

---

题目：算法设计与分析作业  
作者：数学强基 2301 刘欣楠

关键词：算法、作业

## 目 录

1	第四次作业.....	1
1.1	习题 5-4.....	1
1.2	习题 5-6.....	1

## 1 第四次作业

### 1.1 习题 5-4

**解.** 以每个点为初始团个进行依次搜索, 每次搜索遍历与最后一个加入结点相邻的所有节点, 如果存在加入后仍为团的相邻节点, 则加入, 并从该点继续搜索, 反之回溯. □

### 1.2 习题 5-6

```
1  #include<stdio.h>
2  #define INF -1
3  int n,length = 0,shortest_length = INF,**graph,*path,*best_path;
4
5  void swap(int *array, int i, int j)
6  {
7      int temp;
8      temp = array[i];
9      array[i] = array[j];
10     array[j] = temp;
11 }
12
13 void output()
14 {
15     printf("最短路径长度是%d\n", shortest_length);
16     printf("此时路径为: %d", best_path[1]);
17     for (int i = 2; i < n + 1; i++)
18         printf("-->%d", best_path[i]);
19     printf("-->%d\n", best_path[1]);
20 }
21
22 void travel(int t)
23 {
24     if (t == n)
25     {
26         if (graph[path[t - 1]][path[t]] != INF
27             && graph[path[t]][1] != INF
28             && (length + graph[path[t - 1]][path[t]] + graph[path[t]][1] < shortest_length ||
29                 shortest_length == INF))
30         {
31             for (int i = 0; i < n + 1; i++)
32                 best_path[i] = path[i];
33             shortest_length = length + graph[path[t - 1]][path[t]] + graph[path[t]][1];
34         }
35         return;
36     }
37
38     for (int i = t; i < n + 1; i++)
39     {
40         if (graph[path[t - 1]][path[i]] != INF
41             && (length + graph[path[t - 1]][path[i]] < shortest_length || shortest_length ==
42                 INF))
43         {
44             swap(path, i, t);
```

```

44         length += graph[path[t - 1]][path[t]];
45         travel(t + 1);
46         length -= graph[path[t - 1]][path[t]];
47         swap(path, i, t);
48     }
49 }
50 }
51
52 int main()
53 {
54     int start,m;
55
56     cin>>n>>m;
57     graph = (int**)malloc(sizeof(int*) * (n + 1));
58     for (int i = 0; i <= n; i++)
59         graph[i] = (int*)malloc(sizeof(int) * (n + 1));
60
61     path = (int*)malloc(sizeof(int)*(n + 1));
62
63     best_path = (int*)malloc(sizeof(int)*(n + 1));
64
65     for (int i = 0; i < n + 1; i++)
66     {
67         path[i] = i;
68
69         for (int j = 0; j < n + 1; j++)
70             graph[i][j] = INF;
71     }
72     for(int i=1,u,v,w;i<=m;i++)
73     {
74         cin>>u>>v>>w;
75         graph[u][v]=graph[v][u]=w;
76     }
77     printf("请输入以第几个结点作为起点: ");
78     scanf("%d", &start);
79     travel(start+1);
80     output();
81
82     return 0;
83 }

```