SSSP problem

SSSP $\widehat{=}$ Single-Source-Shortest-Path

Find the shortest way from a source
to all other possible destinations

Dijkstra's algorithm

1. Divide graph into visited and unvisited vertices.
2. Extend visited area by picking vertex with smallest distance, calculate distances to all neighbors and update if possible.
3. Mark vertex as visited and repeat until graph is fully visited

Running time

$\mathcal{O}((|V| + |E|)\log(|V|))$

Limitations

Cannot be used with negative weights