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1. #include<bits/stdc++.h>
2. using namespace std;
3. #define N 60100
4. struct A{
5.     long long ht,fd[510];
6. };
7. A town[N];
8. int p[N],idx=0,mp[N];
9. long long food[510];
10. bool hotel[N],res[N];
11. // unordered_map< int,int > mp;
12. vector< pair<int,int> > g[N];
13. int findr(int i){
14.     if(p[i]==i) return i;
15.     return p[i]=findr(p[i]);
16. }
17. void dfs(int now,int la){
18.     town[now].ht=-3e9;
19.     for(int i=1;i<=idx;i++)town[now].fd[i]=-3e9;
20.     if(res[now]) town[now].fd[mp[findr(now)]] =0;
21.     if(hotel[now]) town[now].ht=0;
22.     for(auto x: g[now]){
23.         if(x.first==la) continue;
24.         dfs(x.first,now);
25.         for(int i=1;i<=idx;i++){
26.             food[i]=max(food[i],town[now].ht+town[x.first].fd[i]+x.second);
27.             food[i]=max(food[i],town[now].fd[i]+town[x.first].ht+x.second);
28.             town[now].fd[i]=max(town[now].fd[i],town[x.first].fd[i]+x.second);
29.         }
30.         town[now].ht=max(town[now].ht,town[x.first].ht+x.second);
31.     }
32.     return ;
33. }
34. int main()
35. {
36.     int q,n,m,r,k,u,v,w;
37.     scanf("%d",&q);
38.     while(q--){
39.         idx=0;
40.         scanf("%d %d %d %d",&n,&m,&r,&k);
41.         for(int i=1;i<n;i++){
42.             scanf("%d %d %d",&u,&v,&w);
43.             g[u].push_back({v,w});
44.             g[v].push_back({u,w});
45.         }
46.         for(int i=1;i<=n;i++) p[i]=i;
47.         for(int i=1;i<=r;i++){
48.             scanf("%d %d",&u,&v);
49.             p[findr(u)]=findr(v);
50.             res[u]=res[v]=true;
51.         }
52.         for(int i=1;i<=n;i++){
53.             if(res[i] && !mp[findr(i)]) mp[findr(i)]=++idx;
54.         }
55.         for(int i=1;i<=k;i++){
56.             scanf("%d",&u);
57.             hotel[u]=1;
58.         }
59.         dfs(1,-1);
60.         long long ans=0;
61.         for(int i=1;i<=idx;i++){
62.             ans+=food[i];

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63.         food[i]=0;
64.     }
65.     printf("%lld\n",ans*2);
66.     for(int i=1;i<=n;i++){
67.         g[i].clear();
68.         mp[i]=0;
69.         res[i]=hotel[i]=0;
70.     }
71. }
72. return 0;
73. }
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