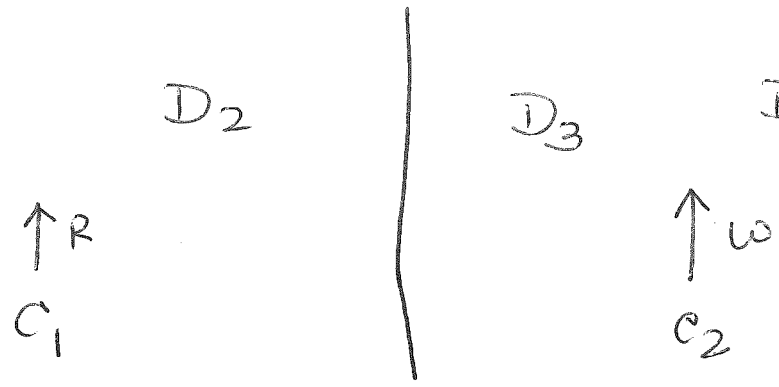
D

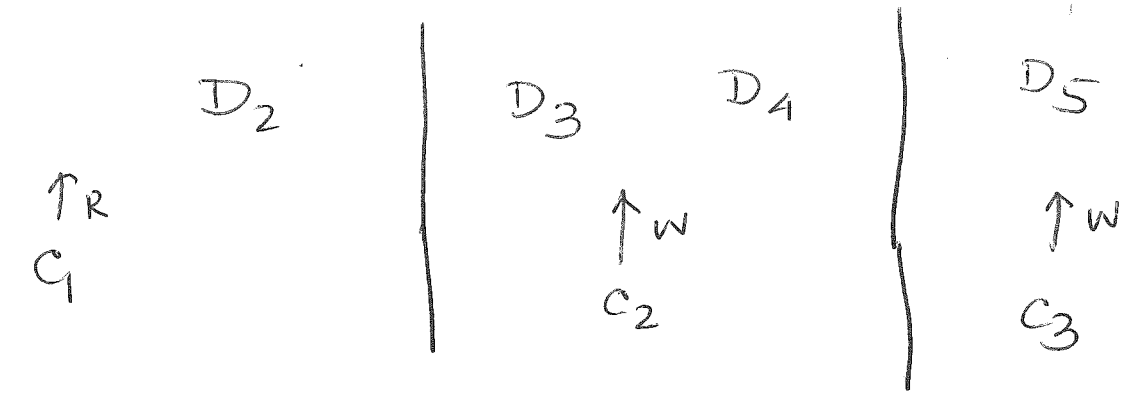
	D_1	D_2	D_3	D_4	D_5
votes	1	2	3	4	5

T_0 : No partition

T_1 :



T_2 :



$\Sigma V = 15$

$R = 1 \quad W = 15$

T_1: $C_1 \xrightarrow{R}$ ✓

$C_2 \xrightarrow{W}$ X

T_2: $C_1 \xrightarrow{R}$ ✓

$C_2 \xrightarrow{W}$ X

$C_3 \xrightarrow{W}$ X

$R = 8 \quad W = 8$

T_1: $C_1 \xrightarrow{R}$ X

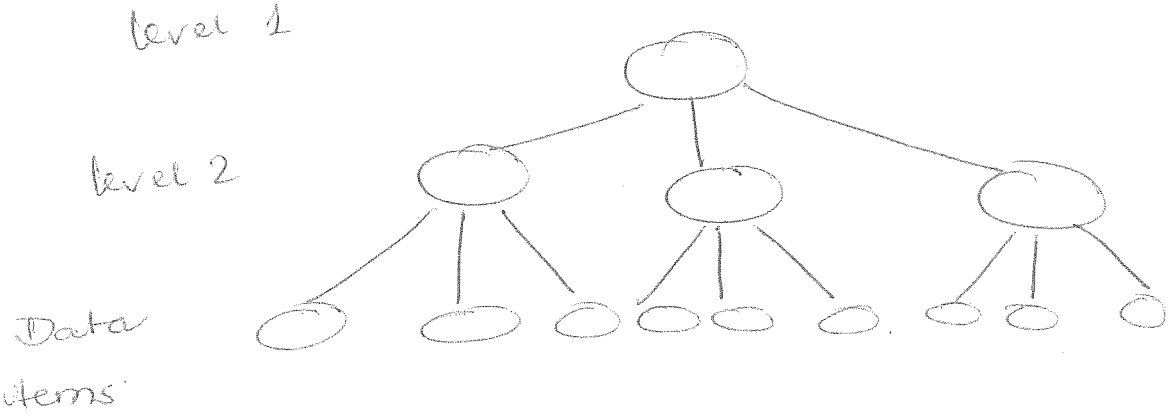
$C_2 \xrightarrow{W}$ ✓

T_2: $C_1 \xrightarrow{R}$ X

$C_2 \xrightarrow{W}$ X

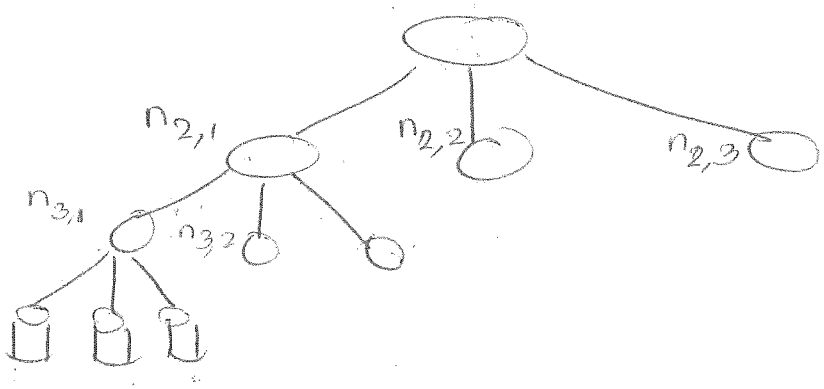
$C_3 \xrightarrow{W}$ X

Hierarchical voting



children of a node at level $i = l_{(i+1)}$
$= l$ (same)

$\therefore$ # nodes at level $i = l^{i-1}$



Depth = m (4 in the above example)

rounds of voting = m-1

Read quorum = r_i (at level i) = r (same)

Write quorum = w_i (at level i) = w (same)

data replicas I have to contact for successfully reading = r^{m-1}

- - - - - - - - - - - - - writing = w^{m-1}

Total n data replicas

Fixed branching factor = l.

Depth of tree $m = \log_l n + 1$

votes for read $= 2^{m-1}$ (read quorum = 2)

$$m = \underbrace{\log_l n + 1}_{0.63}$$

n $\qquad$ $l = 3$

$n = 5$ $\qquad$ $r = w = 3$

R+W possible

R+W not possible