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1   /*
2       | Heavy Light Decomposition |
3       Desc: BEST TECHNIQUE EVER. Path queries in O(n*log^2(n)) with Segment Tree.
4       Source: KawakiMeido
5       State: Untested lmao
6   */
7
8   int curpos = 0;
9   int parent[N], sz[N], depth[N];
10  int root[N], pos[N];
11
12  void dfsHLD(int u, int p=0){
13      sz[u] = 1;
14      for (auto v:adj[u]){
15          if (v==p) continue;
16          parent[v] = u;
17          depth[v] = depth[u]+1;
18          dfsHLD(v,u);
19          sz[u] += sz[v];
20      }
21  }
22
23  void buildHLD(int u, int r){
24      pos[u] = ++curpos;
25      root[u] = r;
26
27      int nxt = 0;
28
29      for (auto v:adj[u]){
30          if (v==parent[u]) continue;
31          if (!nxt || sz[v]>sz[nxt]) nxt = v;
32      }
33
34      if (nxt){
35          buildHLD(nxt,r);
36      }
37
38      for (auto v:adj[u]){
39          if (v==parent[u] || v==nxt) continue;
40          buildHLD(v,v);
41      }
42  }
43
44  void updateHLD(int x){
45      int u = x;
46      while (root[u]≠1){
47          int v = parent[root[u]];
48
49          u = v;
```

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50          }
51      }
```