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Traveling Tourist Problem for selected popular destinations in Sri Lanka (TTPSL)

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Sri Lanka, known as the pearl of the Indian Ocean, is a vibrant country with delightful surroundings rich with lush greenery, natural gardens, fascinating waterfalls, wild animals and historical places. Thus, it is a major tourist attraction today turning tourism into a major foreign exchange earner.

“The fastest way” or the “shortest path” is the most important aspect when a person is traveling from one place to another. It depends on distance, time and cost. Several methods can be used to find the shortest path from one place to another. Geographic Information System (GIS) and web based systems like Google maps are some examples. So far, there is no system in Sri Lanka that allows a user to find the shortest path based on “distances” providing the total traveling distance needed, using the method of “shortest path”. Although the shortest path between two points is to be a straight line, when applying this into real world problems such as the above, obviously it is not possible to find a straight line to represent the shortest path between two places due to limitations in the existing road network. Therefore the shortest path may be a combination of paths from the origin to the destination.

In this study, the routing problem is formulated as a single objective mathematical programming problem which attempts to minimize the distance. Here we apply two phases of the shortest path algorithms in graph theory. In the first phase, obtain the shortest path between the selected cities, based on Dijkstra’s algorithm. In phase II, “Breadth First Search” was used to obtain the shortest path between two chosen cities. Finally, the combination of the results of phase I and phase II is used as the solution. In this research a computer software package has been developed by using C# programming language and then the Traveling Tourist Problem (TTP) has been solved based on road distances by considering forty two cities in Sri Lanka.