Task : 2

Implementation of Hill climbing algorithm for Heuristic search approach using following constraints in python

Aim : To implement Hill climbing algorithm for Heuristic search approach for travelling salesman problem using python.

Algorithm:
1. Start
2. Define TSP with (graph, s) and assign value for vertex
3. Store all vertex apart from source vertex
4. Store minimum weight hamiltonian cycle and assign permutation (vertex) -
5. Store current path weight (cost) and compute current path weight
6. Update mininimum and matrix representation of the graph values and print it.
7. Stop.

Program:

```
from sys import maxsize
from itertools import permutations

V = 4
def travellingSalesmanProblem (graph, s):
    vertex = []
    for i in range (v):
        if i != s :
            vertex - append (i)
    min -path = maxsize.
    next_ permutation = permutations (vertex).
    for i in next- permutation:
        current_path weigh = 0.
```

Output:

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```python
    k = s
for j in i:
    current-path weight + = graph[k][j]
    k=[j
    current-path weight + = graph[k][s]
    minpath = min (min-path, current-pathweigh)
    return min-path
if --name == "--main--":
    graph = [[0, 10, 15, 20], [10, 0, 35, 25],
             [15, 35, 0, 30], [20, 25, 30, 0]]
    s= 0
    print (travellingSalesman Problem (graph, s))
```

Result: Thus the implementation of Hill climbing algorithm for Heuristic search approach for travelling Salesman problem using python was successfully executed and output was verified.