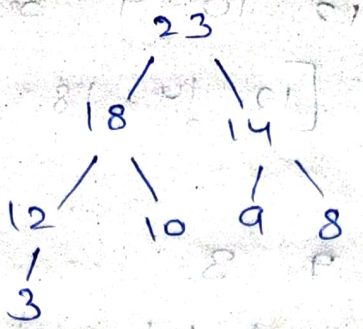
Heap Sort for max heap:

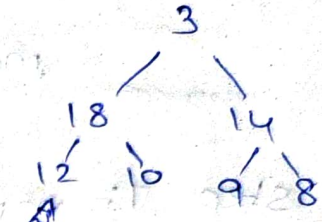
1	2	3	4	5	6	7	8
23	18	14	12	10	9	8	3



step 1:- Extract Max(23), replace (swap) with 3 then.

3	18	14	12	10	9	8	23

Min heap.



step2:- Now, again max heap for 18(max) swap with the 3 and 3 is swapped with the 12 (max).

3 18 14 12 10 9 8 [23 $i = 1 \times 2 = 2, 3$. 3 = 18, 14

18 3 14 12 10 9 8 [23 $i = 2 \times 2 = 4, 5$. 3 = 12, 10

18 12 14 3 10 9 8 [23

step 3:- The array is max heap, remove (extract) the top (or) first (large) 18. and swap the last node index 8 to first index node.

8 12 14 3 10 9 [18 23

Now, min heap.

8 12 14 3 10 9 [18 23 $i = 1 \times 2 = 2, 3$.

14 12 8 3 10 9 [18 23 $i = 3 \times 2$

14 12 9 3 10 8 [18 23.

step 4:- remove 14 from array and swap 8 to first node

8 12 9 3 10 [14 18 23.

Max heap ->

12 8 9 3 10 [14 18 23

12 10 9 3 8 [14 18 23

Step 5 :- Min heap → Extract '12' and swap with '8'.

~~8~~ ~~10~~ ~~9~~ 12 10 9 3 8 [14 18 23

8 10 9 3 [12 14 18 23.

max heap →

10 8 9 3.

Step 6 :- min heap → Extract '10' and swap '3'.

3 8 9 [10 12 14 18 23

max heap →

9 8 3 [10 12 14 18 23

Step 7 :- min heap → extract 9 and swap 3.

3 8 [10 12 14 18 23

max heap →

8 3 [10 12 14 18 23.

Step 8 :- min heap → extract 8 & swap with 3.

3 [8 10 12 14 18 23.

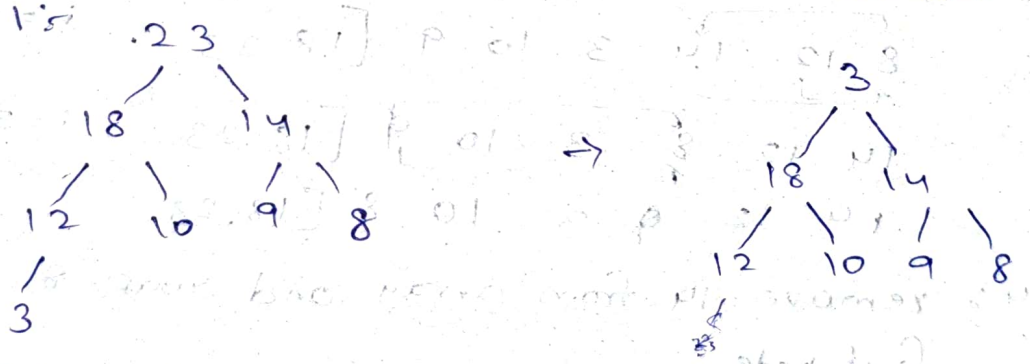
max heap → 3 [8 10 12 14 18 23.

min heap → Extract 3.

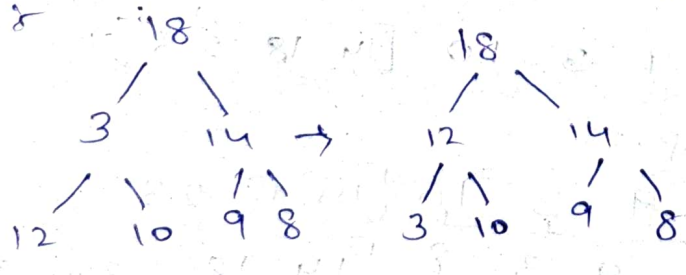
empty [3 8 10 12 14 18 23.

The ascending and perfect heap sort. | 3 | 8 | 9 | 10 | 12 | 14 | 18 | 23 |

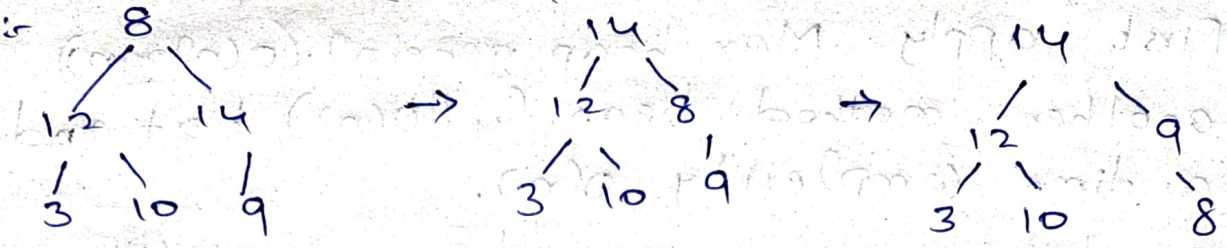
Step 1 :-



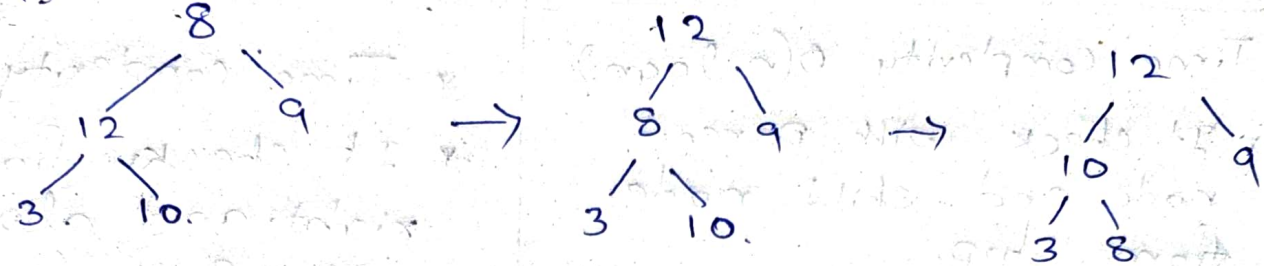
Step 2 :-



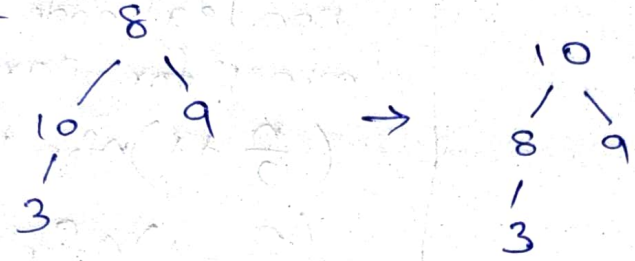
Step 3:-



Step 4:-

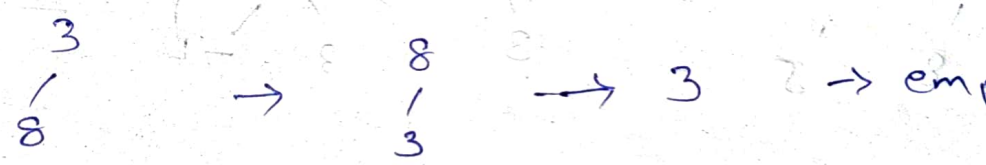


Step 5:-

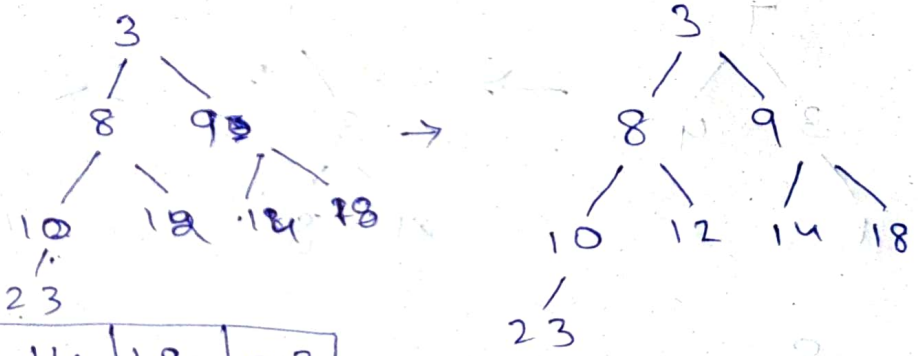


Step 6:-

Step 7:-



The min heap :-



3	8	9	10	12	14	18	23