# Exploring Dijkstra's Algorithm Alternatives

A Stanford student assumes they found a shortcut to solving conceptual questions that require Dijkstra's algorithm! Instead of following Dijkstra's priority queue, they sum the weights of all paths from a start vertex to an end vertex. They then choose the path with the smallest summed weight assuming it matches Dijkstra's SPT. Is the shortest path tree chosen through this method always the same path found by Dijkstra's algorithm?.

Solution:

We prove the Stanford student wrong by providing a counterexample.
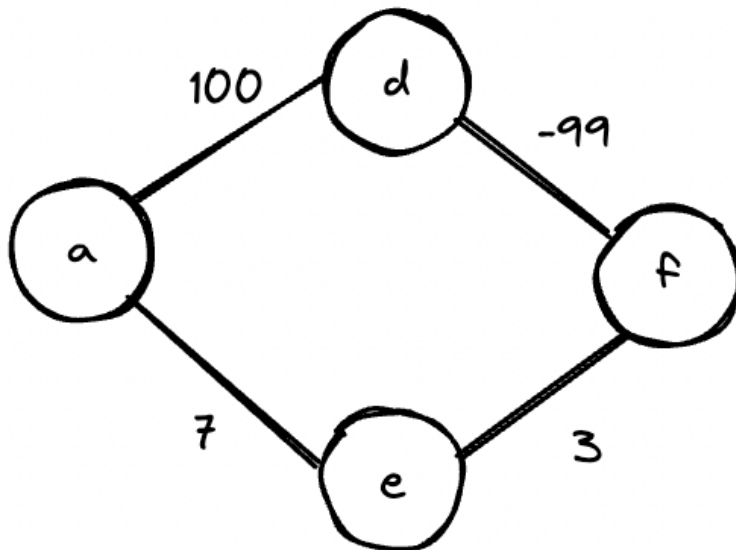
Dijkstra's:
- Nodes visited: aef
- SPT: aef
- Total weight: 10
Summing all paths:
- Nodes visited: adef
- SPT: adf
- Total weight: 1