Friday, October 4, 2024   2:27 PM

I) Illustrate the operation of **building a heap** on the following array:

A = < 5, 13, 2, 25, 7, 17, 20, 8, 4>

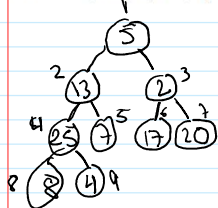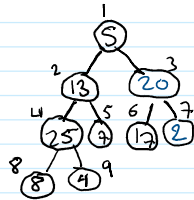| 1	2	3	4	5	6	7	8	9
25	13	20	8	7	17	2	5	4

figure ①

figure ② - Swapped 20 & 2
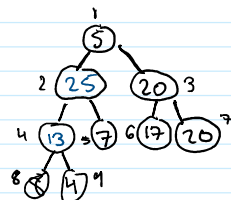∴ 20 is bigger than 2.

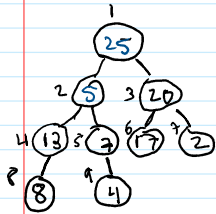figure ③ - Swapped 13 & 25
∴ 25 is bigger than 13.

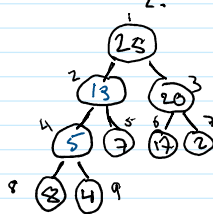figure ④ : Swapped 25 & 5 ∴ 25 is bigger than 5.

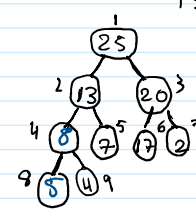figure ⑤ : Swapped 13 & 5. ∴ 13 is bigger than 5.

figure ⑥ : Swapped 8 & 5 ∴ 8 is bigger than 5

∴ Building heap Sort is completed.

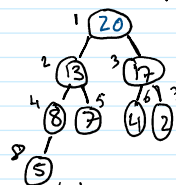II) Illustrate the **operation of HEAPSORT** on the following array (Do it at the end of lecture 3):
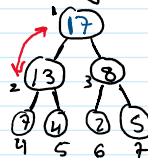
A = < 5, 13, 2, 25, 7, 17, 20, 8, 4>

Working backwards of the Build-Heap Sort by swapping & eliminating nodes:
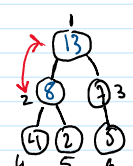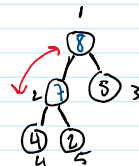

Begin Heap Sort

Swapped: 20 with 25
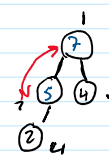
Eliminated Node: 25
Swapped Node: 17

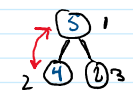Eliminated Node: 20, 25
swapped Node: 13

Eliminated Node: 17, 20, 25
Swapped Node: 8

Eliminated Node: 13, 17, 20, 25
Swapped Node: 7

Eliminated Node: 8, 13, 17, 20, 25
Swapped Node: 5

Eliminated Node: 7, 8, 13, 17, 20, 25
Swapped Node: 4

Eliminated Node: 5, 7, 8, 17, 20, 25
Swapped Node: 4

Eliminated Node: 4, 5, 7, 8, 13, 20, 25
Swapped Node: 2.

∴ operation of Heap-Sort is completed with: A = | 2 | 4 | 5 | 7 | 8 | 13 | 17 | 20 | 25 |