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1  #include<bits/stdc++.h>
2  using namespace std;
3  const int MAXN=10002, LOGN=14, INF=2000000000, root=1;
4  struct dt{ int u,v,w; }edge[MAXN];
5  vector<int>adj[MAXN],tree[MAXN];
6  int a[MAXN],depth[MAXN],parent[MAXN],subSize[MAXN],sChild[MAXN];
7  int chainNo,head[MAXN],chainHead[MAXN],chainPos[MAXN],chainInd[MAXN],chainSize[MAXN];
8  void update_tree(int chid, int nd, int l, int r,int x,int val){
9      if(l==x&&r==x){ tree[chid][nd] = val; return; }
10     int lf = (nd<<1), rg = lf+1, m = (l+r)>>1;
11     if(x<=m) update_tree(chid,lf,l,m,x,val);
12     else update_tree(chid,rg,m+1,r,x,val);
13     tree[chid][nd] = max(tree[chid][lf],tree[chid][rg]);
14 }
15 int query_tree(int chid, int nd, int l, int r,int x,int y){
16     if(l>y||r<x)return -INF;
17     if(l>=x&&r<=y)return tree[chid][nd];
18     int lf = (nd<<1), rg = lf+1, m = (l+r)>>1;
19     int p1 = query_tree(chid,lf,l,m,x,y);
20     int p2 = query_tree(chid,rg,m+1,r,x,y);
21     return max(p1,p2);
22 }
23 int query_up(int u,int lca){
24     if(u==lca)return 0;
25     int ans = -INF;
26     while(depth[u]>depth[lca]){
27         int l = (depth[head[u]]>depth[lca]) ? chainPos[head[u]] : chainPos[lca]+1;
28         int r = chainPos[u];
29         int sz = chainSize[chainInd[u]];
30         int ret = query_tree(chainInd[u],1,1,sz,l,r);
31         if(ret>ans)ans=ret;
32         u = parent[head[u]];
33     }
34     return ans;
35 }
36 int getLCA(int u, int v){
37     while(chainInd[u]!=chainInd[v]){
38         if(depth[head[u]]>depth[head[v]]) u = parent[head[u]];
39         else v = parent[head[v]];
40     }
41     if(depth[u]<depth[v])return u;
42     else return v;
43 }
44 int query(int u,int v){
45     int lca = getLCA(u,v);
46     int ret1 = query_up(u, lca);
47     int ret2 = query_up(v, lca);
48     int ans = ret1 > ret2 ? ret1 : ret2;
49     return ans;
50 }
51 void build_chain(int _head){
52     chainNo++;
53     chainHead[chainNo] = _head;
54     int u = _head;
55     vector<int>vv;
56     while(u!=-1){
57         vv.push_back(u);
58         chainInd[u] = chainNo;
59         chainPos[u] = (int)vv.size();
60         head[u] = _head;
61         u = sChild[u];
62     }
63     chainSize[chainNo] = (int)vv.size();
64     tree[chainNo].resize(4*chainSize[chainNo], 0);
65     for(int i=0; i<(int)vv.size(); i++){
66         update_tree(chainNo,1,1,chainSize[chainNo],chainPos[vv[i]],a[vv[i]]);
67     }
68 }
69 void HLD_DFS(int u,int prev){
70     for(int i=0; i<adj[u].size(); i++){
71         int v = adj[u][i];
72         if(v!=prev){
73             HLD_DFS(v,u);
74         }
75     }

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76     for(int i=0; i<adj[u].size(); i++){
77         int v = adj[u][i];
78         if(v != prev && v != sChild[u]){
79             build_chain(v);
80         }
81     }
82 }
83 void HLD(){
84     chainNo = 0;
85     HLD_DFS(root,-1);
86     build_chain(root);
87 }
88 void DFS(int u,int prev,int _depth){
89     depth[u] = _depth; parent[u] = prev; subSize[u] = 1;
90     int specialChild = -1, maxSize = 0;
91     for(int i=0; i<adj[u].size(); i++){
92         int v = adj[u][i];
93         if(v!=prev){
94             DFS(v,u,_depth+1);
95             subSize[u] += subSize[v];
96             if(subSize[v]>maxSize){
97                 specialChild = v;
98                 maxSize = subSize[v];
99             }
100         }
101     }
102     sChild[u] = specialChild;
103 }
104 void CLEAR(int n){
105     for(int i=0; i<=n; i++) {
106         adj[i].clear(); chainHead[i] = -1; head[i] = -1; sChild[i] = -1;
107     }
108 }
109 int main(){
110     int tt; scanf("%d",&tt);
111     for(int ks=1; ks<=tt; ks++){
112         int n; scanf("%d",&n);
113         CLEAR(n);
114         for(int i=1; i<n; i++){
115             int u,v,w; scanf("%d%d%d",&u,&v,&w);
116             adj[u].push_back(v);
117             adj[v].push_back(u);
118             edge[i].u=u; edge[i].v=v; edge[i].w=w;
119         }
120
121         DFS(root, -1, 0);
122
123         for(int i=1; i<n; i++){
124             if(depth[edge[i].u]>depth[edge[i].v])
125                 swap(edge[i].u,edge[i].v);
126             a[edge[i].v] = edge[i].w;
127         }
128
129         HLD();
130
131         while(1){
132             char ss[10]; scanf("%s",&ss);
133             if(ss[0]=='D')break;
134             if(ss[0]=='Q'){
135                 int u,v; scanf("%d%d",&u,&v);
136                 int ans = query(u, v);
137                 printf("%d\n",ans);
138             }
139             else{
140                 int idx,weight; scanf("%d%d",&idx,&weight);
141                 int v = edge[idx].v;
142                 int sz = chainSize[chainInd[v]];
143                 update_tree(chainInd[v],1,1,sz,chainPos[v],weight);
144             }
145         }
146     }
147     return 0;
148 }

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