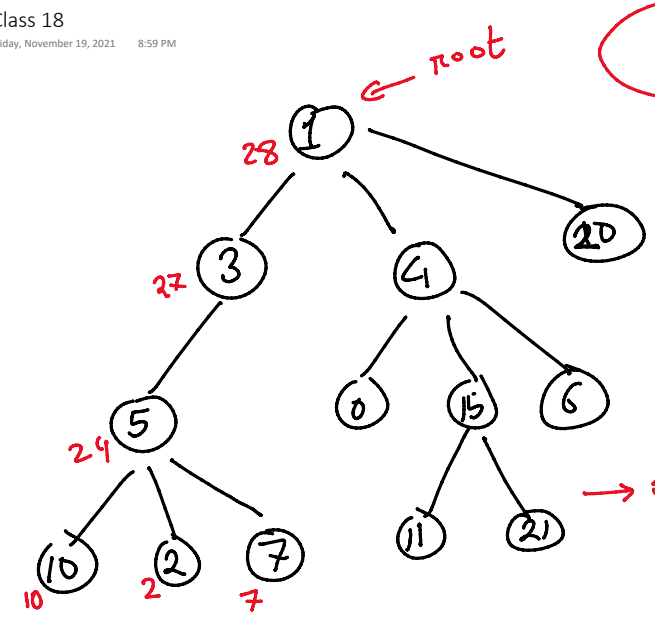
Class 18

Friday, November 19, 2021 8:59 PM



subtree_sum[15] = ?

$q \rightarrow 15$

$1 \le t \le 5$

$1 \le N \le 10^5$

$1 \le q_i \le 10^5$

$1 \rightarrow 10\ 4$

$20 \rightarrow 20$

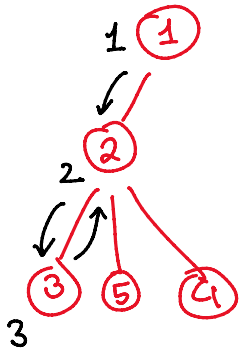
$3 \rightarrow 27$

$\rightarrow$ Sum : 15 + 11 + 21 = 26 + 21 = 47

— o —

Pseudocode

```
vector<int> adj_list[100005]
int subtree_sum[100005] = {0}
T=0
dfs(u):
    subtree_sum[u] = u;
    vis[u] = 1
    st[u] = T++;
    for( v -> adj_list[u])
    {
        if(!vis[v])
        {
            dfs(v);
            subtree_sum[u] += subtree_sum[v];
        }
    }
    en[u] = T++ ;
```

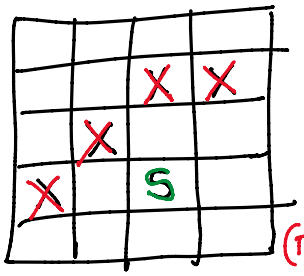


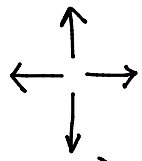
— o —

[5, 20]

Flood-fill

Flood-fill





```
dfs (r, c)
if(isInValid(r,c)) return;
{  vis[r][c] = 1;
   dfs(r-1, c)
   dfs(r+1, c)
   dfs(r, c+1)
   dfs(r, c-1)
}
```

for(i=0; i<4; i++) dfs(r+dr[i], c+dc[i])

(r+1,c-1) (r-1,c) (r-1,c+1)

S ← (3,2) (r,c-1) ← (r,c) → (r,c+1)

(r+1,c+1) (r+1,c) (r+1,c+1)

DIRECTION ARRAY → dr[] → -1, +1, 0, 0
dc[] → 0, 0, +1, -1

70K BDT

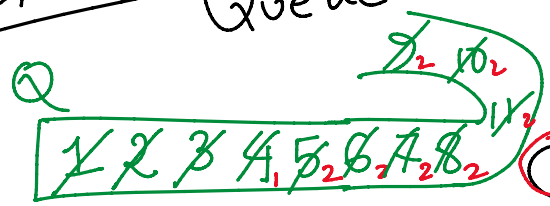
200K BDT

22 ~ 45

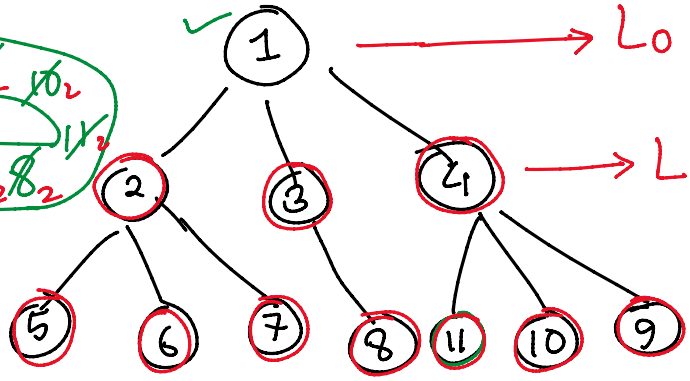
Inflation → 5.6 %

100 → 105.6

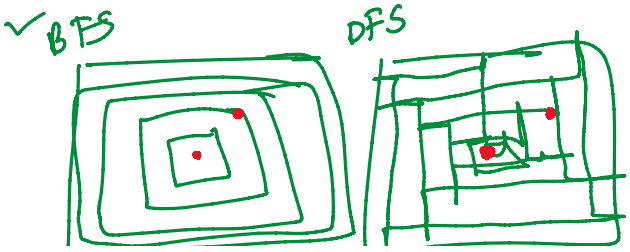
BFS: Queue

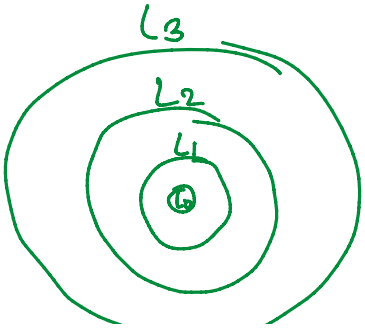


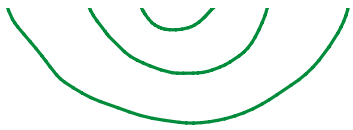
u = 4

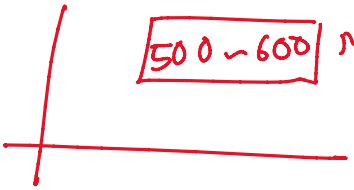


L0, L1, L2









500 ~ 600 MB ~ 3 - 4 MB

DFS ~ BFS

6 - 6 ⟷ BFS

O(N) O(N)

→ O(H) → O(d)

DFS → $10^5 - 10^6$