**Lowest Common Ancestor (nlogn)**

**Parent[i][0] is the parent of ith node**

**Tested on: CodeForces 406D**

int lca(int p, int q) //template from tc

{

int tmp, log, i;

if(depth[p] < depth[q])

tmp = p, p = q, q = tmp;

for(log = 1; 1 << log <= depth[p]; log++);

log--;

for(i = log; i >= 0; i--)

if(depth[p] - (1 << i) >= depth[q])

p = parent[p][i];

if(p == q)

return p;

for(i = log; i >= 0; i--)

if(parent[p][i]!=-1 && parent[p][i]!=parent[q][i])

p = parent[p][i], q = parent[q][i];

return parent[p][0];

}

void lca prepocess3

{

for (int j = 1; 1 << j < n; j++)

for (int i = 0; i < n; i++)

if (parent[i][j - 1] != -1)

parent[i][j]=parent[parent[i][j-1]][j-1];

return;

}