Heap Sort —

Binary Tree — Tree → nodes → 0/1/2 children.

Leaf node — Node with 0 children
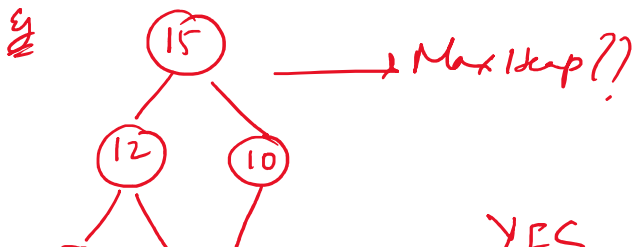

Leaf   0

← Leaf

0
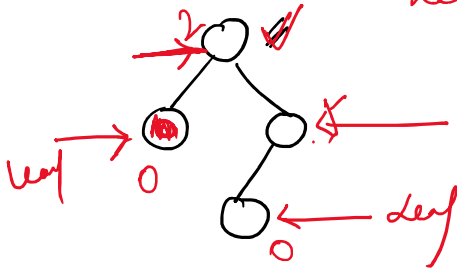
~~ACBT~~ **Almost Complete Binary Tree** —

Nodes insert karo → left direction se karo.

ACBTX
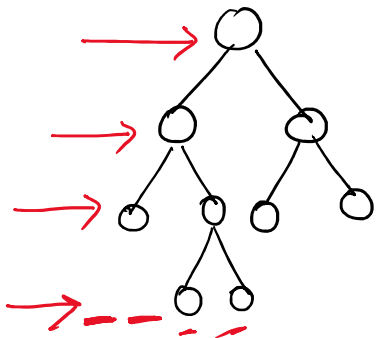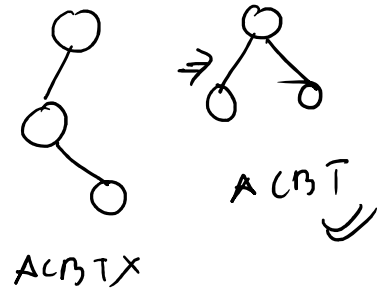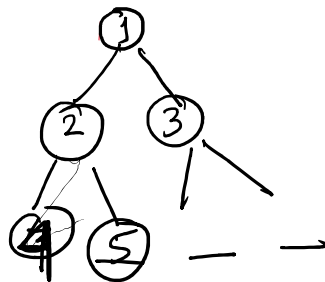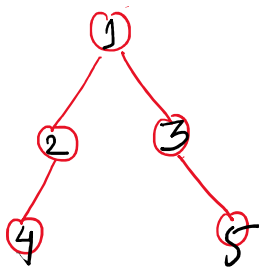
ACBT

Heap — ① ACBT

② Max heap (parent > child)

Min heap (parent < child)
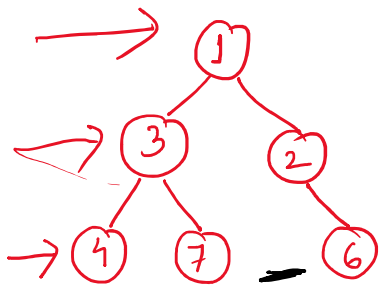
Eg.

→ Max Heap ??

15

12   10

parent.val > child.val
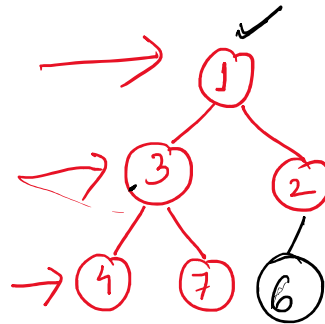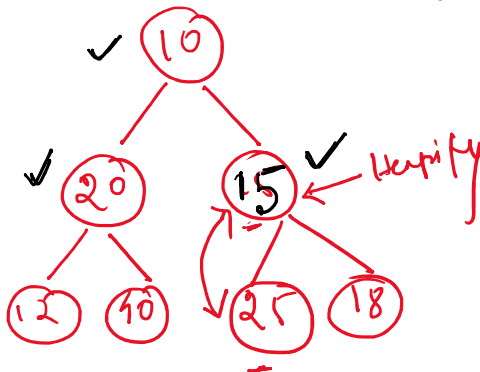
YES
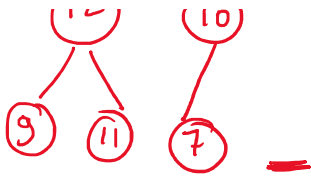
YES

→ Min Heap ??

→

Heapify - Array $\xrightarrow{\text{convert}}$ Max/ Min Heap
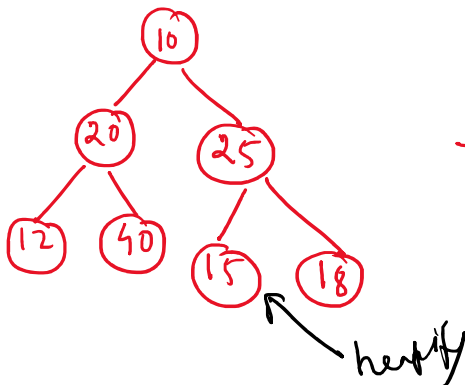
Convert to Max Heap:-

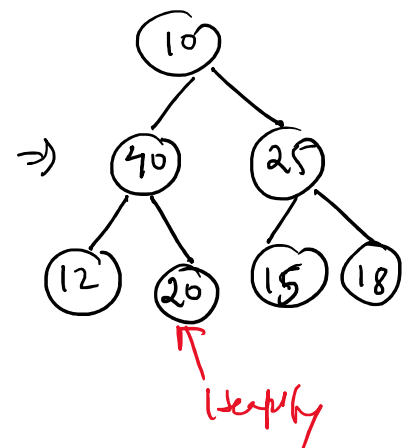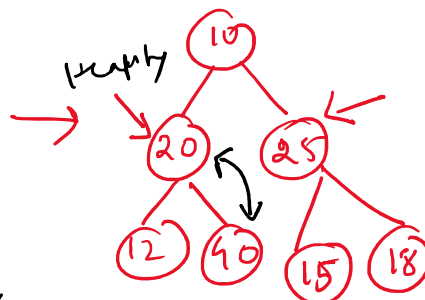10   20   15   12   40   25   18
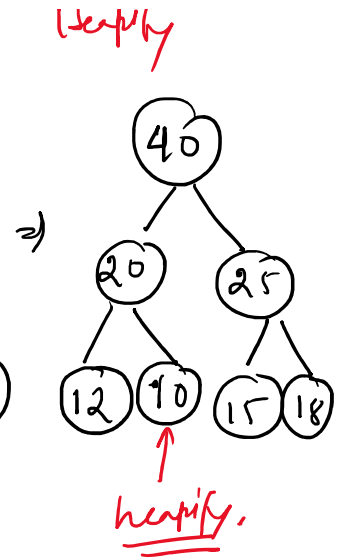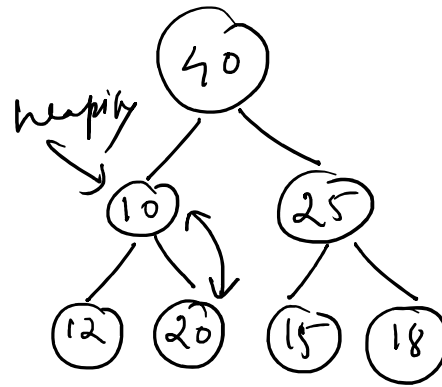
→ Represent in the form of ACBT.

① Start from last non-leaf node.

② parent > child.

Heapify

heapify

Heapify

Heapify

Heapify

Heapify diagrams (three trees showing heapify operations)

Tree 1: 10 (root, circled red, "Heapify"), children 40 and 25; 40 has children 12 and 20 (circled red); 25 has children 15 and 18.

Tree 2: 40 (root, "heapify"), children 10 and 25; 10 has children 12 and 20; 25 has children 15 and 18.

Tree 3: 40 (root, "Heapify"), children 20 and 25; 20 has children 12 and 10 ("heapify"); 25 has children 15 and 18.

H/w :- Convert array to min heap.