

Dynamic Connectivity - Quick Union

Find \Rightarrow check if $\text{root}(p) == \text{root}(q)$

union \Rightarrow set $\text{root}(p)$ to the $\text{root}(q)$

step 0

i	0	1	2	3	4	5	6	7	8	9
index[i]	0	1	2	3	4	5	6	7	8	9

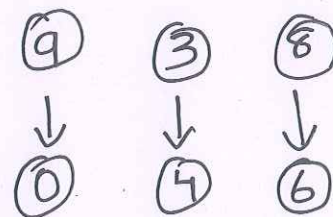
step 1 $\rightarrow \text{union}(9, 0) \rightarrow$

i	0	1	2	3	4	5	6	7	8	9
index[i]	9	1	2	3	4	5	6	7	8	9



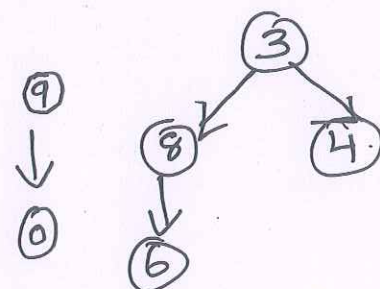
step 2 $\rightarrow \text{union}(3, 4), \text{union}(8, 6)$

i	0	1	2	3	4	5	6	7	8	9
index[i]	9	1	2	3	3	5	8	7	8	9



step 3 $\rightarrow \text{union}(3, 6) \Rightarrow \text{root}(3)=3, \text{root}(6)=8$

i	0	1	2	3	4	5	6	7	8	9
index[i]	9	1	2	3	3	5	8	7	3	9



step 4 $\text{union}(0, 8) \Rightarrow \text{root}(0) \Rightarrow 9, \text{root}(8) \Rightarrow 3$

i	0	1	2	3	4	5	6	7	8	9
index[i]	9	1	2	9	3	5	8	7	3	9

