

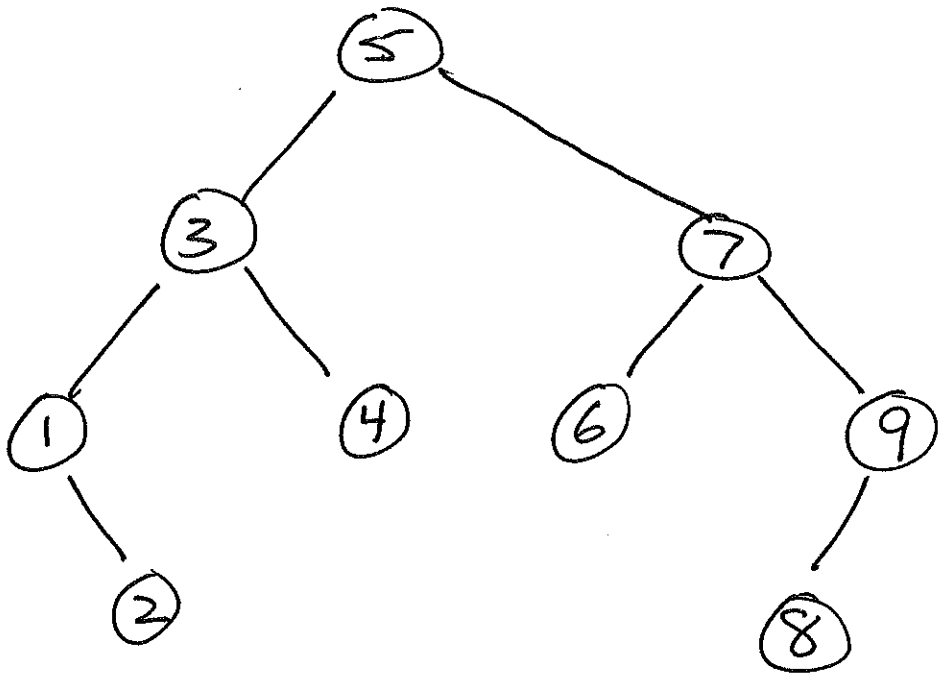
CSE 101 2-26-25

1

• mid 2 : Friday 2/28

• Pa6 : ext. 2 more days (last)
MON. 3/2 .

Ex. insert! 5, 3, 1, 2, 4, 7, 6, 9, 8

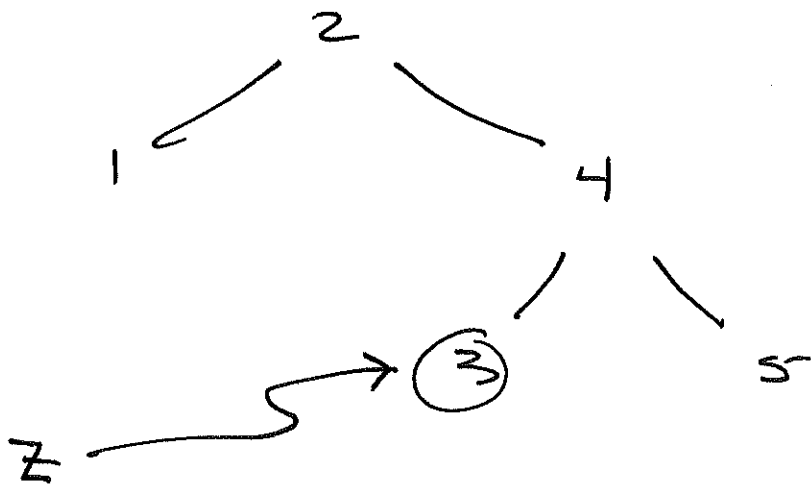


Deletion: delete z from T

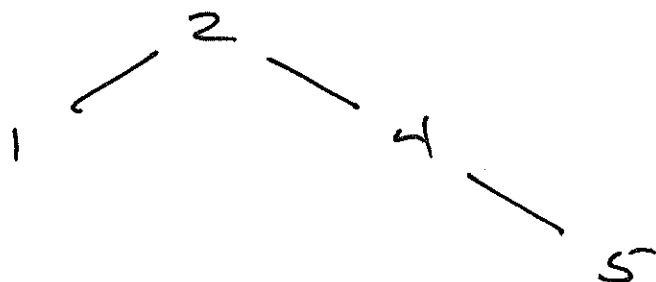
3 cases

case 1: z is a leaf

detach z from z.parent



delete(3):

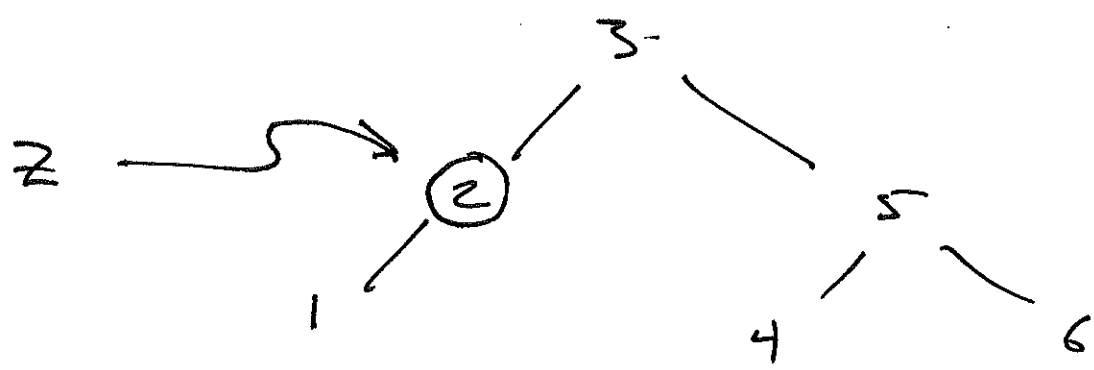


case 2: z has 1 child

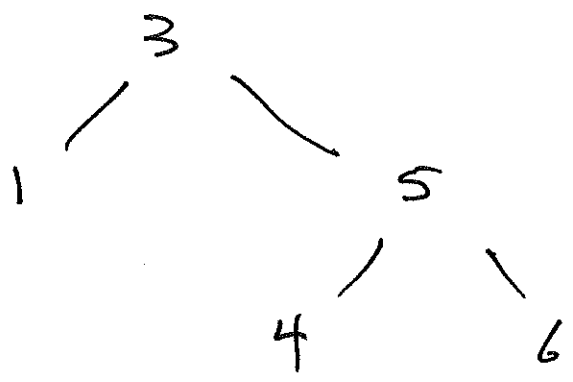
Subcase 2.1: z has a right but no left

Subcase 2.2: " " " left " " right

splice z out of 'local list'

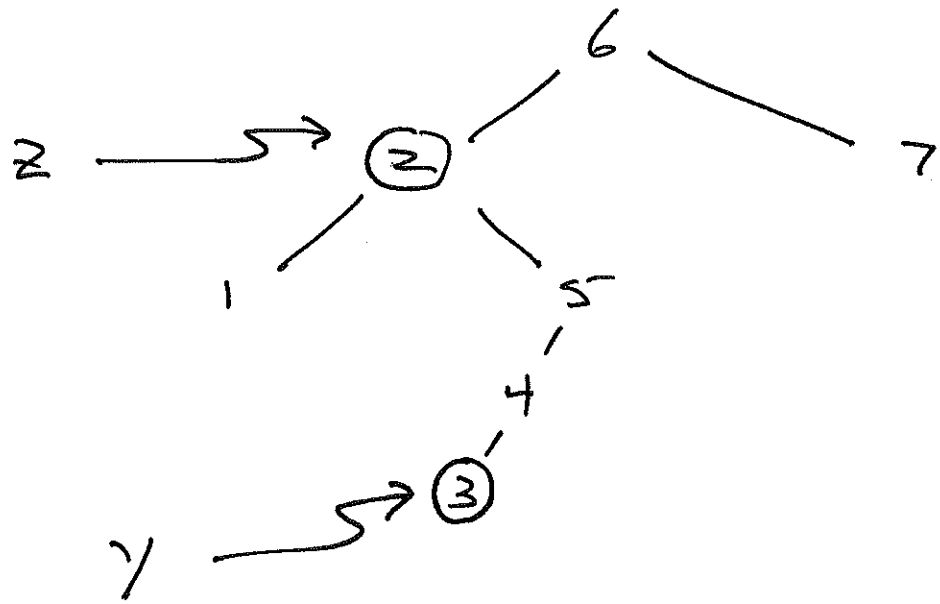


delete(2)

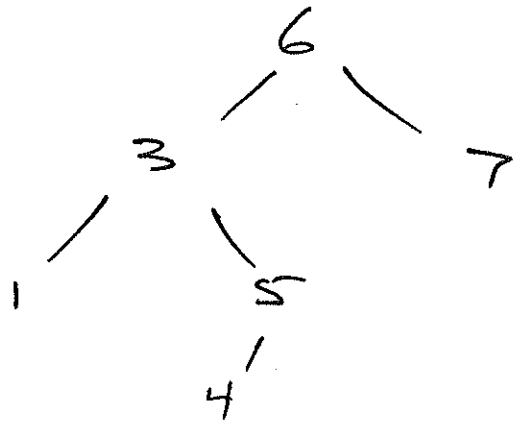


Case 3: z has 2 children

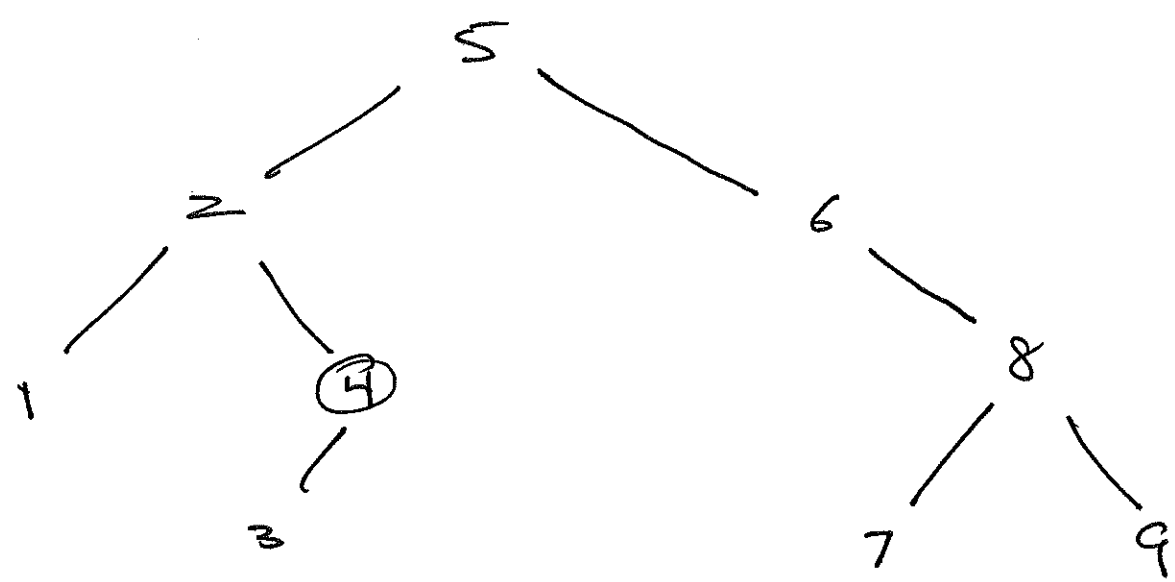
let $y = \text{successor}(z)$, note y has no left child. splice out y , then splice out z , and put y in z 's position.



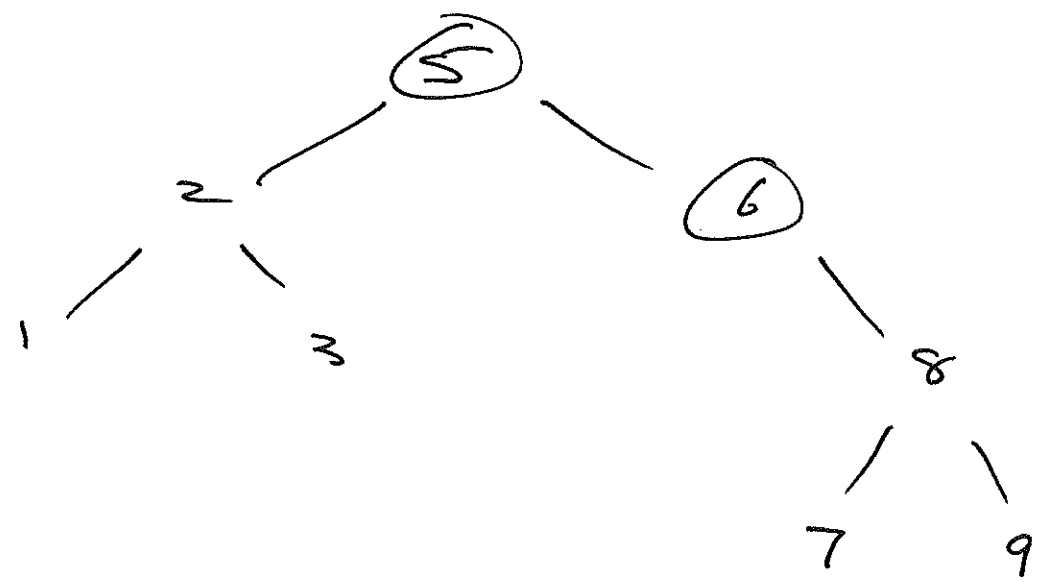
delete(2)

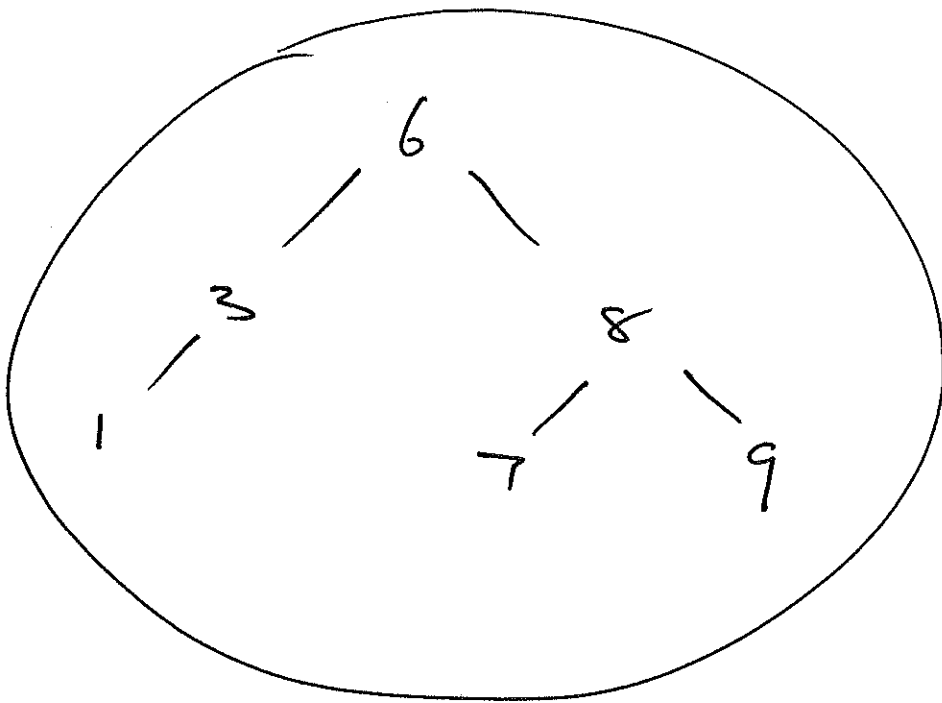
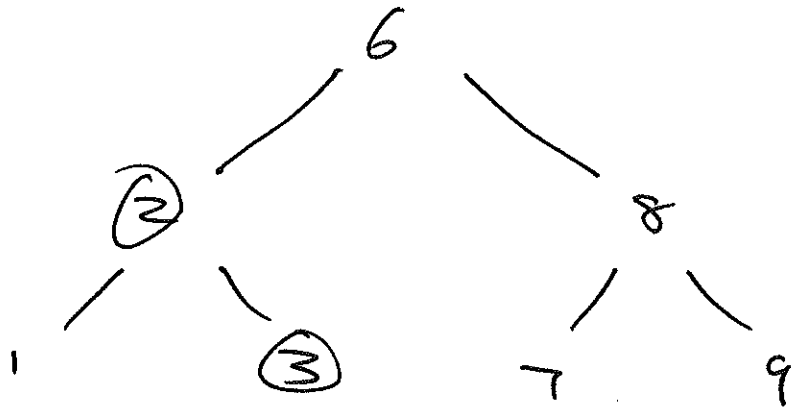


EX insert : 5 2 6 4 3 8 7 1 9



Delete : 4 , 5 , 2





Review #2

$$5 < 8 : \ln(\ln(n)) = o(\ln(n^2)) \quad \checkmark$$

$$\lim_{n \rightarrow \infty} \frac{\ln(\ln(n))}{2 \ln(n)} = \lim_{n \rightarrow \infty} \frac{\frac{1}{\ln(n)} \cdot \frac{1}{n}}{2 \cdot \frac{1}{n}}$$

$$= \lim_{n \rightarrow \infty} \frac{1}{2 \ln(n)} = 0$$

$$\text{note \#(4)} : 2^{\ln(n)} = n^{\ln(2)}$$

$$\text{identity : } a^{\log_b(c)} = c^{\log_b(a)}$$