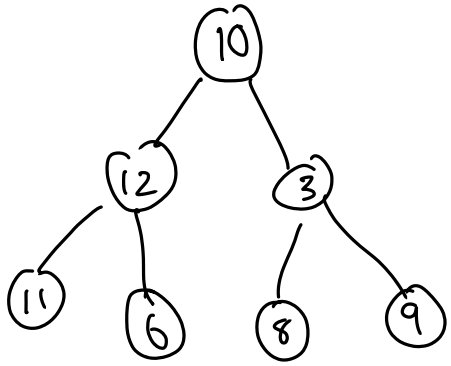
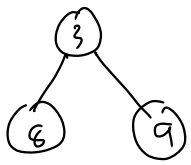
Min-Heap ⇒ Build Heap: Part A

[10, 12, 3, 11, 6, 8, 9]

Original Heap ⇒

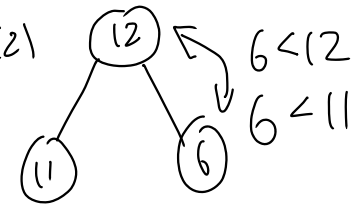


Heapify(1)



3 is smallest, keep

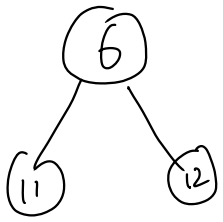
Heapify(2)



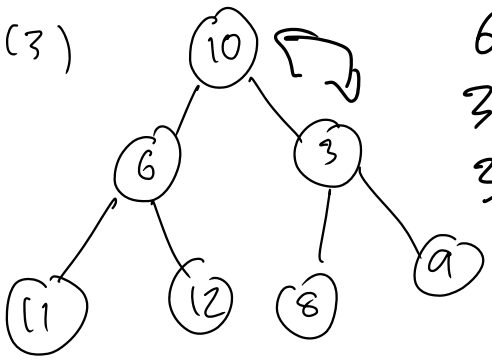
6 < 12

6 < 11

Swap:



Heapify(3)

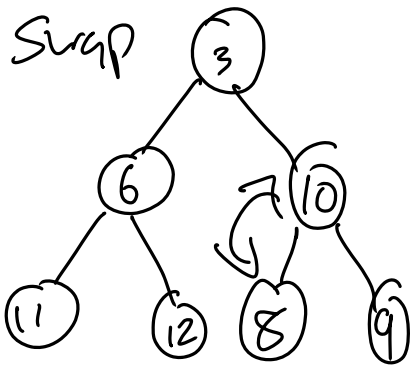


6 < 10

3 < 10

3 < 6

Swap

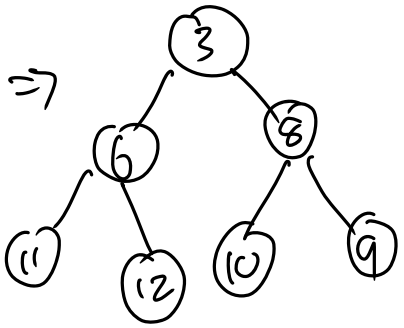


8 < 10

8 < 9

9 < 10

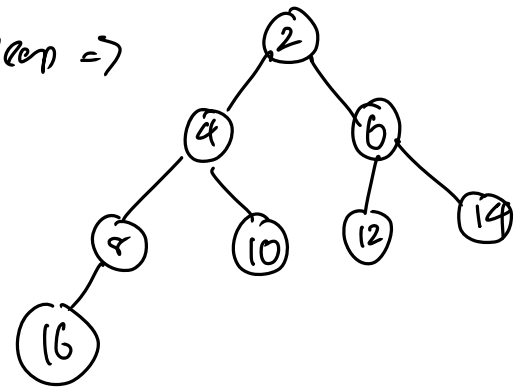
Final Heap ⇒



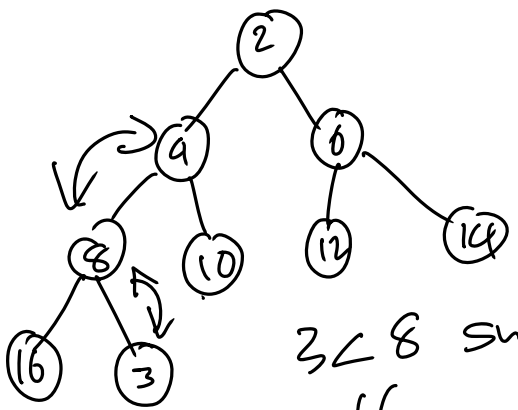
Final List: [3, 6, 8, 11, 12, 10, 9]

Part B : Original list => [2, 4, 6, 8, 10, 12, 14, 16]

Original Heap =>



Insert (3) : Place node at bottom location



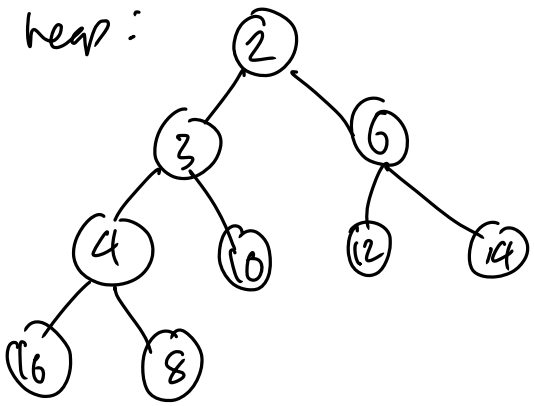
3 < 4 Swap 3 and 4

3 < 8 swap

3 < 16

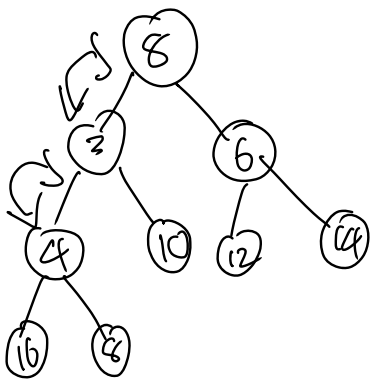
2 > 3 Heap at location

Resulted heap :



Pop(): Remove top node and replace with last node

Replace 8 and 2



3 < 6 Swap 3 and

3 < 8

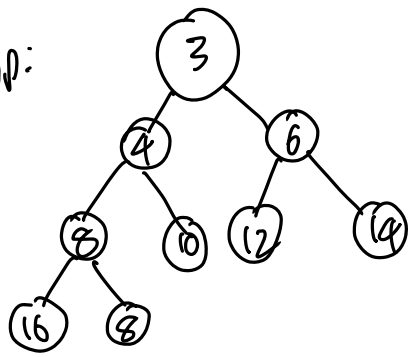
4 < 8 Swap 4 and 8

4 < 10

8 = 8 Keep at location

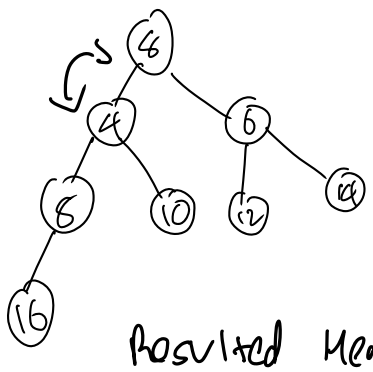
16 > 8

Resulted Heap:



Pop(): Do same thing

Remove 3 and Replace last node with top



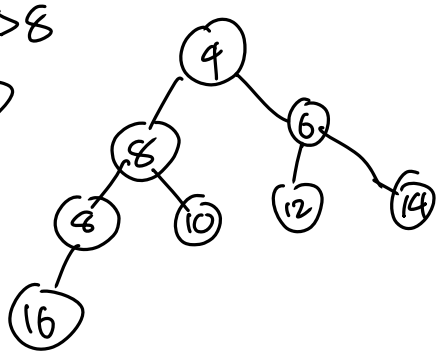
4 < 6 4 < 6 Swap 4 and 6

6 < 8

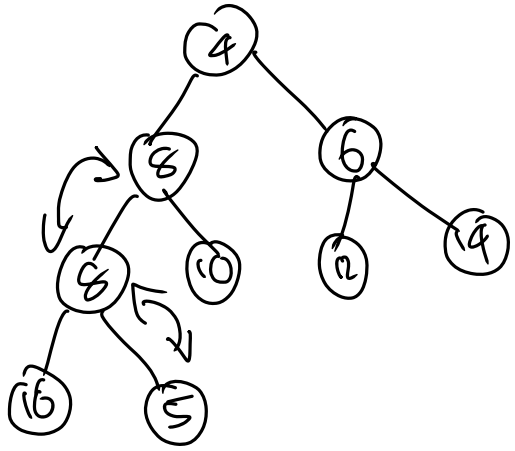
8 = 8 Stay at location

10 > 8

Resulted Heap ⟹



Insert(5) : Place 5 at bottom / last node spot

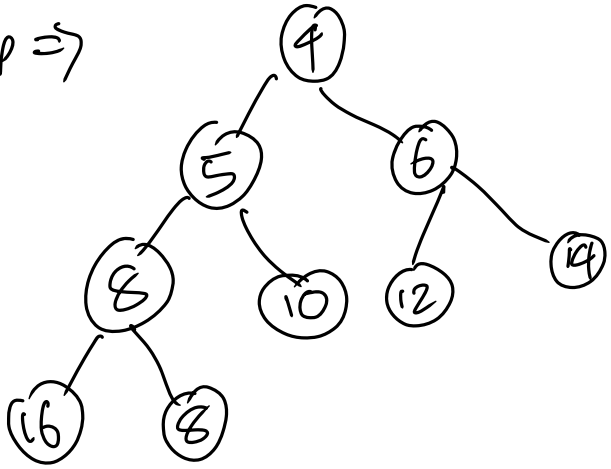


5 < 8 Swap 5 and 8

5 < 8 Swap 5 and 8

4 < 5 Keep at location

Resulted final heap =>



Final array => [4, 5, 6, 8, 10, 12, 14, 16, 8]