

Sumanth.kv

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from

from collections import defaultdict

class Graph():

def __init__(self):

self.edges = defaultdict(list)

self.weights = {}

def addEdge(self, from_node, to_node,
weight):

self.edges[from_node].append(to_node)

self.edges[to_node].append(from_node)

self.weights[(from_node, to_node)] =
weight

self.weights[(to_node, from_node)] = weight

def dijkstra(graph, initial, end):

shortest_path = {initial: (None, 0)}

current_node = initial

visited = set()

while current_node != end:

visited.add(current_node)

destinations = graph.edges[current_node]

weight_to_current_node =

shortest_path[current_node][1]

for next_node in destinations:

weight = graph.weights

[(current_node, next_node)] +

weight_to_current_node

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if nextnode not in shortest_path:
    shortest_paths[next_node] = (current_node,
                                  weight)
else:
    current_shortest_weight = shortest_paths[next_node][1]
    if current_shortest_weight > weight:
        shortest_paths[next_node] = (current_node,
                                       weight)

next_destination = {node: shortest_paths[node]} for
node in shortest_paths if node not in visited

if not next_destination:
    return "Route not possible"
current_node = min(next_destinations, key=
                    lambda k: next_destinations[k][1])

path = []
while current_node is not None:
    path.append(current_node)
    next_node = shortest_paths[current_node][0]
    current_node = next_node

path = path[::-1]
print("Shortest weight", current_shortest_weight)
print(path)

```