▶ R5-1 Complete Dijkstra Algorithm　分数 6　　　　　　　　　　　　　　　　　　　　　　　　　作者 杨子棋　单位 浙江大学

Find the shortest path in a weighted graph. The function `dijkstra` implements the Dijkstra algorithm where given the source node `from` and the destination node `to`, it returns the shortest path between the two nodes.

```c
#define SIZE 110
#define INF 99999

int map[SIZE][SIZE]; // The graph, initialized to be INF
int len[SIZE];
int visit[SIZE];
int n; // Number of vertices
int m; // Number of edges

int dijkstra(int from, int to){
    int i;
    for(i = 1 ; i <= n ; i ++){
        visit[i] = 0;
        len[i] = map[from][i];
    }
    int j;
    for(i = 1 ; i < n ; ++i){
        int min = INF;
        int pos;
        for(j = 1 ; j <= n ; ++j){
            if(!visit[j] && min > len[j]){
                pos = j;
                min = len[j];
            }
```

```c
        for(j = 1 ; j <= n ; ++j){
            if( len[pos] + map[pos][j] < len[j]     3 分 ){
                len[j] = len[pos] + map[pos][j];
            }
        }
    }
    return len[to];
}
```

答案正确: 6 分

R5-2 Hash Table with Linear Probing　分数 6　　　　　　　　　　　　　　　　　　　　　　　　作者 冯雁　单位 浙江大学

Find Key from a hash table H with linear probing. The function `Find` should return the position of the Key in hash table. If Key value is not in hash table, the function should return `-1`.(When testing, the values of elements of array `TheCells` in `Hashtbl` will be initialized to `-1`, which represents empty.)

```c
int Hash(const int Key,int TableSize);
typedef int ElementType;
typedef unsigned int Position;

struct HashTbl{
    int TableSize;
    ElementType *TheCells;
};
typedef struct HashTbl *HashTable;

Position Find(ElementType Key, HashTable H){
    Position CurrentPos = Hash(Key, H->TableSize);
    while( H->TheCells[CurrentPos] != Key     3 分 ){
        if(H->TheCells[CurrentPos] == -1) return -1;
        CurrentPos++;     3 分
        if(CurrentPos >= H->TableSize) CurrentPos -= H->TableSize;
    }
    return CurrentPos;
}
```

答案正确: 6 分