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Monday

Lab 8

Writeup

Arjun A.S
1BM18CS019

# Dijkstra's Algorithm in Networking

```
class Network:                    # Set of nodes

    def __init__(self, nodes, graph):
          self.V= nodes
          self.graph = graph
    # function to print the network
    def printTable (self, dist, src, path):
        print ("Shortest path Table of {}".format (chr(ord('A') + src)))

        for node in range(self.V):
            print (" {0}\t{1}\t{2}".format (chr(ord('A')+ node), dist[node],
                                         path[node]))

    def minDistance (self, dist, sptSet):
            min = MAXSIZE
            for v in range (self.V):
                if dist[v] < min and sptSet [v] == False :
                        min = dist[v]
                        min-index = v

         return min_index

    def dijkstra (self, src):
          dist = [MAXSIZE] * self.V

          dist [src] = 0
          sptSet = [False] * self.V

          path = {}
```

Arjun AS

```
for _in range(self.V):
        path[_]=[]

for coun    in range(self.V):

        u= self.minDistance(dist, sptSet]
        sptSet[u] = True

        for v in range(self.V):
            if self.graph[u][v]>0 and sptSet[v]==False
                    and dist[v]>dist[u]+self.graph[u][v]:
                dist[v]= dist [u] + self.graph [u][v]
                if u==src
                    path[v].append(chr(Ord('A')+v))
                else:
                    path[v].append(chr(Ord('A')+u))
                    path[V].append(chr(Ord('A')+v))
self.printTable(dist, src, path)


# MAIN FUNCTION

graph = [[0,1,1,0,0],
          [1,0,0,1,1],
          [1,0,0,1,0],
          [0,1,1,0,1],
          [0,1,0,1,0].
        ]

g= Network(5, graph)
for _ in range(g.V):
        g.dijkstra(_)
```