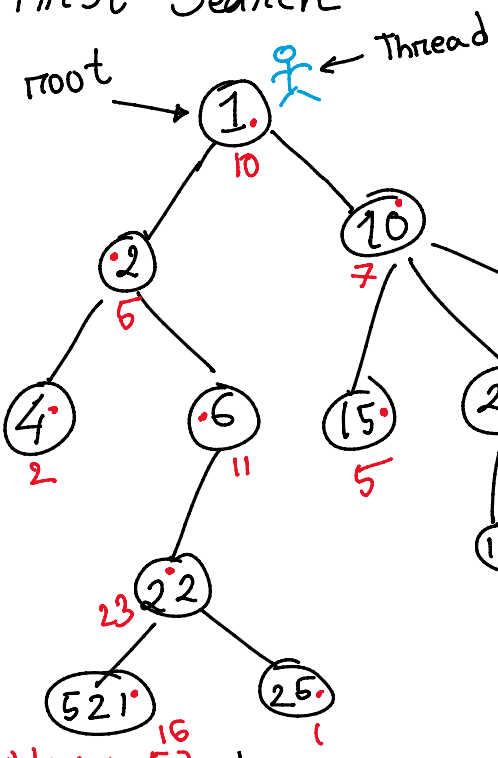
Class 16

Tuesday, February 22, 2022 8:56 PM

DFS → Depth First Search



Graph
- Node
- Edge

acyclic →

N = 12
E = 11.

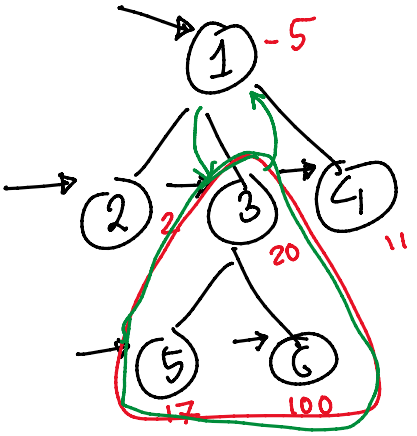
Tree

N = x
E = x - 1
single component

sum = 10+5+2+11+
23 + 1 +16+7+
5 + 19 + 0 + 2

```
int main()
{
    traverse(1);
}
```

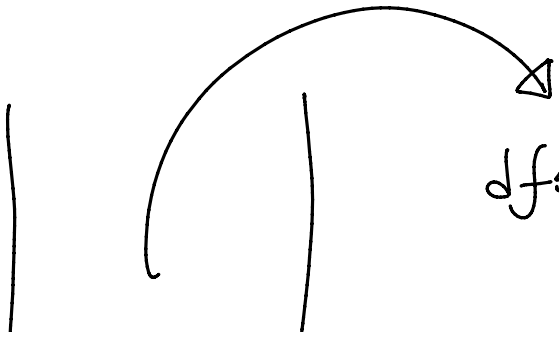
subtree_sum[3] = 20 + subtree_sum[5] + subtree_sum[6]

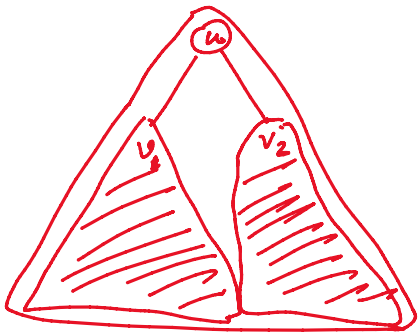


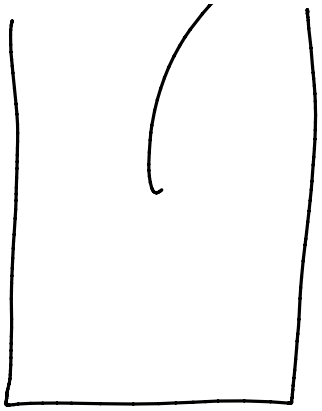
vis[] → 1 1 1 1 1 1
1 2 3 4 5 6

1 : 2, 3, 4
2 : 1
3 : 1, 5, 6
4 : 1
5 : 3
6 : 3

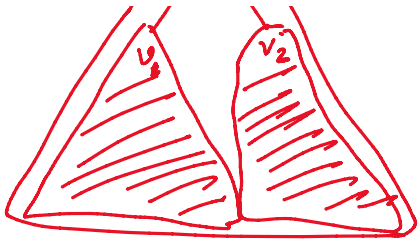
```
void dfs(int u)
{
    vis[u] = 1;
    for(auto v : adj[u])   // adj[u] : list
    {
        if(vis[v] == 0)
            dfs(v)
    }
}
```







dfs(1), 15



$f(u) = tv[u] + f(v_1) + f(v_2)$