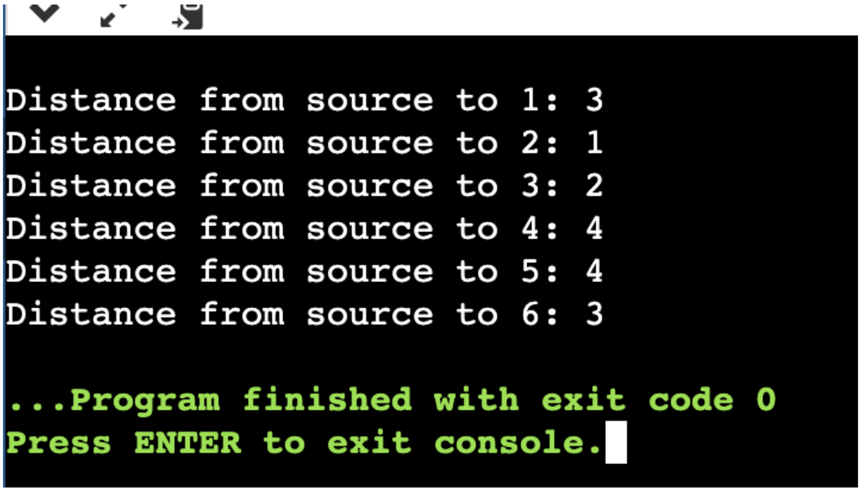
PALAK SHARMA
73

```
// Dijkstra's Algorithm in C

#include <stdio.h>
#define INFINITY 9999
#define MAX 10

void Dijkstra(int Graph[MAX][MAX], int n, int start);

void Dijkstra(int Graph[MAX][MAX], int n, int start) {
  int cost[MAX][MAX], distance[MAX], pred[MAX];
  int visited[MAX], count, mindistance, nextnode, i, j;

  // Creating cost matrix
  for (i = 0; i < n; i++)
    for (j = 0; j < n; j++)
      if (Graph[i][j] == 0)
        cost[i][j] = INFINITY;
      else
        cost[i][j] = Graph[i][j];

  for (i = 0; i < n; i++) {
    distance[i] = cost[start][i];
    pred[i] = start;
    visited[i] = 0;
  }

  distance[start] = 0;
  visited[start] = 1;
  count = 1;

  while (count < n - 1) {
    mindistance = INFINITY;

    for (i = 0; i < n; i++)
      if (distance[i] < mindistance && !visited[i]) {
        mindistance = distance[i];
        nextnode = i;
      }

    visited[nextnode] = 1;
    for (i = 0; i < n; i++)
      if (!visited[i])
        if (mindistance + cost[nextnode][i] < distance[i]) {
          distance[i] = mindistance + cost[nextnode][i];
          pred[i] = nextnode;
        }
    count++;
  }

  // Printing the distance
  for (i = 0; i < n; i++)
    if (i != start) {
      printf("\nDistance from source to %d: %d", i, distance[i]);
    }
}
int main() {
  int Graph[MAX][MAX], i, j, n, u;
```

```
n = 7;

Graph[0][0] = 0;
Graph[0][1] = 0;
Graph[0][2] = 1;
Graph[0][3] = 2;
Graph[0][4] = 0;
Graph[0][5] = 0;
Graph[0][6] = 0;

Graph[1][0] = 0;
Graph[1][1] = 0;
Graph[1][2] = 2;
Graph[1][3] = 0;
Graph[1][4] = 0;
Graph[1][5] = 3;
Graph[1][6] = 0;

Graph[2][0] = 1;
Graph[2][1] = 2;
Graph[2][2] = 0;
Graph[2][3] = 1;
Graph[2][4] = 3;
Graph[2][5] = 0;
Graph[2][6] = 0;

Graph[3][0] = 2;
Graph[3][1] = 0;
Graph[3][2] = 1;
Graph[3][3] = 0;
Graph[3][4] = 0;
Graph[3][5] = 0;
Graph[3][6] = 1;

Graph[4][0] = 0;
Graph[4][1] = 0;
Graph[4][2] = 3;
Graph[4][3] = 0;
Graph[4][4] = 0;
Graph[4][5] = 2;
Graph[4][6] = 0;

Graph[5][0] = 0;
Graph[5][1] = 3;
Graph[5][2] = 0;
Graph[5][3] = 0;
Graph[5][4] = 2;
Graph[5][5] = 0;
Graph[5][6] = 1;

Graph[6][0] = 0;
Graph[6][1] = 0;
Graph[6][2] = 0;
Graph[6][3] = 1;
Graph[6][4] = 0;
Graph[6][5] = 1;
Graph[6][6] = 0;
```

```
  u = 0;
                                        Dijkstra(Graph,
n, u);

  return 0;
}
```



```
Distance from source to 1: 3
Distance from source to 2: 1
Distance from source to 3: 2
Distance from source to 4: 4
Distance from source to 5: 4
Distance from source to 6: 3

...Program finished with exit code 0
Press ENTER to exit console.
```