Assignment – 4

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CODE –

import sys

# Function to perform Floyd's Algorithm (also called Floyd-Warshall Algorithm)

# This algorithm finds the shortest paths between all pairs of nodes in a graph.

def floyds\_algorithm(a):

# k is the intermediate node, i is the source, and j is the destination.

for k in range(0, 4): # Iterating over intermediate nodes

for i in range(0, 4): # Iterating over source nodes

for j in range(0, 4): # Iterating over destination nodes

# Update the shortest path between i and j using node k as an intermediate point.

a[i][j] = min(a[i][j], a[i][k] + a[k][j])

# After updating the matrix with shortest paths, print the result

for i in range(0, 4):

print("\n")

for j in range(0, 4):

print(a[i][j], end="\t")

# Define the adjacency matrix representing the graph.

a = [

[0, 3, sys.maxsize, 7], # Distances from node 0 to other nodes

[8, 0, 2, sys.maxsize], # Distances from node 1 to other nodes

[5, sys.maxsize, 0, 1], # Distances from node 2 to other nodes

[2, sys.maxsize, sys.maxsize, 0] # Distances from node 3 to other nodes

]

floyds\_algorithm(a)

OUTPUT –

