

```
1  /// Kruskal( 1174-IP-TV):
2  #include<bits/stdc++.h>
3  using namespace std;
4  int par[2005],nn;
5  map<string,int>mp;
6  struct edge{ int u,v,w; };
7  vector<edge>vv;
8  bool cmp(edge x, edge y){
9      return x.w<y.w;
10 }
11 int findparent(int x){
12     if(par[x]==x) return x;
13     return par[x]=findparent(par[x]);
14 }
15 void Unionparent(int x,int y){
16     par[findparent(y)] = findparent(x);
17 }
18 int kruskalMST(int n){
19     for(int i=1; i<=n; i++) par[i]=i;
20     int sum=0,cnt=0;
21
22     sort(vv.begin(),vv.end(),cmp);
23
24     for(int i=0; i<vv.size(); i++){
25         edge top = vv[i];
26         int parU = findparent(top.u);
27         int parV = findparent(top.v);
28
29         if(parU!=parV){
30             Unionparent(parU,parV);
31             sum += top.w;
32             cnt++;
33             if(cnt==n-1)break;
34         }
35     }
36     vv.clear();
37     return sum;
38 }
39 int main(){
40     int tt; scanf("%d",&tt);
41     for(int ks=0; ks<tt; ks++){
42         if(ks)printf("\n");
43         int n; scanf("%d",&n);
44         int m; scanf("%d",&m);
45
46         int k=0; mp.clear();
47         for(int i=1; i<=m; i++){
48             string s1,s2; int w;
49             cin >> s1 >> s2 >> w;
50
51             if(mp[s1]==0)mp[s1]=++k;
52             if(mp[s2]==0)mp[s2]=++k;
53
54             int u = mp[s1]; int v = mp[s2];
55             edge pp; pp.u=u, pp.v=v, pp.w=w;
56             vv.push_back(pp);
57         }
58
59         int ans = kruskalMST(n);
60         printf("%d\n",ans);
61     }
62     return 0;
63 }
```

```

1  /// Kruskal Algorithm(MST):
2  #include<bits/stdc++.h>
3  using namespace std;
4  #define mx 100
5  int par[mx];
6  struct edge{
7      int u,v,w;
8      edge(int a, int b, int c){
9          u=a;v=b;w=c;
10     }
11     bool operator < (const edge& p) const{
12         return p.w < w;
13     }
14 };
15 priority_queue<edge>pq;
16 queue<edge>Q;
17
18 int findparent(int x){
19     if(par[x]==x) return x;
20     else return par[x]=findparent(par[x]);
21 }
22
23 int kruskalMST(int node){
24     int Mincost=0;
25     for(int i=1; i<=node; i++) par[i]=i;
26
27     for(int i=1; i<=node-1; i++){
28         label:
29         edge top = pq.top();
30         pq.pop();
31
32         int parU = findparent(top.u);
33         int parV = findparent(top.v);
34
35         if(parU==parV){
36             goto label;
37         }else{
38             par[parU]=parV;
39             Q.push(top);
40             Mincost += top.w;
41         }
42     }
43     return Mincost;
44 }
45
46 int main(){
47     int node,edg,u,v,w,mincst,src;
48     cin >> node >> edg;
49
50     for(int i=0; i<edg; i++){
51         cin >> u >> v >> w;
52         pq.push(edge(u,v,w));
53     }
54
55     mincst=kruskalMST(node);
56
57     cout <<endl<<"Minimum Spanning Tree:"<<endl<<endl;
58     cout << " Edges " << " Weight" << endl;
59
60     for(int i=1; i<=node-1; i++){
61         edge top=Q.front();
62         Q.pop();
63         printf("%2d  %2d  %3d\n\n",top.u,top.v,top.w);
64     }
65     cout <<endl<<"Total Minimum Cost: "<<mincst<<endl;
66
67     return 0;
68 }

```