

```

1 #include<bits/stdc++.h>
2 using namespace std;
3 const int MAXN=10002, LOGN=14, INF=2000000000, root=1;
4 vector<int>adj[MAXN],cost[MAXN],indexx[MAXN];
5 int depth[MAXN],parent[MAXN],subSize[MAXN],otherEnd[MAXN],pa[MAXN][LOGN];
6 int chainNo,chainHead[MAXN],chainPos[MAXN],chainInd[MAXN],chainSize[MAXN];
7 int ptr,baseArray[MAXN],posInBase[MAXN], tree[4*MAXN];
8 void make_tree(int nd, int l, int r){
9     if(l==r){ tree[nd] = baseArray[l]; return; }
10    int lf = (nd<<1), rg = lf+1, m = (l+r)>>1;
11    make_tree(lf,l,m);
12    make_tree(rg,m+1,r);
13    tree[nd] = max(tree[lf],tree[rg]);
14 }
15 void update_tree(int nd, int l, int r,int x,int val){
16     if(l==x&&r==x){ tree[nd] = val; return; }
17     int lf = (nd<<1), rg = lf+1, m = (l+r)>>1;
18     if(x<=m) update_tree(lf,l,m,x,val);
19     else update_tree(rg,m+1,r,x,val);
20     tree[nd] = max(tree[lf],tree[rg]);
21 }
22 int query_tree(int nd, int l, int r,int x,int y){
23     if(l>y||r<x) return -INF;
24     if(l>x&&r<=y) return tree[nd];
25     int lf = (nd<<1), rg = lf+1, m = (l+r)>>1;
26     int p1 = query_tree(lf,l,m,x,y);
27     int p2 = query_tree(rg,m+1,r,x,y);
28     return max(p1,p2);
29 }
30 int query_up(int u,int v){
31     if(u==v) return 0;
32     int uchain = chainInd[u], vchain = chainInd[v], ans = -INF;
33     while(1){
34         if(uchain==vchain){
35             int ret = query_tree(1,1,ptr,posInBase[v]+1,posInBase[u]);
36             if(ret>ans)ans=ret;
37             break;
38         }
39         int ret = query_tree(1,1,ptr,posInBase[chainHead[uchain]],posInBase[u]);
40         if(ret>ans)ans=ret;
41         u = chainHead[uchain];
42         u = parent[u];
43         uchain = chainInd[u];
44     }
45     return ans;
46 }
47 int LCA(int u, int v){
48     if(depth[u]<depth[v])swap(u,v);
49     for(int i=LOGN-1; i>=0; i--){
50         if(pa[u][i] != -1 && depth[u]-(1<<i) >= depth[v]){
51             u = pa[u][i];
52         }
53     }
54     if(u==v) return u;
55     for(int i=LOGN-1; i>=0; i--){
56         if(pa[u][i] != -1 && pa[u][i] != pa[v][i]){
57             u = pa[u][i]; v = pa[v][i];
58         }
59     }
60     return parent[u];
61 }
62 int query(int u,int v){
63     int lca = LCA(u,v);
64     int ret1 = query_up(u, lca);
65     int ret2 = query_up(v, lca);
66     int ans = ret1 > ret2 ? ret1 : ret2;
67     return ans;
68 }
69 void change(int idx,int weight){
70     int u = otherEnd[idx];
71     update_tree(1, 1, ptr, posInBase[u], weight);
72 }
73 void preprocess_lca(int n){
74     for(int u=1; u<=n; u++)pa[u][0]=parent[u];
75     for(int i=1; i<LOGN; i++){
76         for(int u=1; u<=n; u++){
77             if(pa[u][i-1]!=-1){
78                 pa[u][i] = pa[pa[u][i-1]][i-1];
79             }
80         }
81     }
82 }

```

```

83 void HLD(int u,int prev,int weight){
84     if(chainHead[chainNo]==-1) chainHead[chainNo]=u;
85     chainSize[chainNo]++;
86     chainInd[u] = chainNo; chainPos[u] = chainSize[chainNo];
87     posInBase[u] = ++ptr; baseArray[ptr] = weight;
88     int specialChild = -1, maxSize = 0, nweight;
89     for(int i=0; i<adj[u].size(); i++){
90         int v = adj[u][i];
91         if(v!=prev){
92             if(subSize[v]>maxSize){
93                 specialChild = v;
94                 maxSize = subSize[v];
95                 nweight = cost[u][i];
96             }
97         }
98     }
99     if(specialChild != -1){
100         HLD(specialChild,u,nweight);
101     }
102     for(int i=0; i<adj[u].size(); i++){
103         int v = adj[u][i];
104         if(v != prev){
105             if(v != specialChild){
106                 ++chainNo;
107                 HLD(v,u,cost[u][i]);
108             }
109         }
110     }
111 }
112 void DFS(int u,int prev,int _depth=0){
113     depth[u] = _depth; parent[u] = prev; subSize[u] = 1;
114     for(int i=0; i<adj[u].size(); i++){
115         int v = adj[u][i];
116         int _index = indexx[u][i];
117         if(v!=prev){
118             otherEnd[_index] = v;
119             DFS(v,u,_depth+1);
120             subSize[u] += subSize[v];
121         }
122     }
123 }
124 void CLEAR(int n){
125     for(int i=0; i<=n; i++) {
126         adj[i].clear(); cost[i].clear(); indexx[i].clear(); chainHead[i]=-1;
127         for(int j=0; j<LOGN; j++) pa[i][j] = -1;
128     }
129 }
130 int main(){
131     int tt; scanf("%d",&tt);
132     for(int ks=1; ks<=tt; ks++){
133         int n; scanf("%d",&n);
134         CLEAR(n);
135         for(int i=1; i<n; i++){
136             int u,v,w; scanf("%d%d%d",&u,&v,&w);
137             adj[u].push_back(v); cost[u].push_back(w); indexx[u].push_back(i);
138             adj[v].push_back(u); cost[v].push_back(w); indexx[v].push_back(i);
139         }
140         chainNo = 0, ptr = 0;
141         DFS(root, -1);
142         HLD(root, -1, -INF);
143         make_tree(1, 1, ptr);
144         preprocess_lca(n);
145         while(1{
146             char ss[10]; scanf("%s",&ss);
147             if(ss[0]=='D')break;
148             if(ss[0]=='Q'){
149                 int u,v; scanf("%d%d",&u,&v);
150                 int ans = query(u, v);
151                 printf("%d\n",ans);
152             }
153             else{
154                 int idx,wgt; scanf("%d%d",&idx,&wgt);
155                 change(idx, wgt);
156             }
157         }
158     }
159     return 0;
160 }
```