ADS - Lab 2

Batch - B1.

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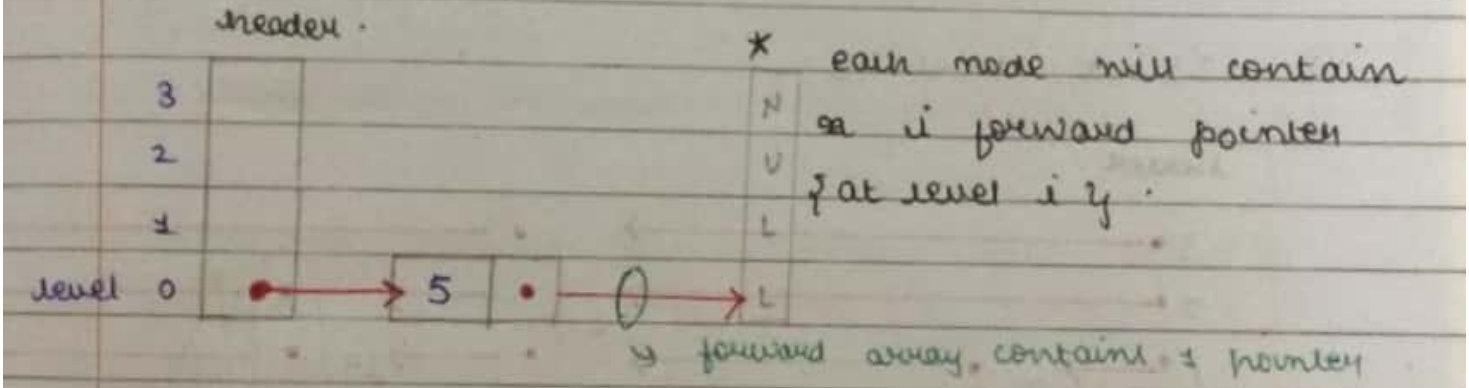
ques. Implement skip list & insertion, deletion, searching

// Insertion

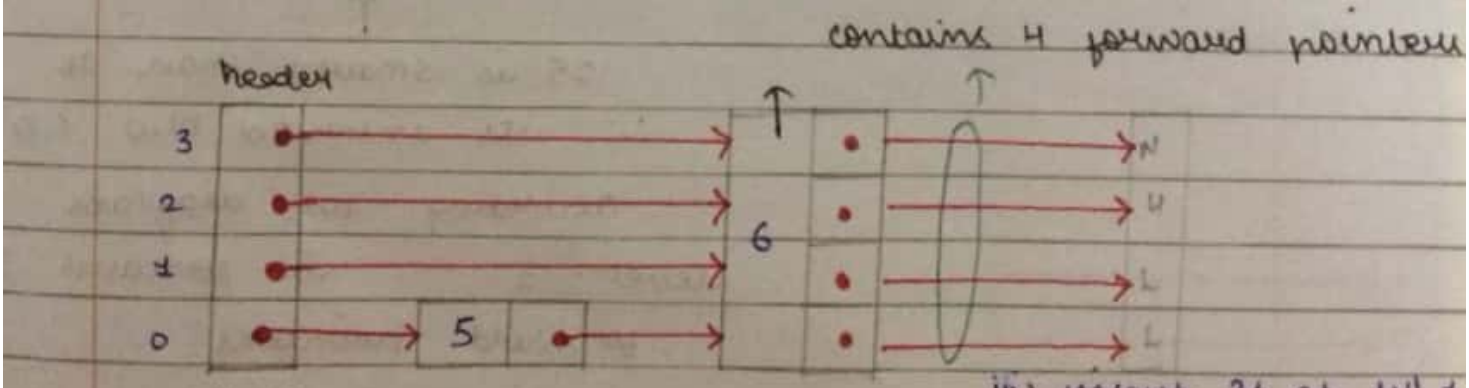
5 at level 1, 6 at level 4, 26 at level 4, 3 at level 2, 25 at level 3.

* we start with empty list having maximum level = 4

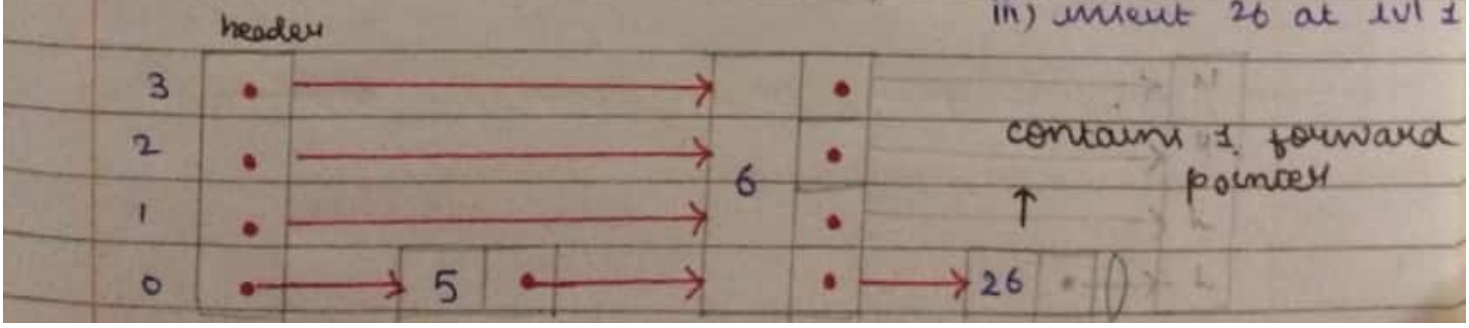
(i) inserting 5 at level 1. // indexing starts from 0



(ii) 6 at level 4.



iii) insert 26 at lvl 1



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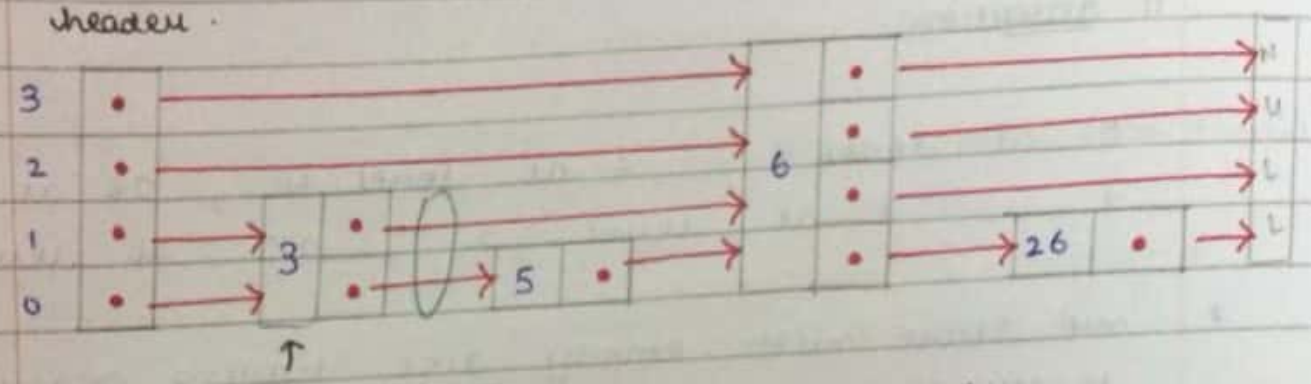
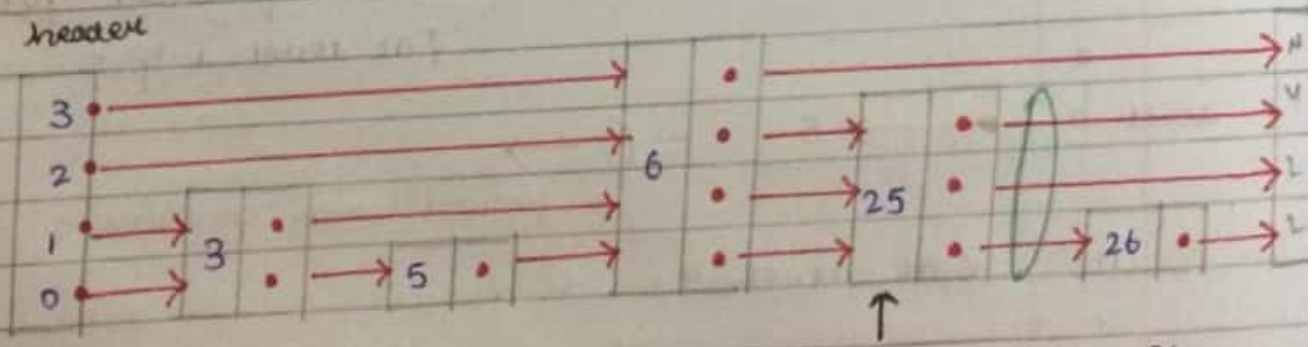
iv) insert 3 at level 2



insertion takes place in sorted order.
∵ as its to be inserted at level 2, it contains 2 forward pointers

v) 25 at level 3.



25 is smaller than 26
∴ its inserted b/w 6 & 26
according to diagram.
level = 3 ∴ it contains 3 forward pointers.

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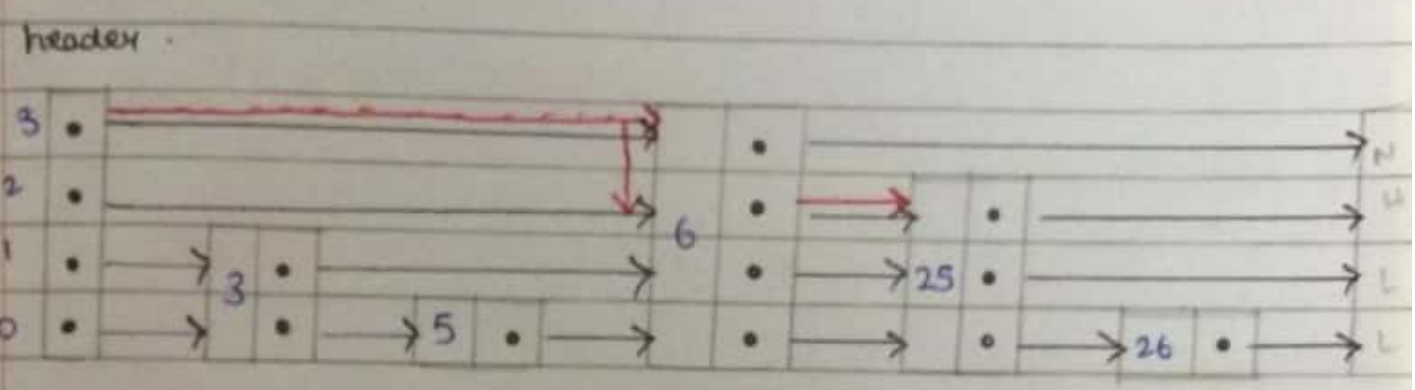
II Deletion

To delete an element we need to first search or locate it in skip list & then adjust pointers.

considering previous example ; delete node 25.

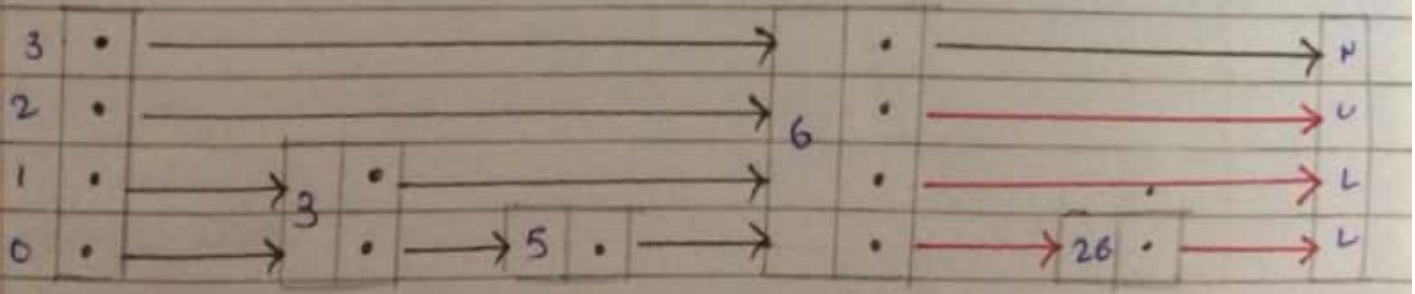


i) Start at highest level since 6 < 25 move forward.

ii) NULL ; ⇒ drop down.

iii) 25 <= 25 ∴ move forward.

Value matched ∴ we need to update pointers as shown below.



pointer manipulation is shown in red.