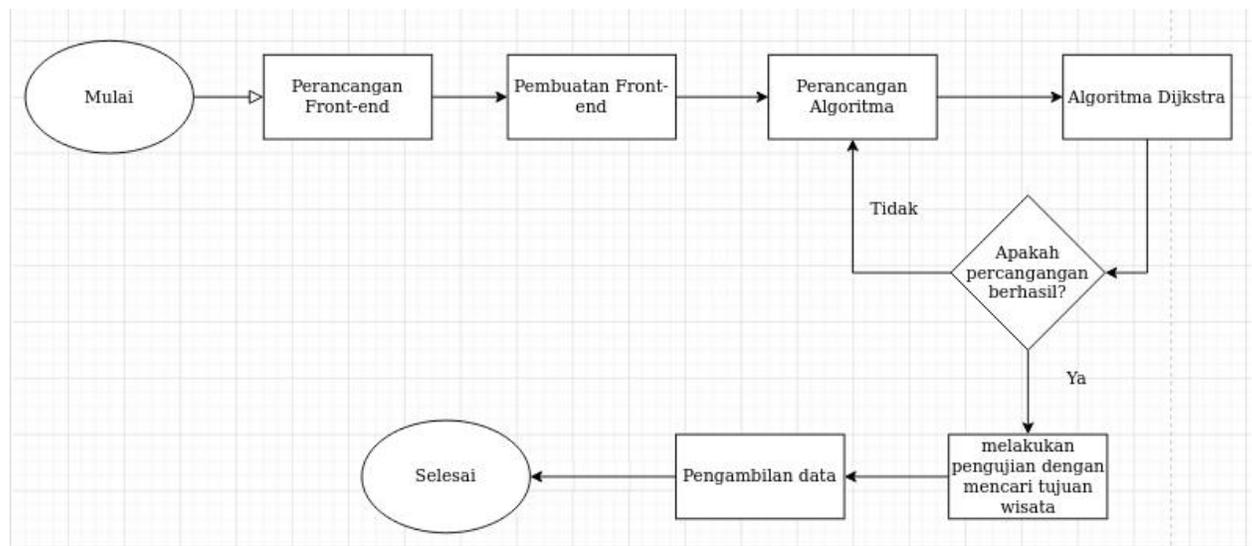
- Tourist attractions in the city of Bandung and surrounding areas
- Aimed at telkom students especially those outside the region
- Shortest route search based on distance

1.4. Software Development Methodology

Based on the workmanship and development of this application, what will be done first is from making an application mockup and then working on a web application front-end using javascript, especially using the javascript framework, leafet.js, after that the map and data marker making are used to create a location plan tourist attractions in the city of Bandung and surrounding areas.

For route search using the dijkstra algorithm or route search based on the smallest cost from source to destination

1.5. Analysis of Requirements and Design of Software Solutions

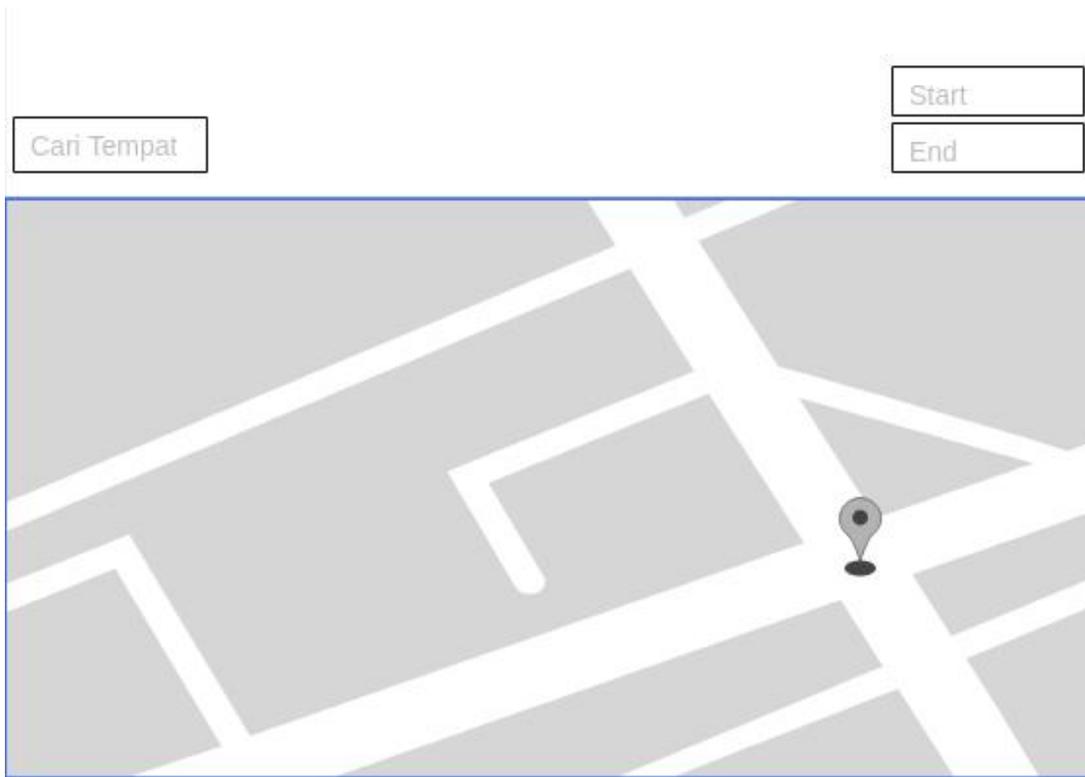


If all the design has been done, then proceed to check whether the system designed in terms of distance or weight can show the distance or not.

1.6. Interface System Design

At this stage the system interface is designed to interact between the user and the system. This stage is very important because a good interface design will make users feel comfortable in using a computer application. The following menu structures will be designed in this shortest route search application.

1.6.1. Design of Attraction Data



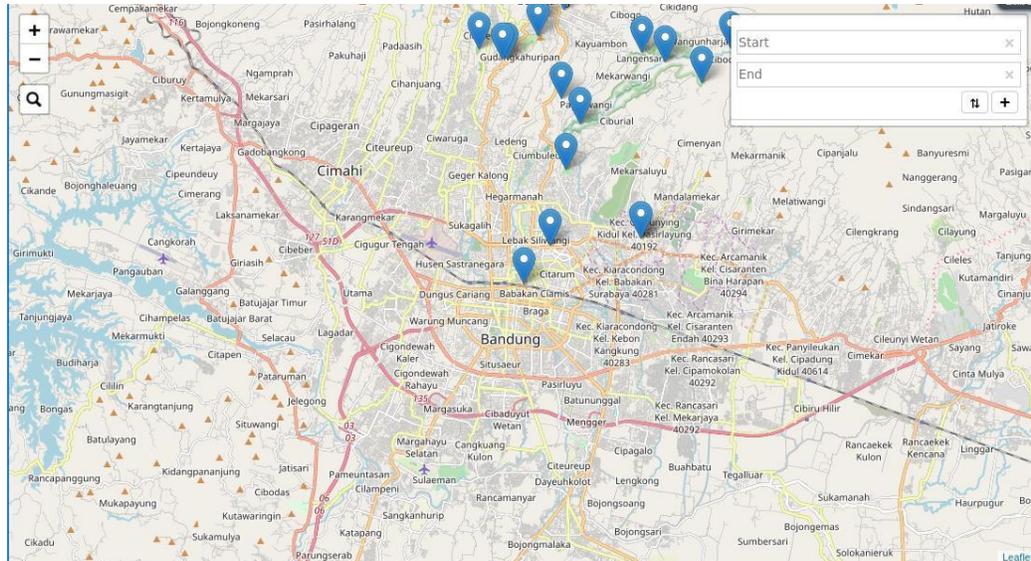
| <u>Place Name</u> | <u>Latitude</u> | <u>Longitude</u> |
|-----------------------|-----------------|------------------|
| Farm house bandung | -6.8329716, | 107.6035328 |
| Kebuh teh sukawana | -6.7769071, | 107.5817071 |
| Curug tilu leuwi opat | -6.7905692, | 107.5804448 |
| Tangkuban perahu | -6.7596375, | 107.6010045 |
| Kawah putih | -7.166154, | 107.4010426 |
| Situ patenggang | -7.1672928, | 107.3532848 |
| Curug cimahi | -6.799262, | 107.575337 |

| | | |
|----------------------------|-------------|-------------|
| Taman huan rata Ir.Djuanda | -6.8565791, | 107.6301794 |
| Curug cisanti | -7.2088735, | 107.6561095 |

The picture above is a page that will be accessed by users to search for tourist attractions with the shortest route to be passed.

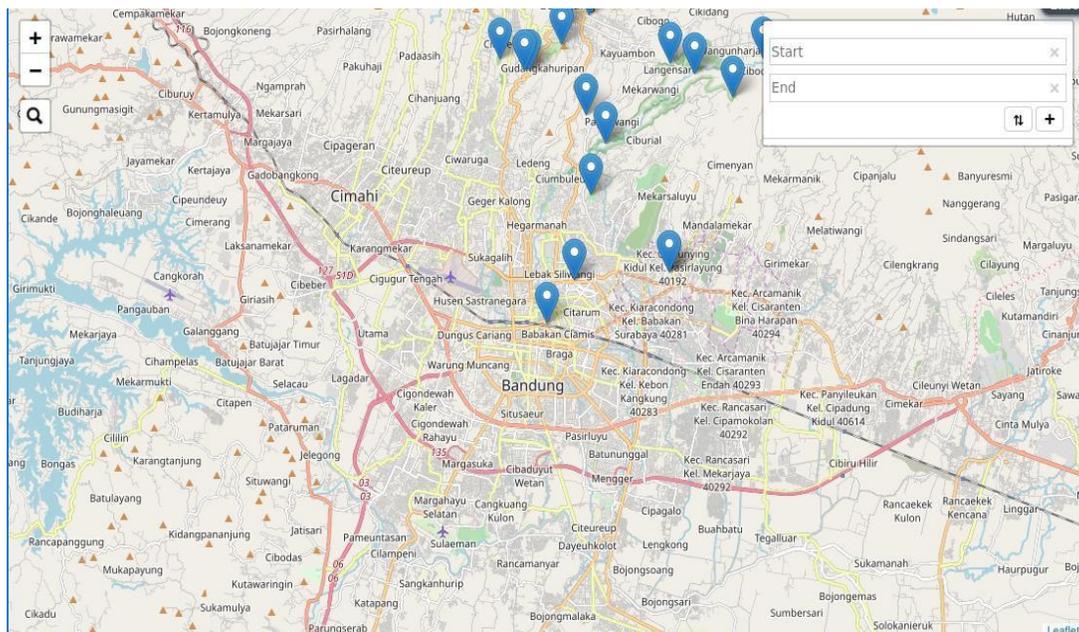
1.6.2. Object Attraction Data

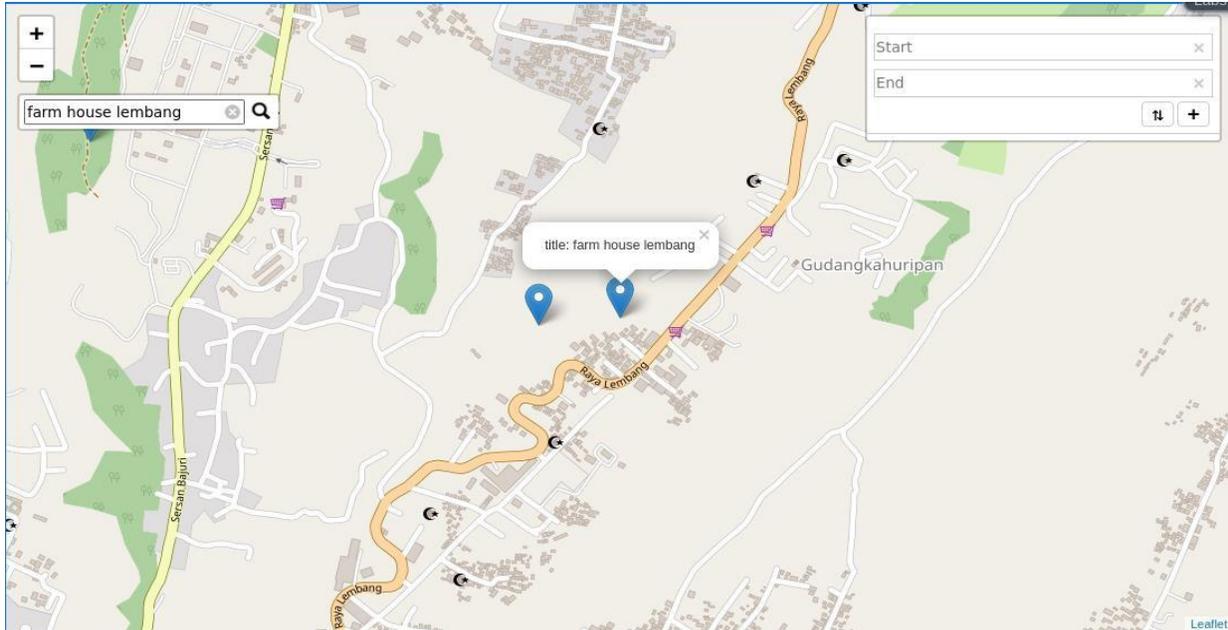
1.7. Software Implementation



1.8. Documentation on How to Use the Software

To use the program, it's simple enough to just access and then just look for tourist attractions in the city of Bandung or on the map that has been provided then type in the start and end





Type the button that has the search icon

Then the program will show the floor plan on the map provided

1.9. Mitra Kerjasama

For this application we undergo cooperation with the Bandung City Transportation Agency. The function of the Department of Transportation of the City of Bandung consists of four main bases which are explained as follows:

1. Formulation of technical policies in the field of transportation
2. Implementation of part of government affairs and public services in the field of transportation.
3. Fostering and implementing transportation operational tasks which include parking, transportation, terminal, service and operational traffic.
4. Implementation of administrative technical services.

The reason we want to collaborate with Dishub bandung is because in Bandung city makes a tourist bus that has 5 bus routes with 71 bus stops. Their bus route covers an area from the North (bandung city) with a stop at the Dago Tea House U-turn to the south (bandung city), so in our opinion it is very good to use the goWis application because in this application we use the Dijkstra algorithm to complete the problem of finding the shortest route and tourists will get to the tourist sites quickly and very effectively.

Conclusion

In our opinion this is very good if applied with goWis because in this application we use the Dijkstra algorithm to solve the problem of finding the shortest route and tourists will get to the tourist sites quickly and very effectively.

Reference

1. https://www.academia.edu/35442124/PENCARIAN_RUTE_TERPENDEK_ANGKUTAN_UMUM_MENGGUNAKAN_ALGORITMA_DIJKSTRA_BERBASIS_WEBGIS_STUDI_KASUS_DINAS_PERHUBUNGAN_KOTA_BATAM
2. <http://jurnalti.polinema.ac.id/index.php/SIAP/article/view/239>
3. <http://j-ptiik.ub.ac.id/index.php/j-ptiik/article/download/647/254/>
4. https://www.researchgate.net/publication/320184002_PENERAPAN_METODE_DIJKSTRA_PADA_SISTEM_INFORMASI_GEOGRAFIS_SEKOLAH_LUAR_BIASA_DI_KOTA_MEDAN_BERBASIS_ONLINE
5. <https://www.neliti.com/publications/67157/implementasi-algoritma-dijkstra-dalam-penentuan-jalur-terpendek-di-yogyakarta-me>