**4.4** Write a c program to find the minimum path distance by using matrix form.

**AIM**

To write a program that finds the **minimum path distance** using the distance matrix of a **complete weighted graph** (typically for solving TSP).

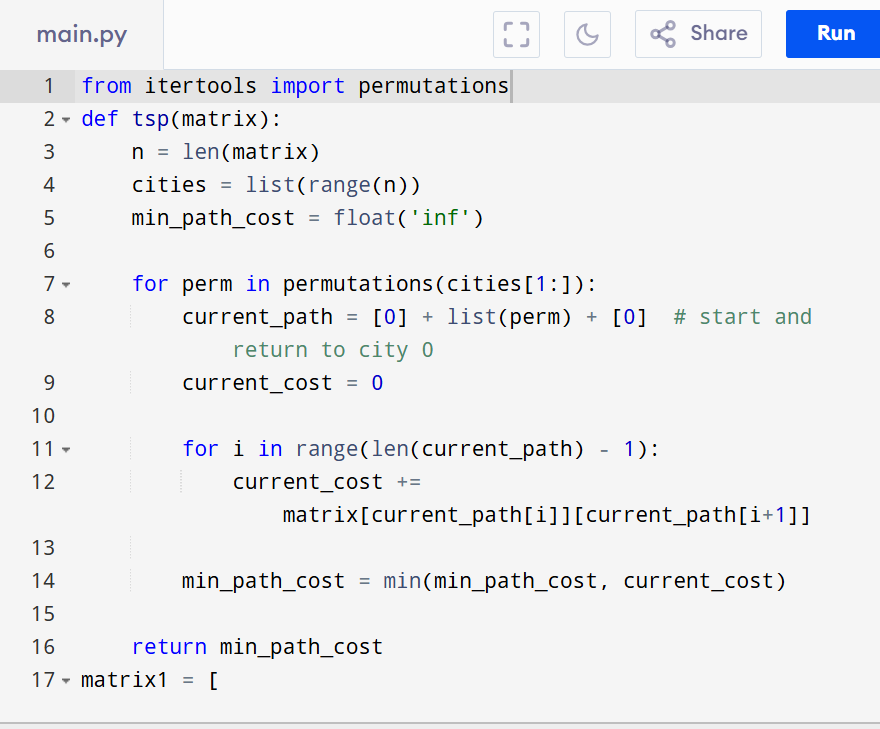
**ALGORITHM**

1. **Input the distance matrix** representing the distances between cities.
2. **Generate all possible paths** that visit every city exactly once and return to the starting city.

For each possible path:Add the distances from one city to the next in the path.

1. Include the return path to the starting city.
2. Keep track of the **minimum total distance** found among all paths.
3. Return or print the shortest path cost.

**PROGRAM**



Input:

matrix1 = [

[0, 10, 15, 20],

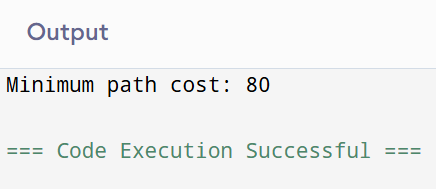
[10, 0, 35, 25],

[15, 35, 0, 30],

[20, 25, 30, 0]

]

Output:



**RESULT:**

Thus the program to write a program that finds the **minimum path distance** is successfully executed and the output is verified.

**PERFORMANCE ANALYSIS:**

Time Complexity:

* Best Case: O(n!)

Space Complexity:

* O(1)