**EXPERIMENT 8**

Write the python to implement Travelling Salesman Problem.

**AIM:**

The aim is implement travelling salesman problem using python program.

**PROGRAM:**

from itertools import permutations

def tsp\_brute\_force(graph):

cities = list(range(1, len(graph)))

permutations\_cities = permutations(cities)

min\_path = None

min\_distance = float('inf')

for perm in permutations\_cities:

distance = 0

last\_city = 0

for city in perm:

distance += graph[last\_city][city]

last\_city = city

distance += graph[last\_city][0]

if distance < min\_distance:

min\_distance = distance

min\_path = (0,) + perm

return min\_path, min\_distance

dist = [[0, 10, 15, 20], [10, 0, 35, 25], [15, 35, 0, 30], [20, 25, 30, 0]]

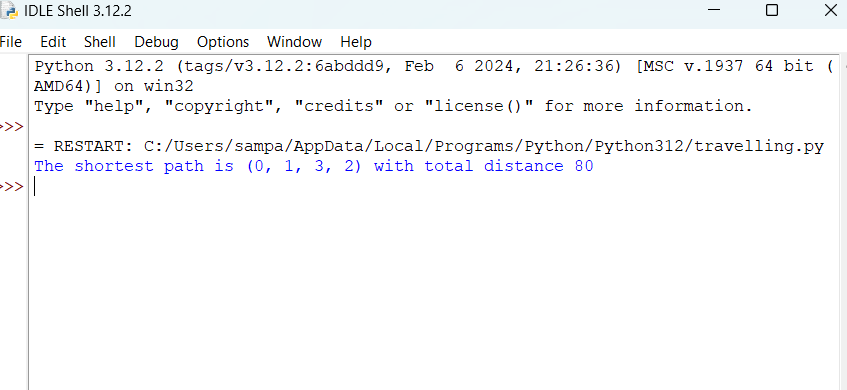
path, distance = tsp\_brute\_force(dist)

print(f"The shortest path is {path} with total distance {distance}")

**INPUT:**

cities = ['A', 'B', 'C', 'D']

**OUTPUT:**

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**RESULT:**

This program executed successfully.