

ECSE210L: Design and Analysis of Algorithms

Lab 11 (Week 15: April 12-17 , 2020)

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Consider the problem of shortest path between two vertices, source (S) and destination T , in a given weighted graph $G = (V, E)$. You all know that one can find a shortest path between S and T in graph G in $O(|E| \log |V|)$ -time by Dijkstra's algorithm.

In this lab you are expected to implement the Dijkstra's algorithm and test your algorithm for the following graph with source $S = 0$ and destination $T = 4$.

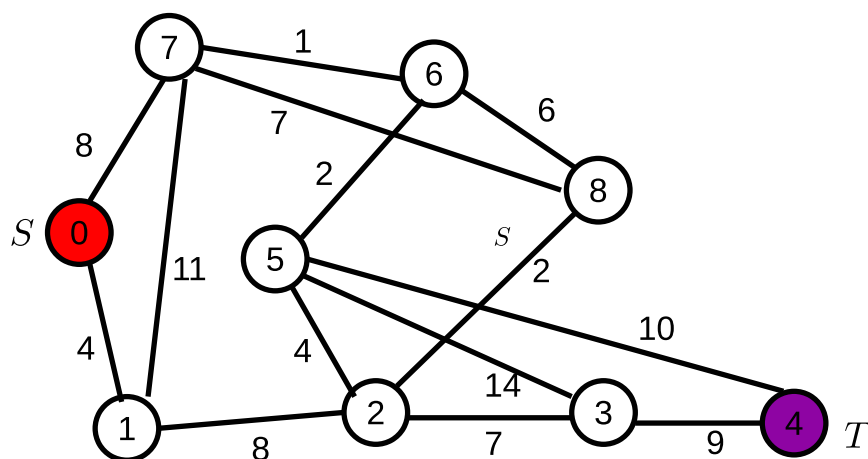


Figura 1: An instance of graph G . The numbers against each eadge denote the cost / weight of the edge.

Optional: Further, look into a road network data set at <http://users.diag.uniroma1.it/challenge9/data/tiger/>. The data set contains 50 states road networks. Consider any two states data. Try to understand the format of the data, the weight of an denote the time to travel from one vertex to another (directed edge). Finally, select any two vertices as source and destinations and compute a shortest path between the source and destination for the following cases:

1. Both source and destination are in the same state
2. Source and destination are in the different states.