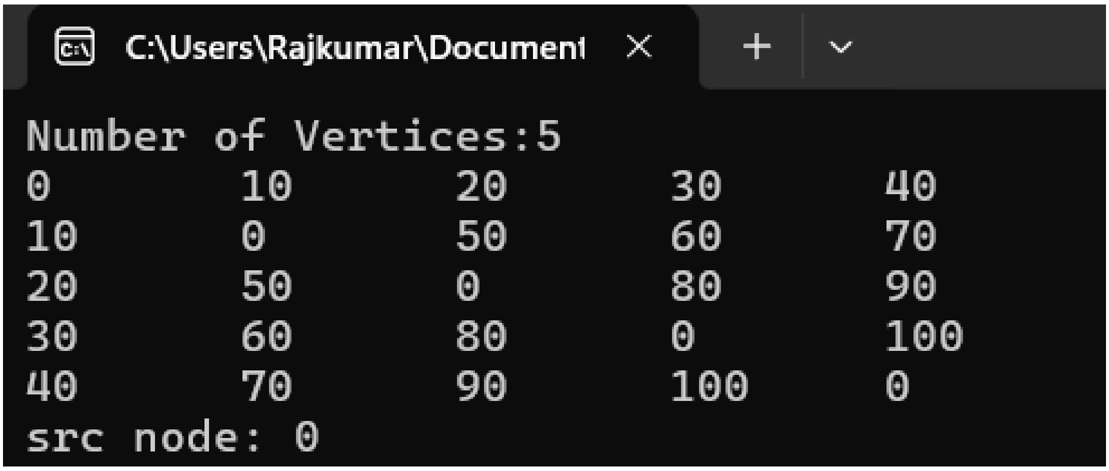
2. On Leetcode find a problem that can be solved with Dijkstra's algorithm and solve it .

```
#include<iostream>
using namespace std;

#define INF 999

//Dijkstra's Algorithm

int V, src, cost[100][100];
int dist[100];
bool visited[100] = {0};
int parent[100] ;

void init(){
   for(int i=0;i<V;i++){
      parent[i]=i;
      dist[i]=INF;
   }
   dist[src]=0;
}
int getNearest(){
   int minvalue = INF;
   int minnode = 0;
   for(int i=0;i<V;i++){
      if( !visited[i] && dist[i]< minvalue){
         minvalue = dist[i];
         minnode=i;
      }
   }
   return  minnode;
}
void dijkstra(){
   for(int i=0; i<V-1 ;i++){
      int nearest = getNearest();
      visited[nearest]=true;

      for(int adj=0;adj<V;adj++){
         if(cost[nearest][adj] != INF &&
         dist[adj]>dist[nearest]+cost[nearest][adj]){
            dist[adj]= dist[nearest]+ cost[nearest][adj];
            parent[adj] = nearest ;
         }
      }
   }
}

void display(){
   cout<<"Node:\t\t\tcost:\t\t\tPath";
   for(int i=0;i<V ;i++){
      cout<<i<<"\t\t\t"<<dist[i]<<"\t\t\t"<<" ";
      cout<<i<<" ";
```

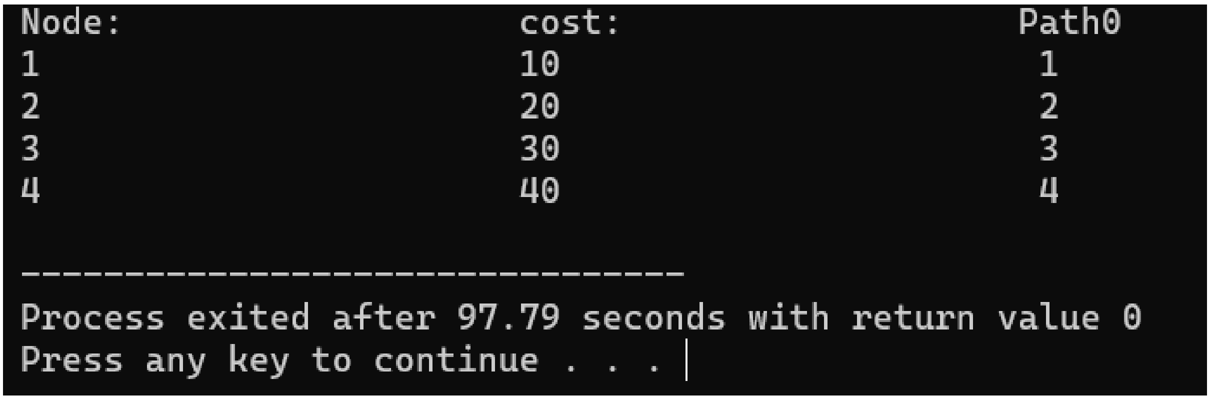
```
        int parnode=parent[i];
        while(parnode!=src){
            cout<<" <-- "<< parnode<< " ";
            parnode = parent[parnode];
        }
        cout<<endl;
    }
}

int main(void){
    cout<<"Number of Vertices:" ;
 cin>>V;
 for(int i=0;i<V;i++){
    for(int j=0;j<V;j++){
        cin>>cost[i][j];
    }
 }
 cout<<"src node: ";
 cin>>src;
 init();
 dijkstra();
 display();
}
```

❖ INPUT :



```
Number of Vertices:5
0           10          20          30          40
10          0           50          60          70
20          50          0           80          90
30          60          80          0           100
40          70          90          100         0
src node: 0
```

❖ OUTPUT :



```
Node:                   cost:                   Path0
1                       10                       1
2                       20                       2
3                       30                       3
4                       40                       4

--------------------------------
Process exited after 97.79 seconds with return value 0
Press any key to continue . . .
```