电子版题 7 实验报告

叶至灵

2015 年 6 月 21 日

1 题目分析与算法设计

1.1 题目原题

Farmer John has decided to bring water to his N (1 <= N <= 300) pastures which are conveniently numbered 1...N. He may bring water to a pasture either by building a well in that pasture or connecting the pasture via a pipe to another pasture which already has water.

...

Determine the minimum amount Farmer John will have to pay to water all of his pastures.

1.2 题目分析

对求最小生成树的 prim 算法进行一点小更改即可。

用 g[1000][1000] 建立图，其中第一行存储建井的花费。prim 函数用来求出总花费。

```
for(int i=0;i<n;i++)
{
    int k = -1,Min = 100001;
    for(int j=0;j<=n;j++)
        if(!visit[j] && Min > cost[j]) {
            k = j;
            Min = cost[j];
        }
```
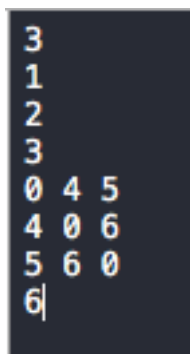
```
    visit[k] = 1;
    res += Min;
    for(int j=0;j<=n;j++)
        if(!visit[j]&&cost[j] > g[k][j])
            cost[j] = g[k][j];
}
```

2　遇到问题及解决方案

一直提示 Runtime error (exitcode: 11)，把数组改成 1000 大小的就解决了。

3　测试结果

如图所示：