Lecture Introduction to Network Science
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Assignment 3 – Shortest Paths

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Question 1 – Dijkstra example

Apply Dijkstra's algorithm to the network visualized in Figure 1 to obtain shortest path distances from Node 1 to every other node.

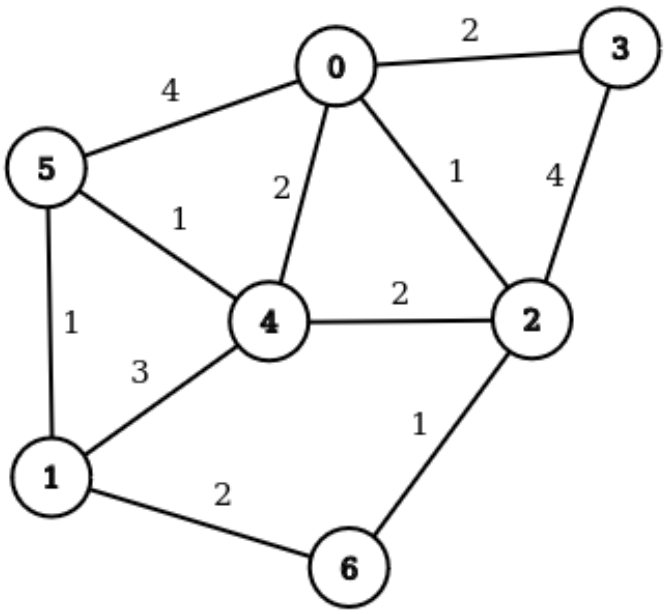

Figure 1: Example network.

Question 2 – Dijkstra implementation

Implement Dijkstra's algorithm by using the "improved" implementation approach as described on Slide 27 in the lecture. That is, your implementation should use a priority queue for accessing the next active node with lowest tentative distance, but should not rely on removing nodes from this queue. Additionally, store for each node its predecessor in a possible shortest path, in order to reconstruct actual shortest paths.