EXPERIMENT 8

CODE:

```
#include <limits.h>
#include <stdbool.h>
#include <stdio.h>
#define V 9
int minDistance(int dist[], bool sptSet[])
{
	int min = INT_MAX, min_index;

	for (int v = 0; v < V; v++)
		if (sptSet[v] == false && dist[v] <= min)
			min = dist[v], min_index = v;

	return min_index;
}
void printSolution(int dist[])
{
	printf("Vertex \t\t Distance from Source\n");
	for (int i = 0; i < V; i++)
		printf("%d \t\t\t\t %d\n", i, dist[i]);
}
void dijkstra(int graph[V][V], int src)
{
```

```
        int dist[V];
        bool sptSet[V];
        for (int i = 0; i < V; i++)
         dist[i] = INT_MAX, sptSet[i] = false;
        dist[src] = 0;
        for (int count = 0; count < V - 1; count++) {
                int u = minDistance(dist, sptSet);
                sptSet[u] = true;
                for (int v = 0; v < V; v++)
                        if (!sptSet[v] && graph[u][v]
                                && dist[u] != INT_MAX
                                && dist[u] + graph[u][v] < dist[v])
                                dist[v] = dist[u] + graph[u][v];
        }

                printSolution(dist);
}

int main()
{       int graph[V][V] = { { 0, 4, 0, 0, 0, 0, 0, 8, 0 },
                                                { 4, 0, 8, 0, 0, 0, 0, 11, 0 },
                                                { 0, 8, 0, 7, 0, 4, 0, 0, 2 },
                                                { 0, 0, 7, 0, 9, 14, 0, 0, 0 },
                                                { 0, 0, 0, 9, 0, 10, 0, 0, 0 },
                                                { 0, 0, 4, 14, 10, 0, 2, 0, 0 },
```

```
                                        { 0, 0, 0, 0, 0, 2, 0, 1, 6 },
                                        { 8, 11, 0, 0, 0, 0, 1, 0, 7 },
                                        { 0, 0, 2, 0, 0, 0, 6, 7, 0 } };
    dijkstra(graph, 0);

    return 0;
}
```

OUTPUT:

```
Vertex          Distance from Source
0                   0
1                   4
2                   12
3                   19
4                   21
5                   11
6                   9
7                   8
8                   14


=== Code Execution Successful ===
```