

## LAB 6 Explanation

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Lab section: 14

#Task 1: This problem is shortest path from a node to all other node problem and can be solved directly with new dijkstra algorithm. That's exactly what I did. In the output infinity or unreachable nodes distances are replaced by -1.

#Task 2: In this problem, I ran dijkstra <sup>from two sources</sup> two times and stored the resulting dictionary both times. Then I created another array called "ord". This array takes the d key and the largest distance to it from the two nodes that are our two starting nodes. Then we sort the list based on the distances. So then the first tuple of the array is the tuple consisting the least time and the node that achieves it.

#Task 3 : In this problem the Dijkstra algorithm needs some modification. Dangers in here ~~do~~ do not get added up along the path, instead we choose the least dangerous path everytime and we put the highest amount of danger we have already gone through in a particular path as danger of the node we work on. This way we get a dictionary of each node's maximum danger level through its least dangerous path. ~~As we from node 1.~~  
As we only require ~~that info as the output.~~  
the max danger faced to get to the  $N$ th node, we share that as the output.