ABSTRACT

As one of the big cities in Indonesia, Bandung has grown into a city with a lot of roads and people with high mobility that are constantly growing and changing. These changes has a direct influence on how people move inside Bandung to do their daily activities. Moreover, it will cause the increase of traffic jam, lateness, etc. Therefore it is required to build a system that could help overcome these problems. On of the solution is a Geographic Information to Determine the Shortest Path Using Dijkstra Algorithm.

The system is made by using spatial and attribute datas which are related to buildings and roads in Bandung. Those datas are processed so that the system could visualize the shortest path to a destination determined by the user. This system can also be used to update building datas and provide information about a particular building or street. The system is also user-friendly so people that need such information could use this application easily.

The system is designed using MapInfo Professional 8.0 which is used to process spatial and attribute datas. The user interface and visualization for this application is developed under Visual Basic 6.0. To use this application, the user only needs to input the source and destination nodes and then click the *Find* button. The system will process the inputs and calculate the shortest path between the two nodes using Dijkstra Algorithm. The shortest path will then be visualized by highliting it with blue ink on the map. The application supports adding new nodes, which when the administrator does so, the system creates a new Adjacency Matrix which will be used by the Dijkstra Algorithm to compute shortest path. Note that the Adjacency Matrix is only loaded at the start up of the application. When user enters a new input to find the shortest path, it would only execute the Dijkstra Algorithm based on the Adjacency Matrix created before. Afterwards the visualization of the shortest path is shown. The map is created as attractive as possible with different colors for buildings and roads. Map navigation could also be done easily with the ability to zoom in, zoom out, view the object information, etc. Furthermore data security is maintained by the administrator role which only he/she can access and modify crucial datas.

Finally, this application has a lot of benefits. First, this application could make people easier to find the shortest path to public places. Secondly, the map which is equipped with street names and building information is very useful for users, primarily those who’s visiting Bandung for the first time. Next, this application is flexible in the means of adding new datas. Fourth, the user interface on this application makes GIS much more easier to use. Last, this application can be used by decision makers, in this case Bandung City Council, to arrange roads and buildings in Bandung.

Keywords : Geographic Information System, Shortest Path, Dijkstra Method