

### Problem-3

Starting Vertex =  $1711335 \% 15 = 0$

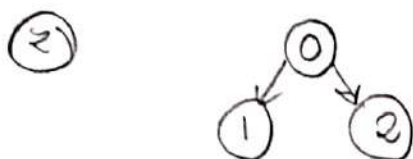
BFS

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
$\pi$	NA	0	0	1	3	3	1	2		6	4	7	10	10	1
d	0	1	1	2	3	3	2	2		3	4	3	5	5	2

① Start  
①

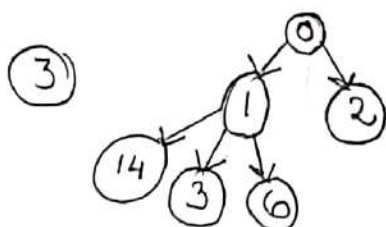
Queue  $\rightarrow$  0

pop  $\rightarrow$



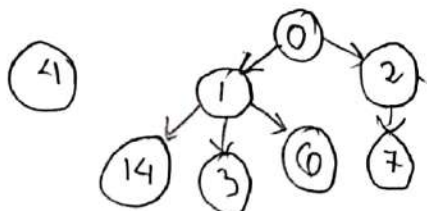
pop  $\rightarrow$  0

Queue  $\rightarrow$  1, 2



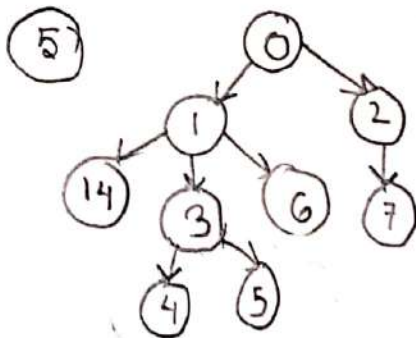
pop  $\rightarrow$  0, 1,

Queue  $\rightarrow$  3, 3, 6, 14



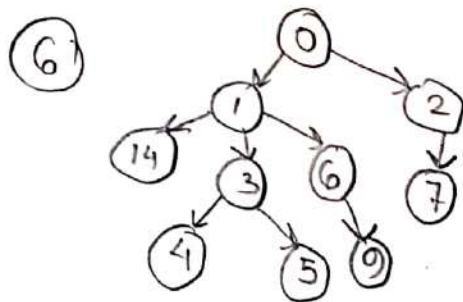
pop  $\rightarrow$  0, 1, 2

Queue  $\rightarrow$  3, 6, 14, 7



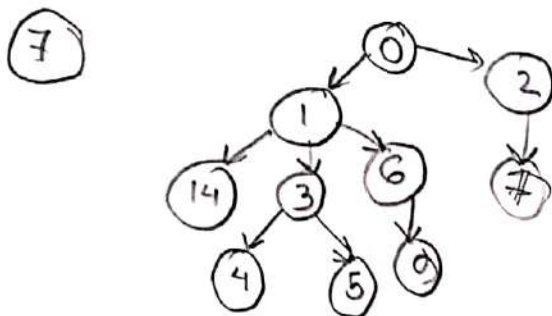
pop  $\rightarrow 0, 1, 2, 3$

Queue  $\rightarrow \underline{6, 14, 7, 4, 5}$



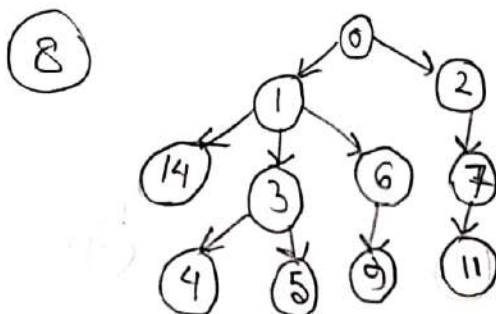
pop  $\rightarrow 0, 1, 2, 3, 6$

Queue  $\rightarrow \underline{14, 7, 4, 5, 9}$



pop  $\rightarrow 0, 1, 2, 3, 6, 14$

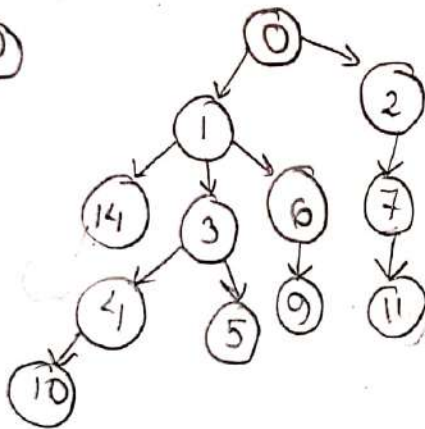
Queue  $\rightarrow \underline{7, 4, 5, 9, 11}$



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7$

Queue  $\rightarrow \underline{4, 5, 9, 11, 12}$

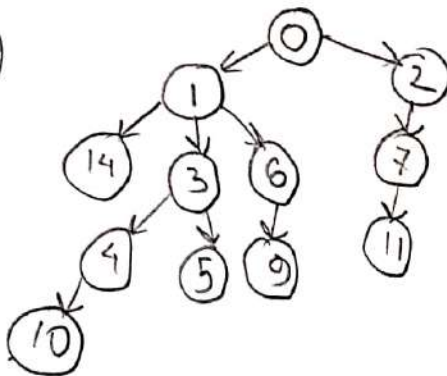
9



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4$

deque  $\rightarrow \underline{5, 9, 11, 10}$

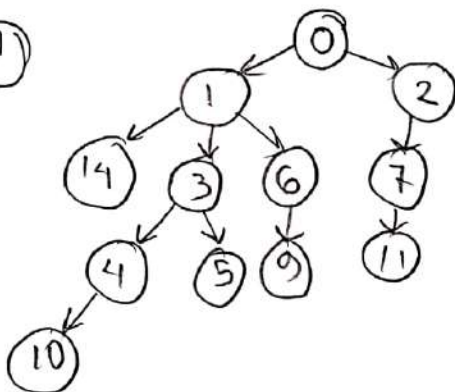
10



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5$

deque  $\rightarrow \underline{9, 11, 10}$

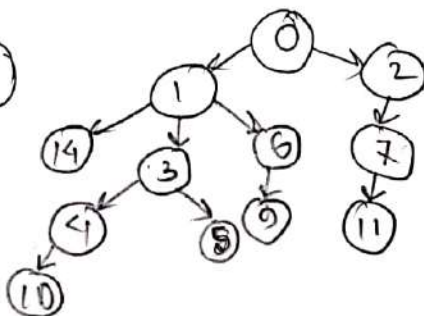
11



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5, 9$

deque  $\rightarrow \underline{11, 10}$

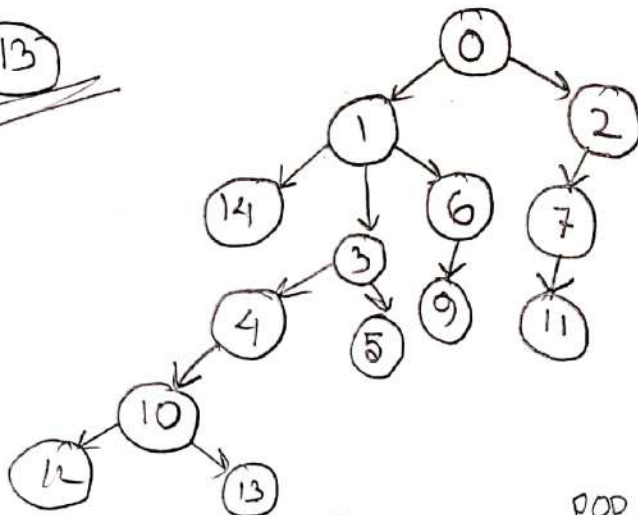
12



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5, 9, 11$

deque  $\rightarrow \underline{10}$

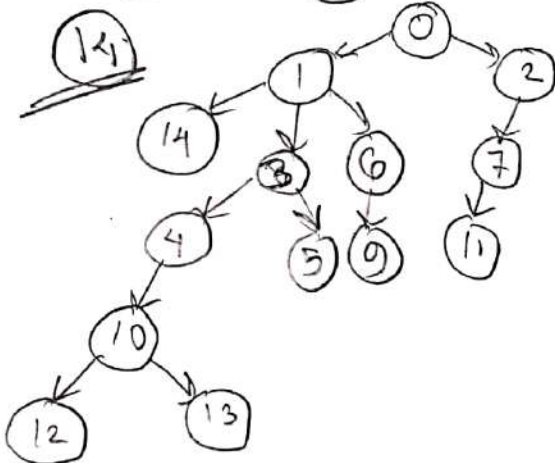
13



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5, 9, 11, 10$

Queue  $\rightarrow \underline{\underline{12, 13}}$

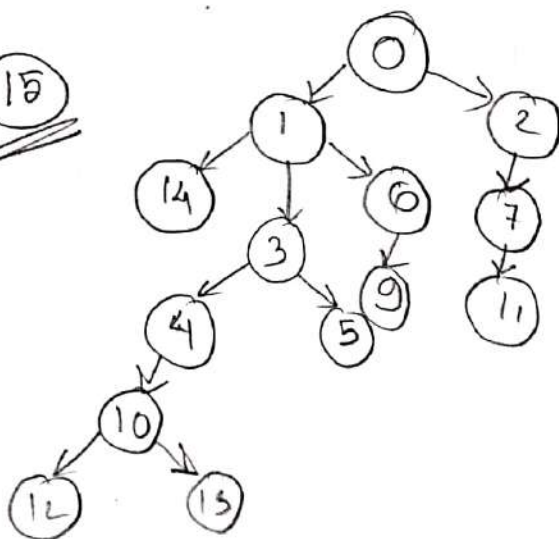
14



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5, 9, 11, 10, 12$

Queue  $\rightarrow \underline{\underline{13}}$

15



pop  $\rightarrow 0, 1, 2, 3, 6, 14, 7, 4, 5, 9, 11, 10, 12, 13$

Queue  $\rightarrow \underline{\underline{\hspace{2cm}}}$