

Student ID: 18125006

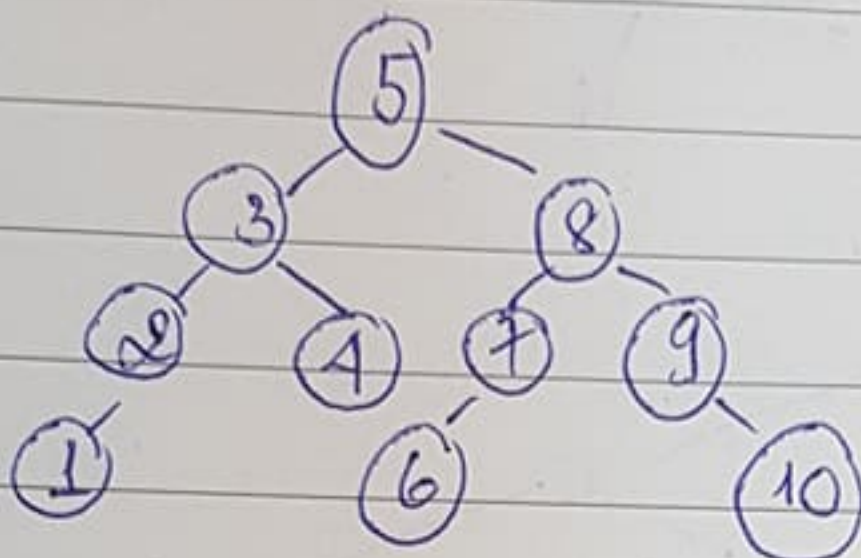
Full name: Phạm Lê Thủy Dung

Class: 18APCS1

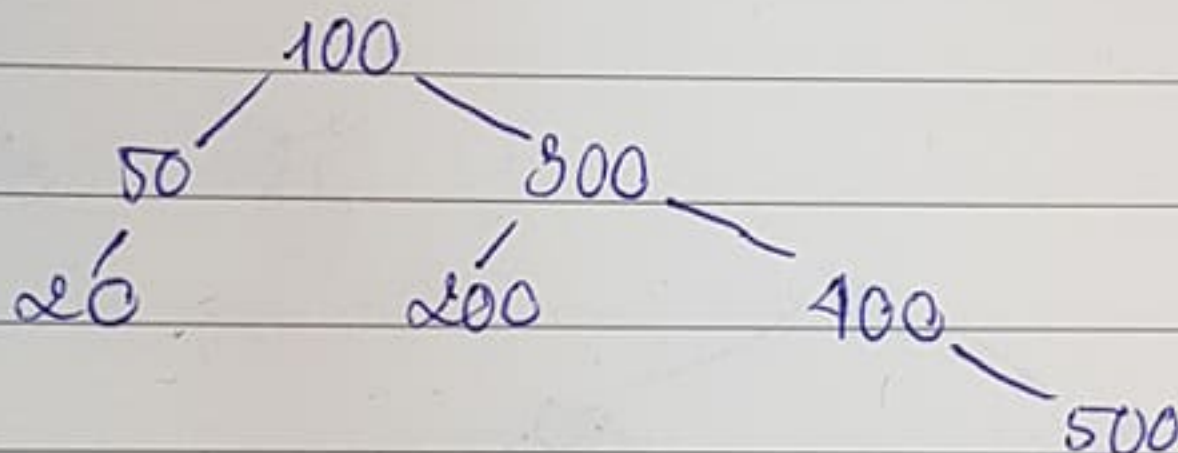
Week 06

### <3.1> Assignment 1

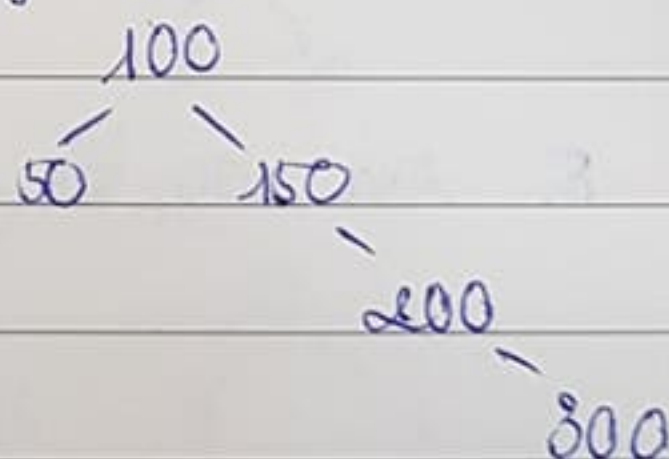
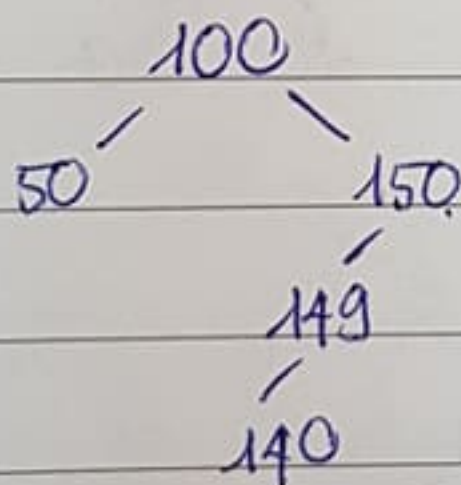
1.



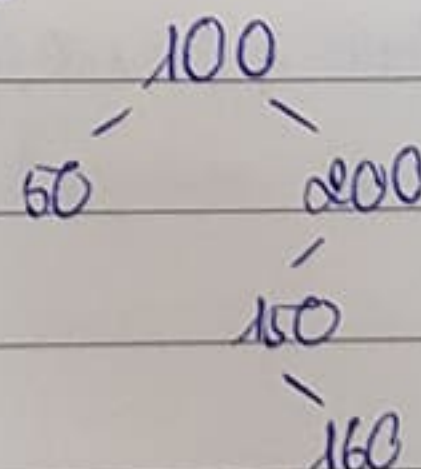
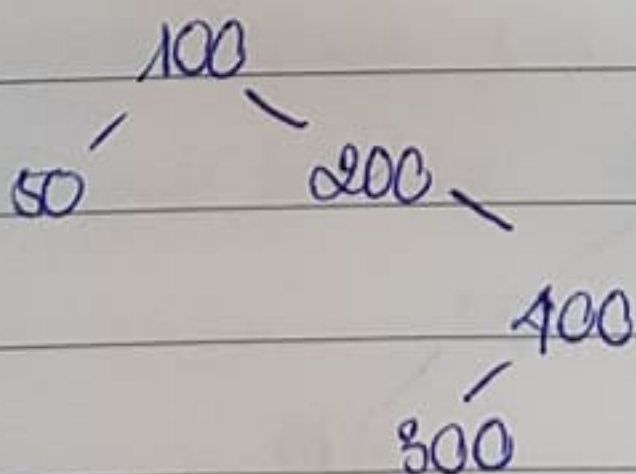
2.



3. Left-left: 100-50-150-149-140 Right-Right: 100-50-150-200-300



Right-left: 100-50-200-400-300 Left-right: 100-50-200-150-160

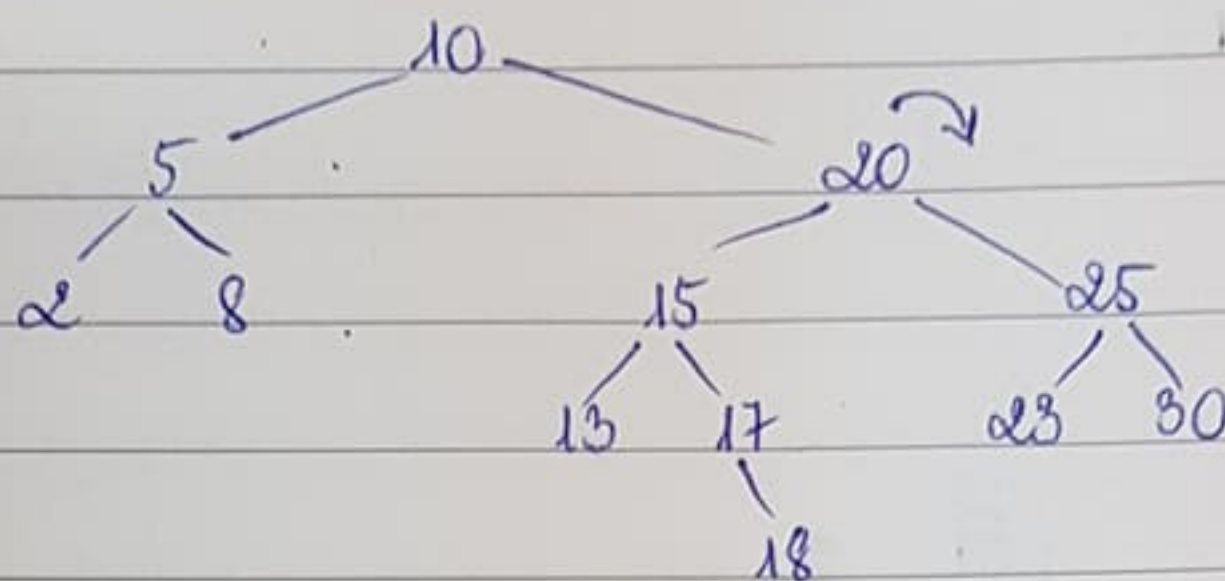




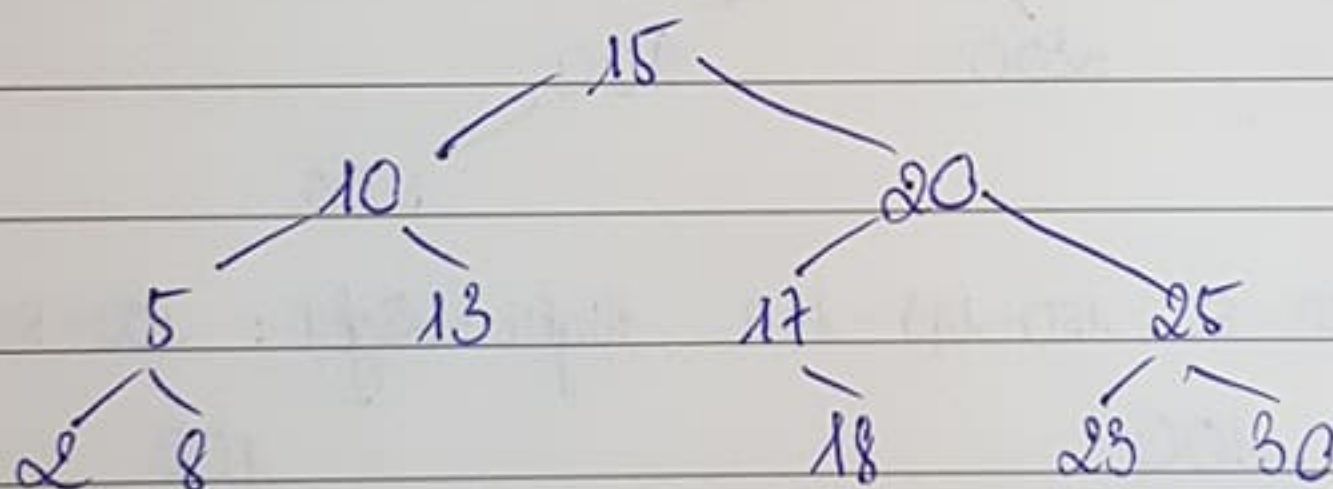
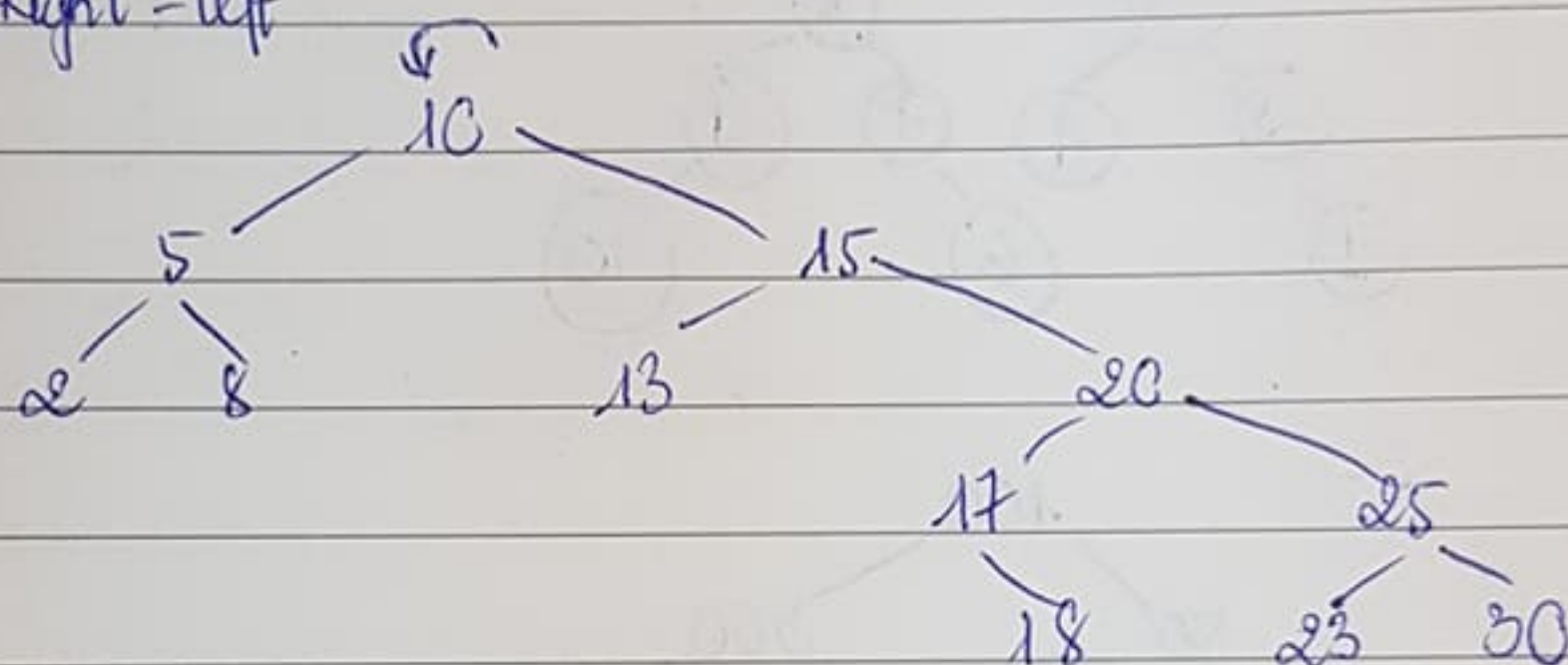
4. a) 40 ~~50~~. Imbalance occurs at ~~30~~ 10.

b) 16 ~~40~~ ~~85~~ ~~16~~ ~~26~~. Imbalance occurs at ~~30~~ 10.

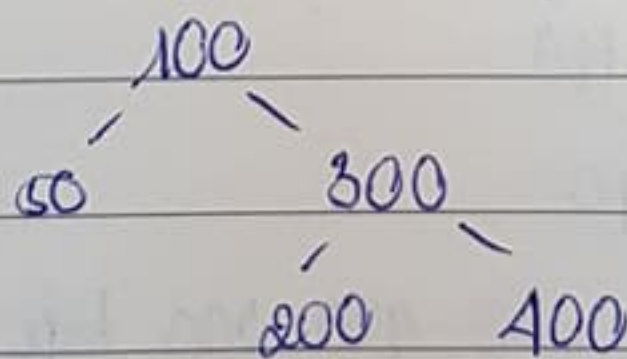
c)



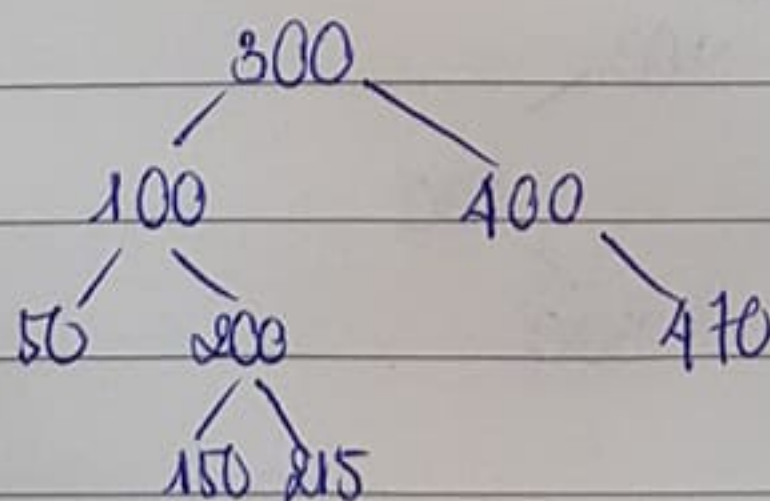
→ Right-left



5. Add 100, 50, 300, 200, 400

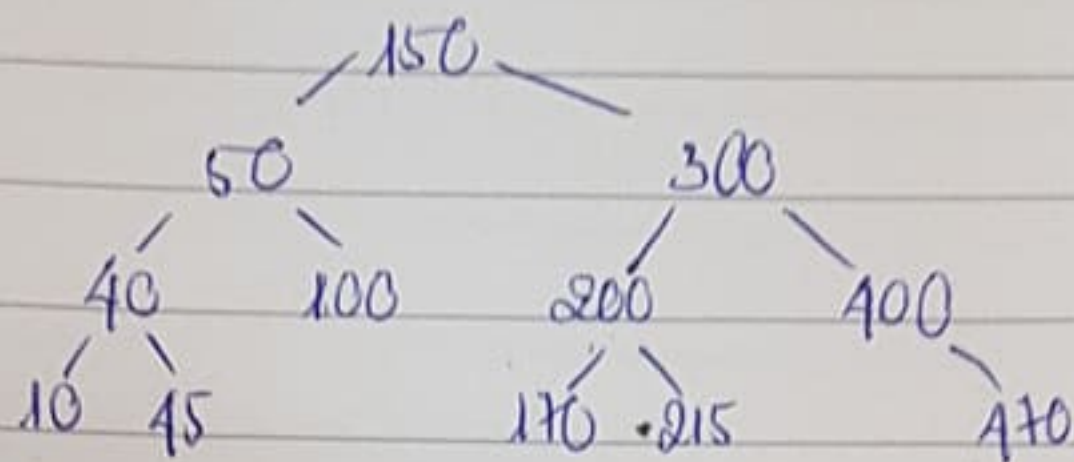


Add 470, 150, 215

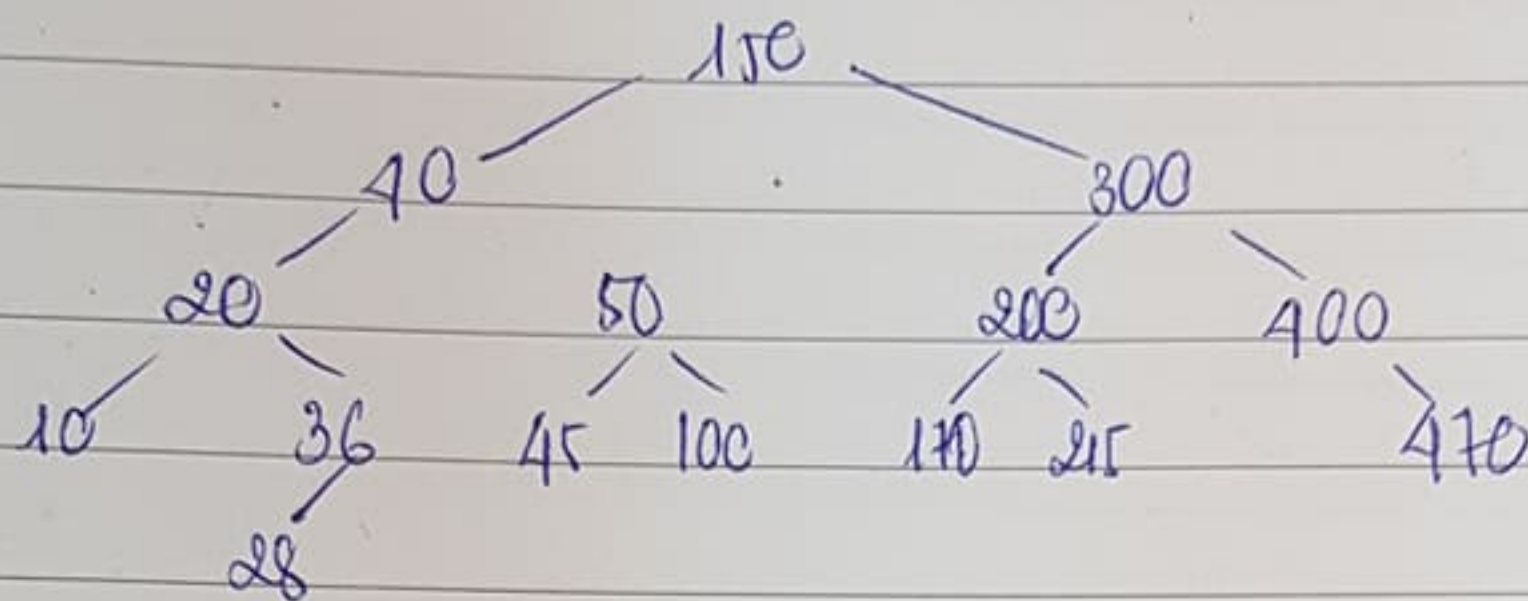


Add 170, 40, 45, 10





Add 36, 20, 28



### 3.2 Assignment 2

1. Minimum :  $2^h - 1$

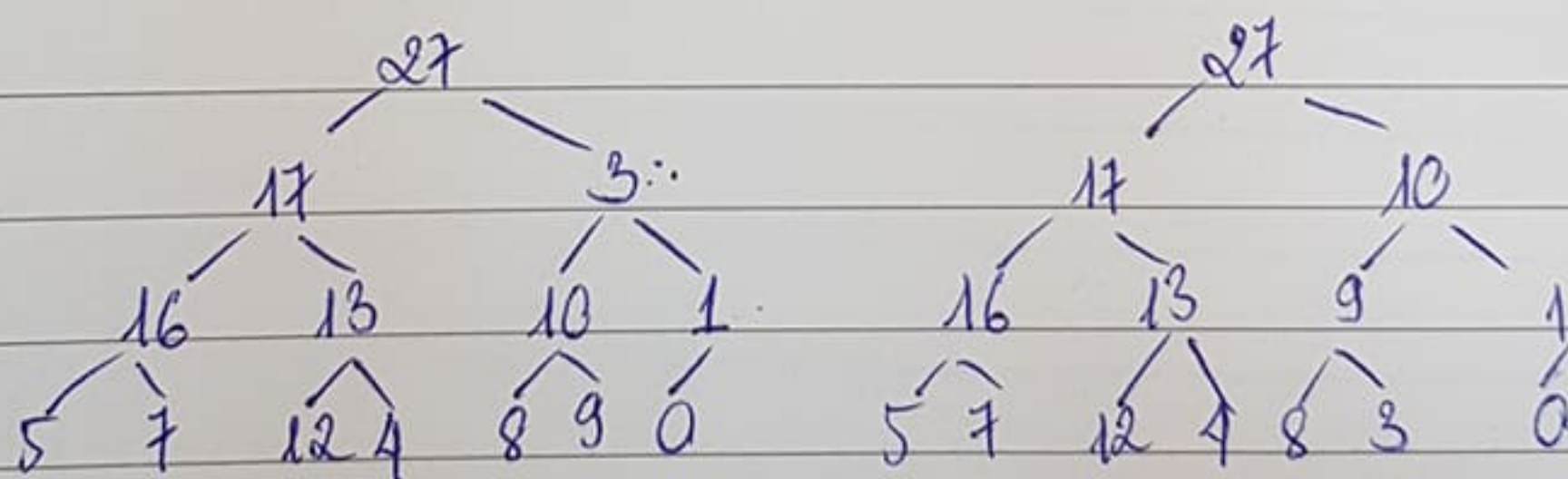
Maximum :  $2^h + 1$

2. Leaves

3. No Yes

4. No

5.



6. Nothing happens because it is already satisfies max-heap

7. Nothing happens because  $2^i + 1 > \text{heap size}$  so  $A[i]$  doesn't have children.

8.