Programming Challenge: Implementing Dijkstra's

In this lesson, you'll be implementing Dijkstra's Shortest Path Algorithm.

WE'LL COVER THE FOLLOWING ^

- Problem Statement
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Problem Statement

Given an adjacency matrix in a 2D array, solve the **Single Source Shortest Path** algorithm, essentially by implementing the Dijkstra's algorithm discussed in the previous lesson. We've written some skeleton code for the function.

- 1. The value of the weight of the link is graph[src][dst].
- 2. The graph is undirected so graph[src][dst]==graph[dst][src].
- 3. A link between the src and dst exists if -1<graph[src][dst]<16</pre>.
- 4. If graph[src][dst]>=16 the weight of the link is infinite and it does not function.

Input

1. An adjacency matrix, i.e., a 2D array, a source node, and a destination node.

Output

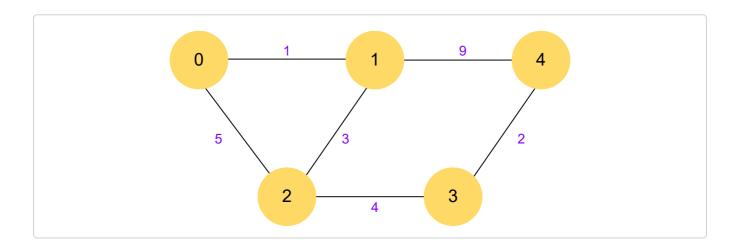
The **shortest path** between the source and destination in the form of an array

of integers where each integer represents a node and the **total weight** of the path.

Sample Input

```
1. graph = [
    [0,1,5,-1,-1],
    [1,0,3,-1,9],
    [5,3,0,4,-1],
    [-1,-1,4,0,2],
    [-1,9,-1,2,0]
]
```

This adjacency matrix represents the following graph:



2. A source and destination:

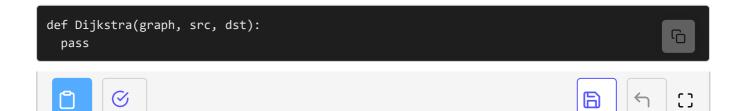
```
src = 0
dst = 3
```

Sample Output

```
shortest_path = [0,1,2,3]
cost = 8
```

Coding Exercise

Try it yourself below!



In the next lesson, we'll look at a solution to this problem.