Goldberg-Radzik Algorithm

Author:

Vladimír Sák, xsakvl00@stud.fit.vutbr.cz

Description:

This presentation describes Goldberg-Radzik algorithm, an algorithm for finding the shortest path in a graph.

Abstract:

Graph algorithms are algorithms working with a graph. Graph is defined as a pair $G = (V, E)$, where V is a finite set of vertices and E is a finite set of edges, connecting two vertices. Graph algorithms are used to solve problems such as enumeration problems, graph coloring problems, sub-graph finding problems and route problems. Route problems can be further divided into the Hamiltonian path problem, the minimum spanning tree problem, the route inspection problem, the Seven Bridges of Königsberg, the Steiner tree problem, the three utilities problem, the travelling salesman problem, and the shortest path problem.

The shortest path problem is a problem of finding the path between two vertices in a graph, whose sum of weights of corresponding edges is minimized. When the graph does not contain edges with weights, the shortest path is the path with the lowest number of edges. There are many algorithms for finding the shortest path in a graph, either directed, or undirected.

This presentation describes one of the algorithms for finding the shortest path in a graph, the Goldberg-Radzik algorithm. It is an algorithm based on the Bellman-Ford algorithm. The algorithm is described in detail and the advantages and disadvantages of the algorithm are also highlighted and discussed.