Programming Challenge: Implementing Dijkstra's

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

WE'LL COVER THE FOLLOWING

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`.
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.

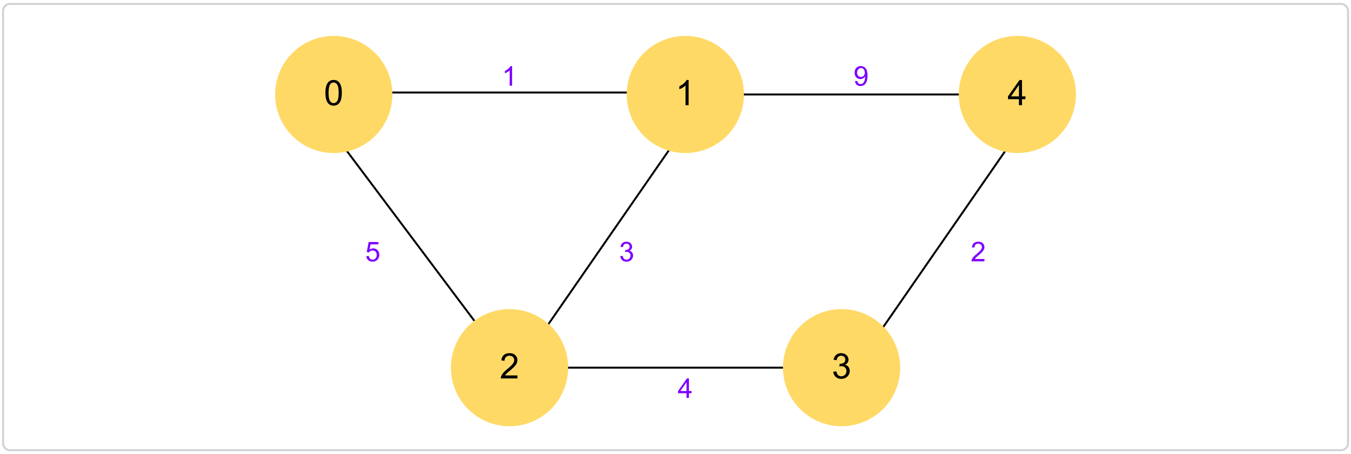
Output

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!

```
def Dijkstra(graph, src, dst):
  pass
```

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