

```
#include <stdio.h>
#include <stdlib.h>

#define INF 1000000
#define V 6

typedef struct {
    int vertex;
    int weight;
} Edge;

typedef struct {
    int vertex;
    int distance;
} Node;

// Function to print the shortest path
void printPath(int path[], int start, int end) {
    printf("Shortest path from %d to %d: ", start, end);
    for (int i = 0; i < V; i++) {
        printf("%d ", path[i]);
    }
    printf("\n");
}

// Function to implement Dijkstra's algorithm
void dijkstra(int graph[V][V], int start) {
    int distance[V];
    int path[V];
    int visited[V];

    // Initialize distance and path arrays
    for (int i = 0; i < V; i++) {
        distance[i] = INF;
        path[i] = -1;
        visited[i] = 0;
    }
}
```

```
distance[start] = 0;
```

```
// Loop until all nodes are visited
```

```
for (int i = 0; i < V; i++) {
```

```
    int min = INF;
```

```
    int min_index = -1;
```

```
    for (int j = 0; j < V; j++) {
```

```
        if (!visited[j] && distance[j] < min) {
```

```
            min = distance[j];
```

```
            min_index = j;
```

```
        }
```

```
    }
```

```
    visited[min_index] = 1;
```

```
    for (int j = 0; j < V; j++) {
```

```
        if (!visited[j] && graph[min_index][j] != 0) {
```

```
            if (distance[min_index] + graph[min_index][j] < distance[j]) {
```

```
                distance[j] = distance[min_index] + graph[min_index][j];
```

```
                path[j] = min_index;
```

```
            }
```

```
        }
```

```
    }
```

```
}
```

```
printPath(path, start, V - 1);
```

```
}
```

```
int main() {
```

```
    int graph[V][V] = {
```

```
        {0, 4, 0, 0, 0, 0},
```

```
        {4, 0, 8, 0, 0, 0},
```

```
        {0, 8, 0, 7, 0, 4},
```

```
        {0, 0, 7, 0, 9, 14},
```

```
        {0, 0, 0, 9, 0, 10},
```

```
        {0, 0, 4, 14, 10, 0}
```

```
    };
```

```
dijkstra(graph, 0);
```

```
return 0;
```

```
}
```