
Application of Dijkstra's algorithm to find the shortest paths between selected travel destinations in Colombo

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This study was a case study that was done as a project under a course unit in the BSc degree program. In this case study, Dijkstra's algorithm was used to determine the shortest distances and shortest paths between selected places around Moratuwa, Dehiwala-Mount Lavinia, Boralesgamuwa, and Sri Jayewardenepura Kotte regions. The places have been chosen considering their significance as travel destinations. Therefore, the main purpose of this study was to provide some support for people who search for the shortest path between these selected places and the places near those places. As the main method of this study, Dijkstra's algorithm has been used with some assumptions on selecting roads and creating the graph. To apply the algorithm, a directed weighted graph was created using the data on the distances and locations of the places according to Google Maps. The edge weights represent the distances between places, while the vertices represent places. Using "Online Dijkstra's Solver in Javascript," this study has found the shortest distances and the shortest paths between selected thirty places within the above-mentioned regions, considering one place as a source vertex at a time.

Keywords: Graph theory, Dijkstra's algorithm, Mixed graph, Directed weighted graph, Google map

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