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700763258

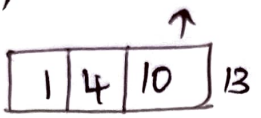
C55600 CRN:- 21566

Written Assignment 2

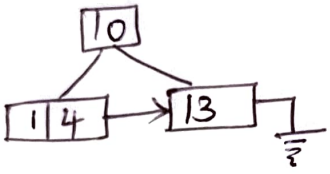
1. Create a B+ Tree (m = 4) after inserting the following input index:

10, 1, 4, 13, 3, 1, 2, 5, 1, 13, 10, 7, 6, 8, 9, 2, 10, 4, 3, 7, 6, 12, 5, 4, 13.

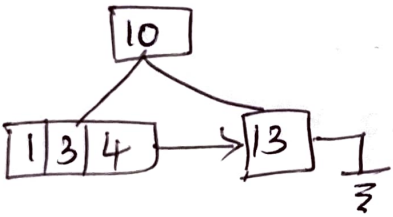
Sol:-



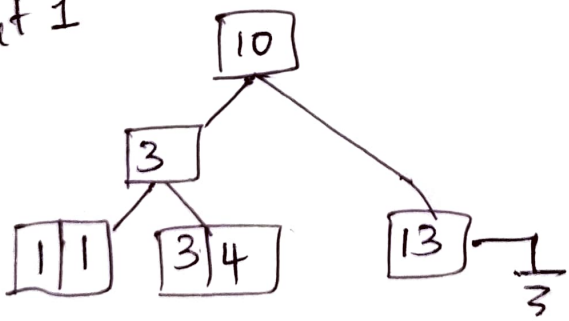
Insert 13



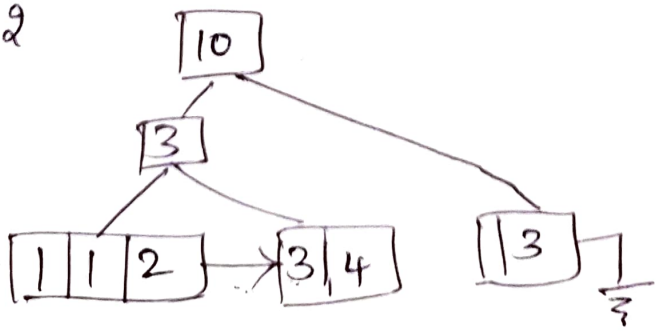
Insert 3



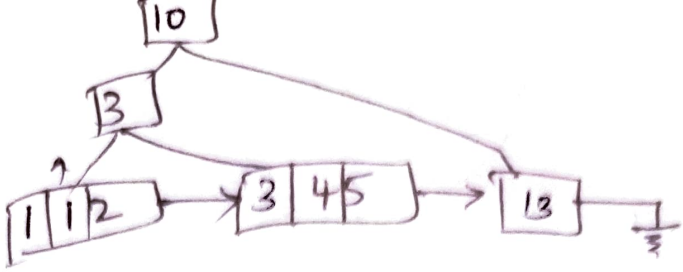
Insert 1



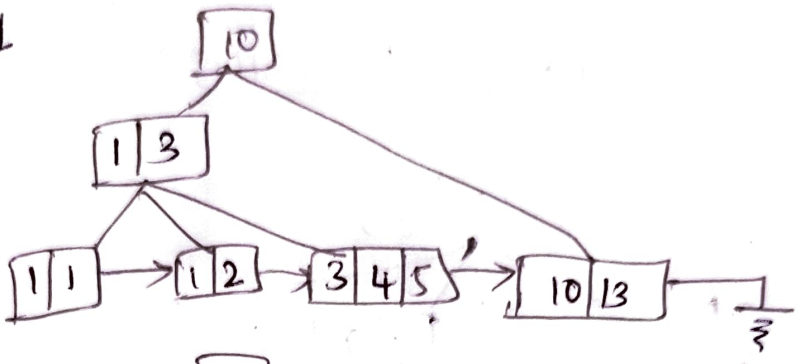
Insert 2



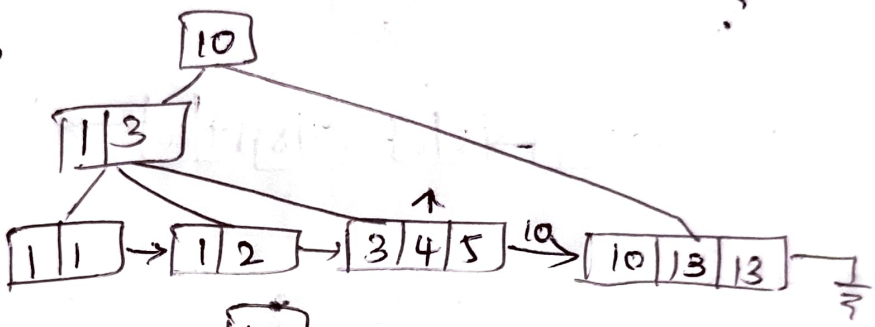
Insert 5



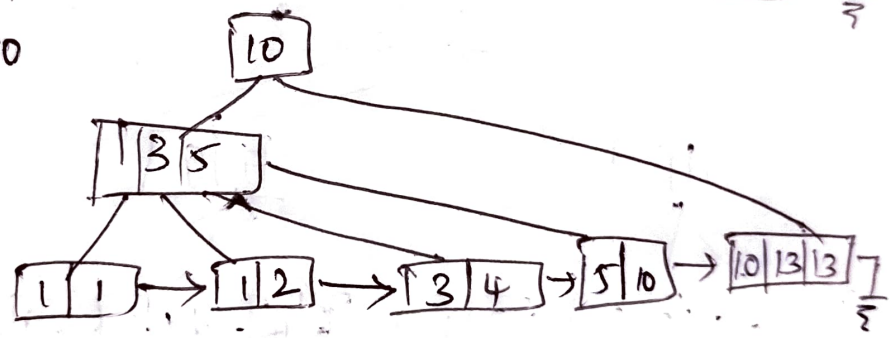
Insert 1



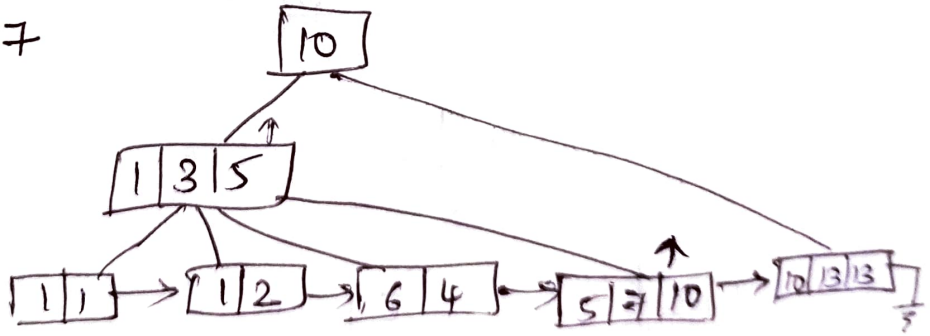
Insert 13



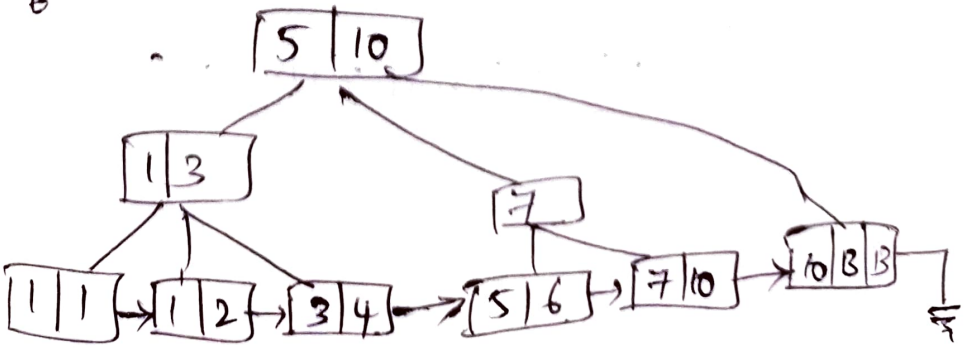
Insert 10



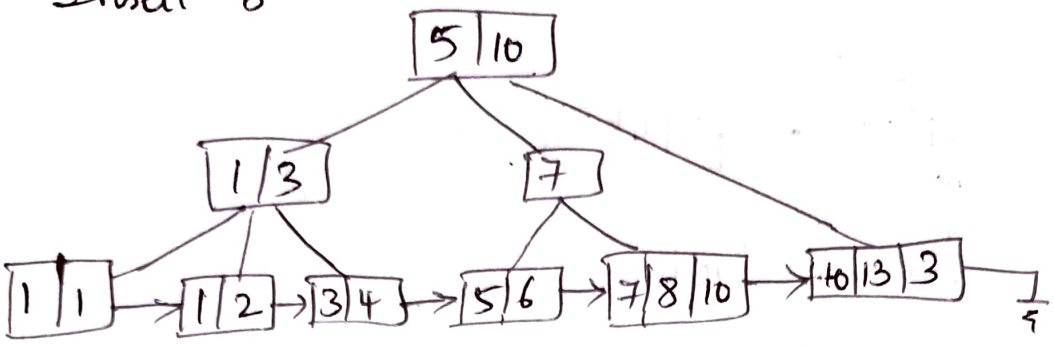
Insert 7



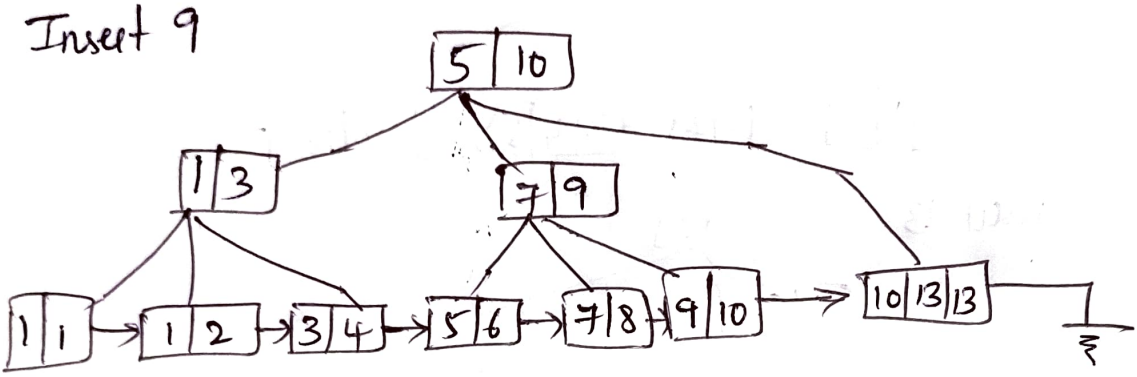
Insert 6



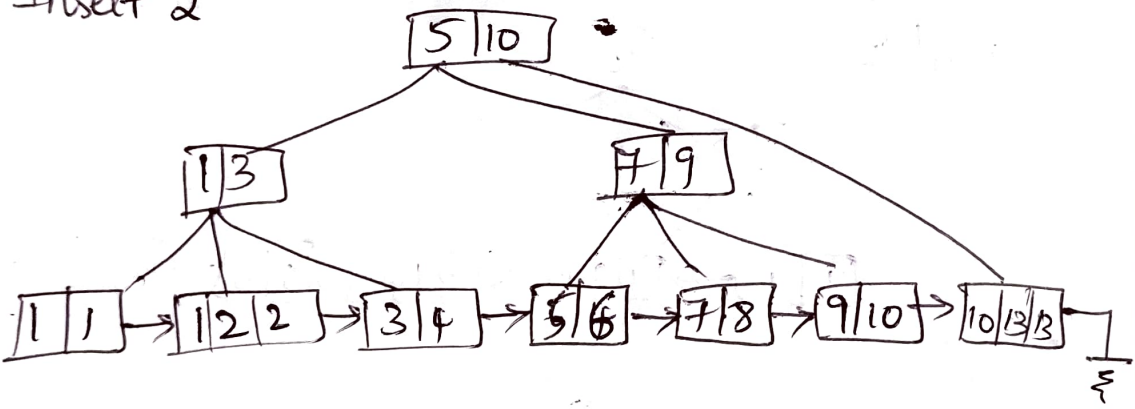
Insert 8



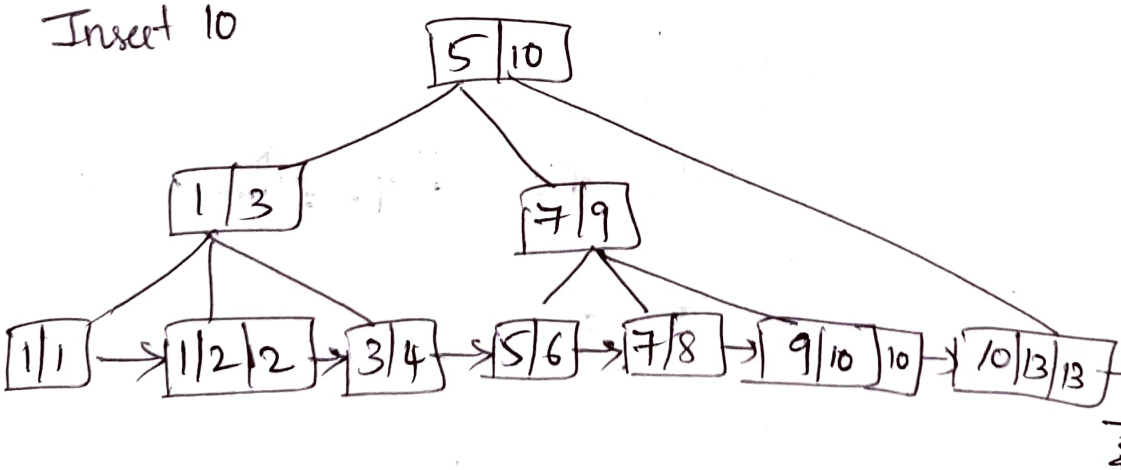
Insert 9



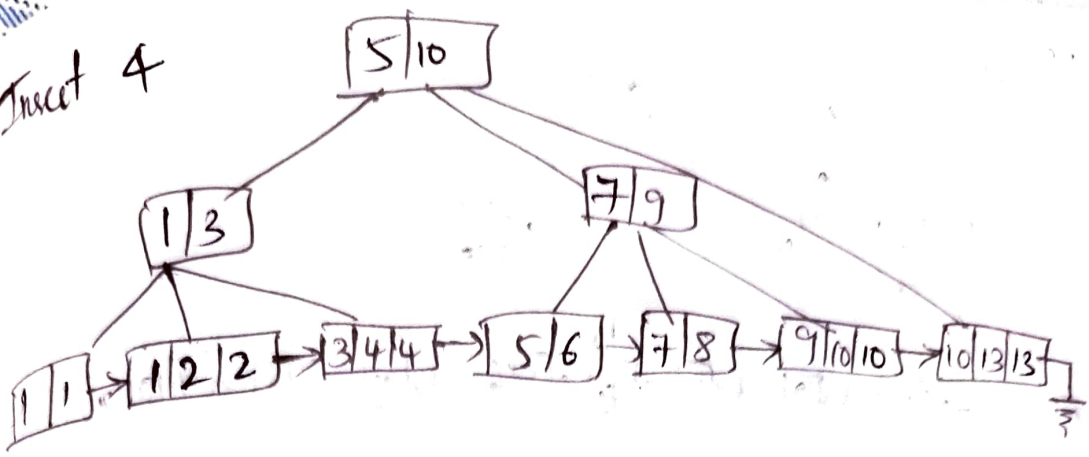
Insert 2



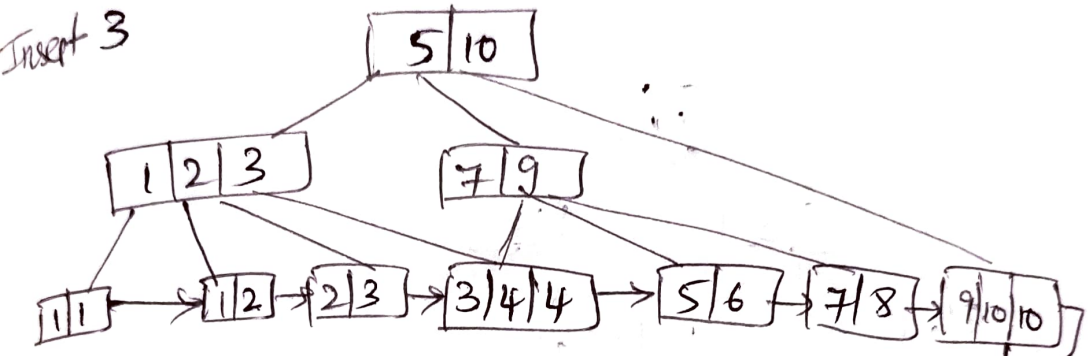
Insert 10



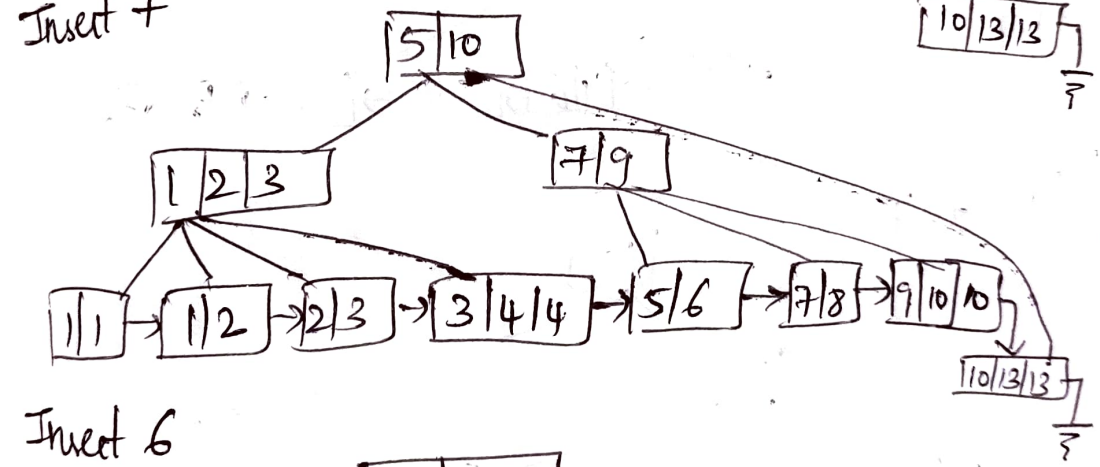
Insert 4



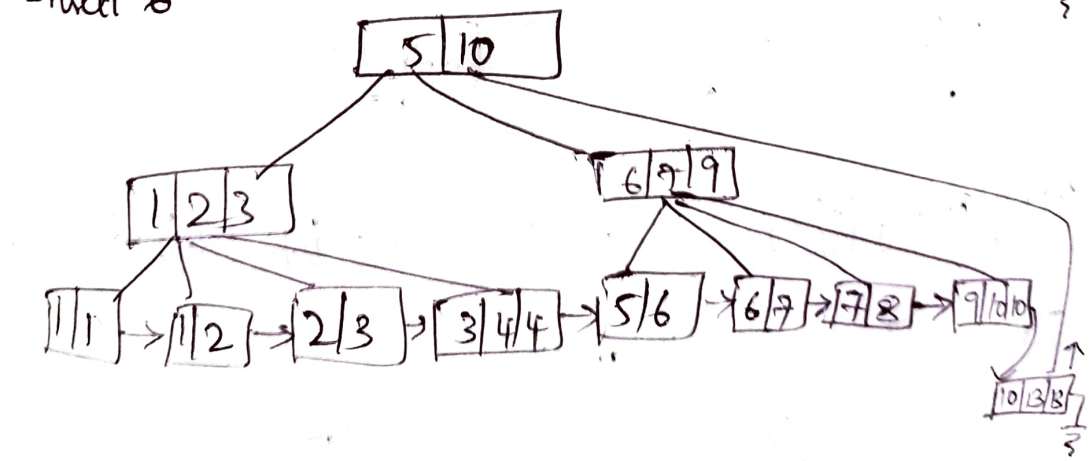
Insert 3



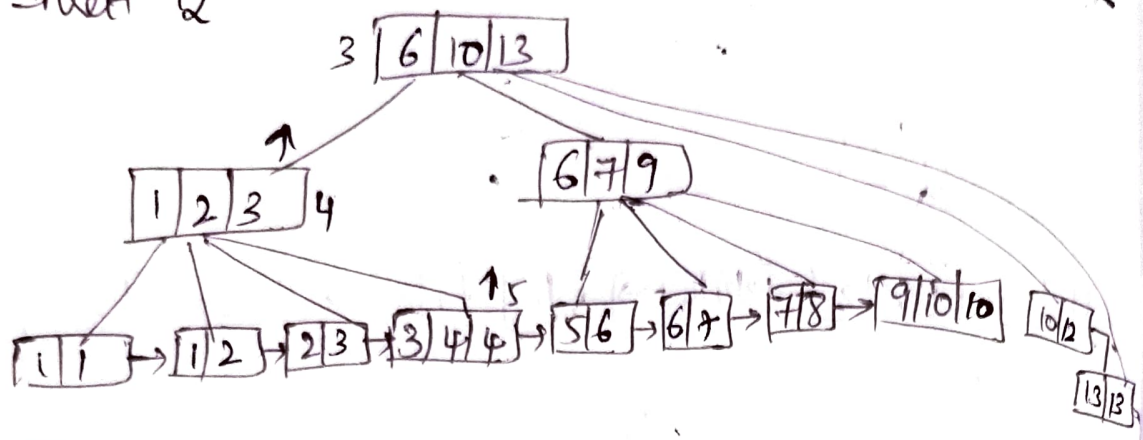
Insert 7



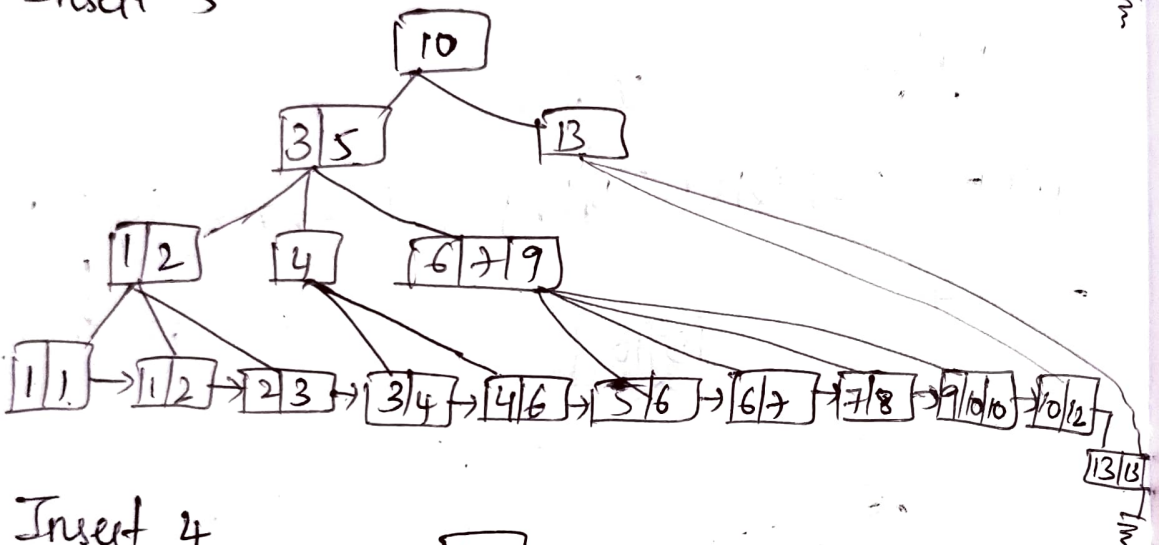
Insert 6



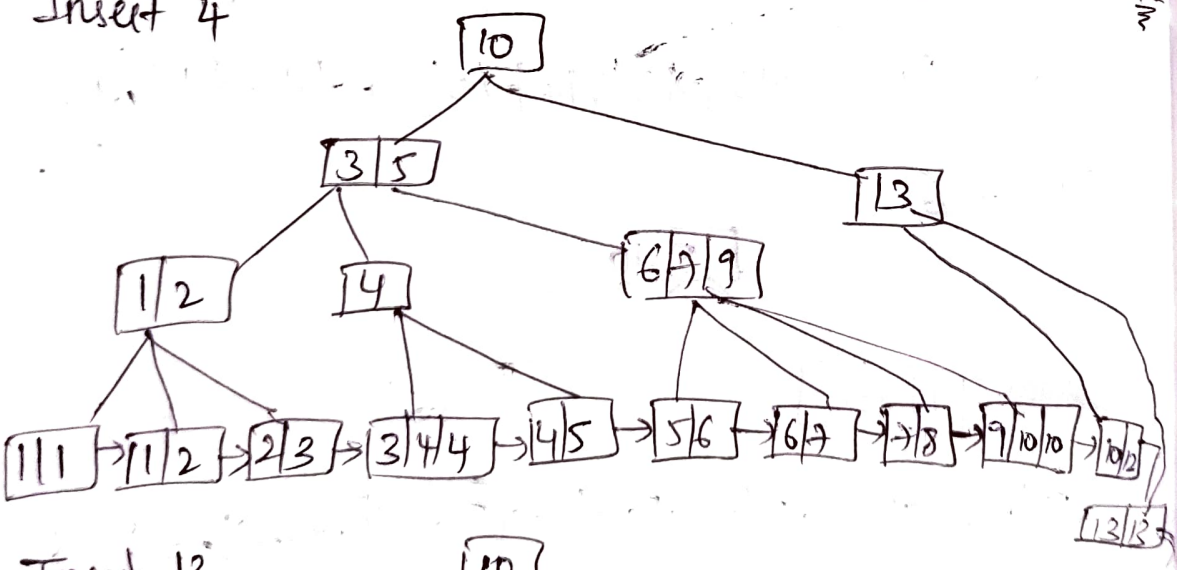
Insert 12



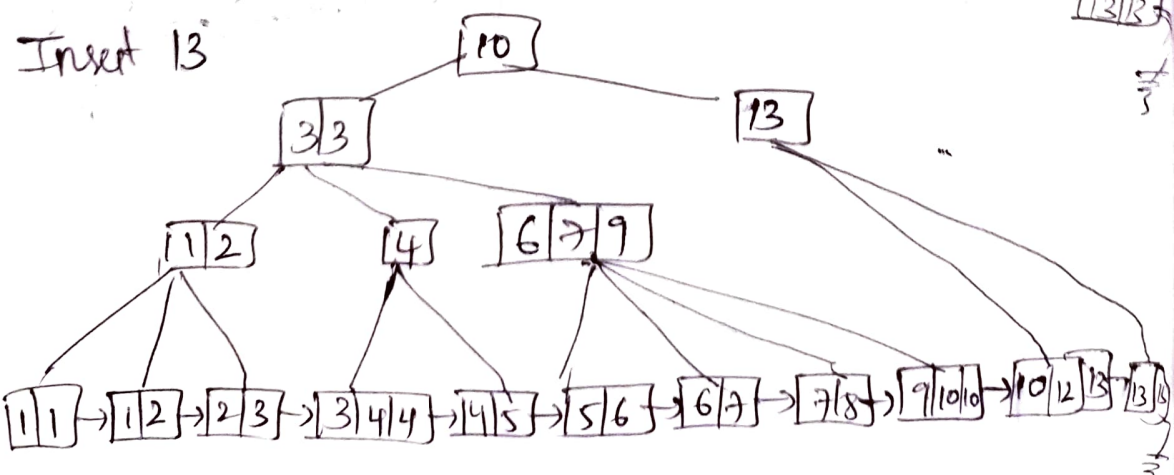
Insert 5



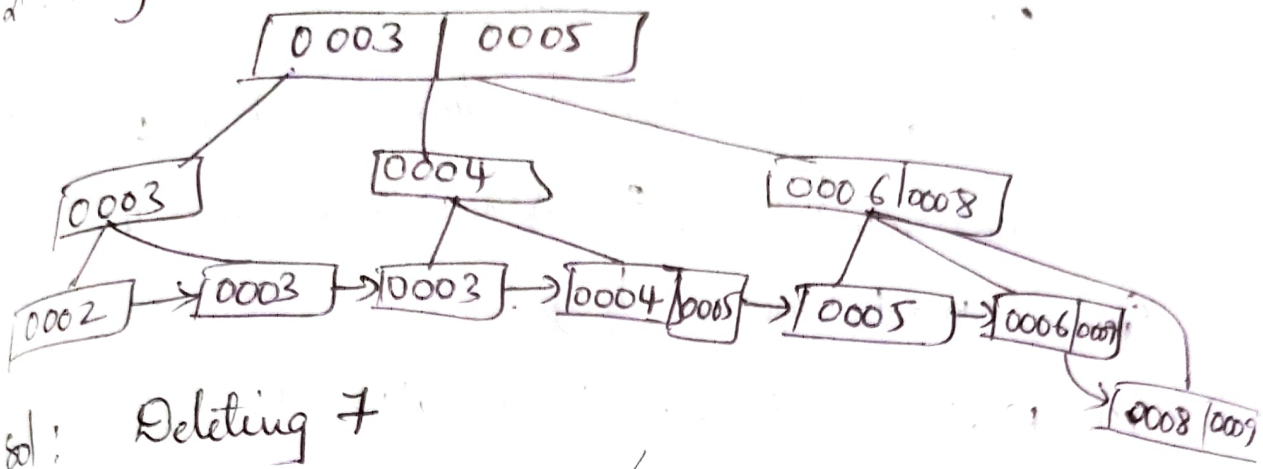
Insert 4



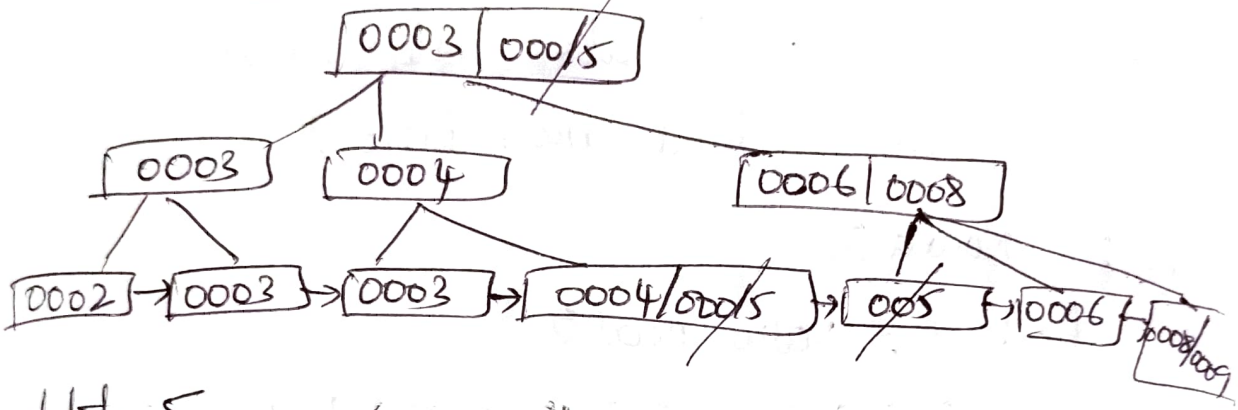
Insert 13



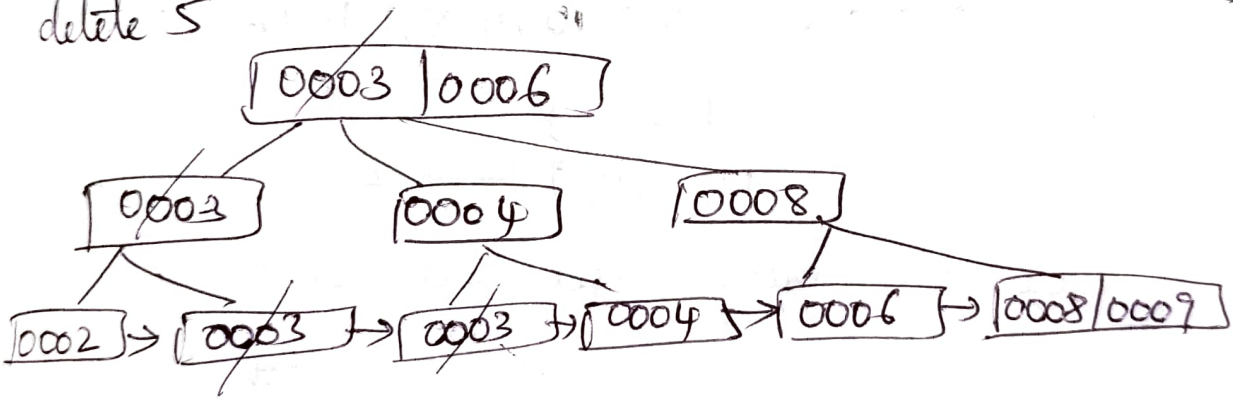
2. Regarding the following B+ Tree (m=3)



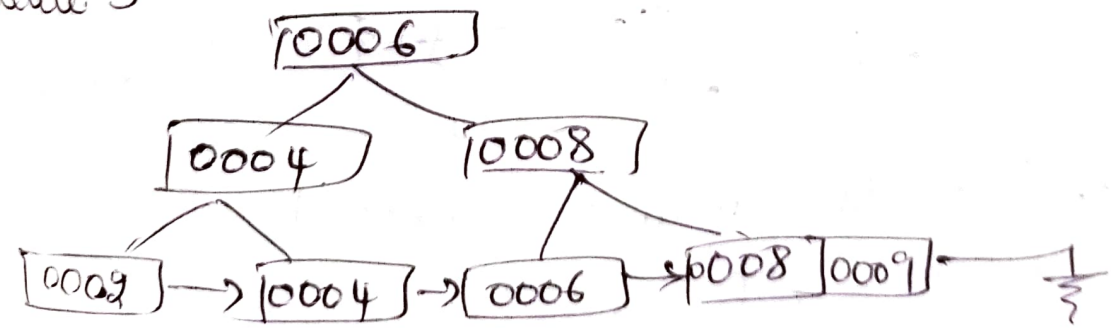
sol: Deleting 7



delete 5



delete 3



3. Linear Hash: Create the hash table from the following index values, with the bucket size = 3 and initial hash function hash h_1 : index value mod 2, hash h_2 = index value mod 4, ...

Given input index keys:

12, 13, 11, 9, 8, 7, 2, 3, 10, 4, 5, 1, 6, 14.

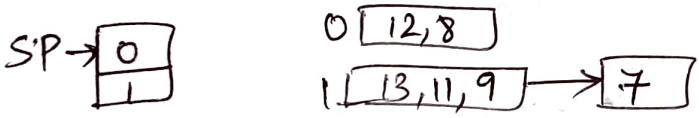
(3.1) what is hash table after round 0

(3.2) what is final hash table?

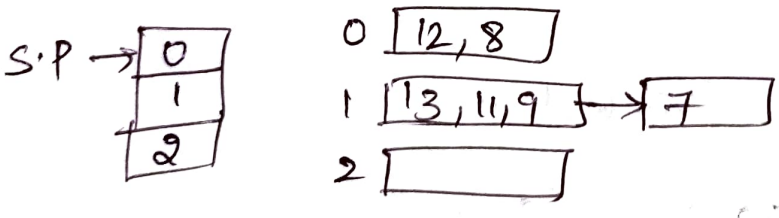
Sol:- Round 0:-

hash 1 = value mod 2

12, 13, 11, 9, 8, 7, 2, 3, 10, 4, 5, 1, 6, 14.



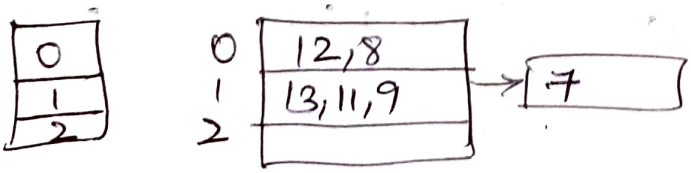
Create one more bucket and hash 2 = value mod 4, for ~~fabricted~~ #0



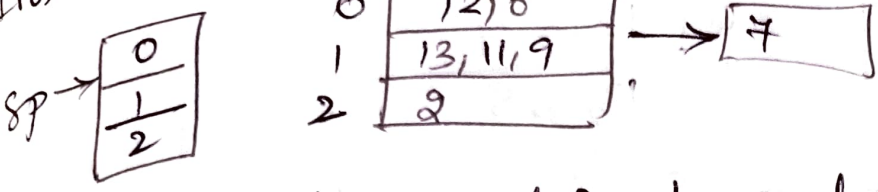
12 mod 4 = 0

8 mod 4 = 0

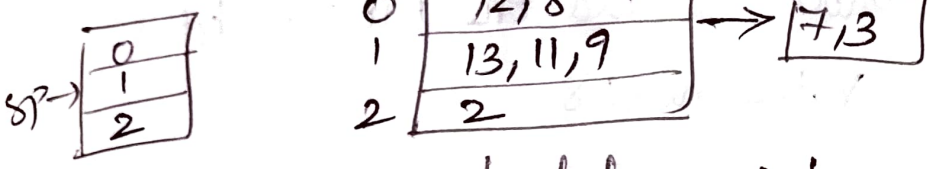
Split pointer move to bucket 1



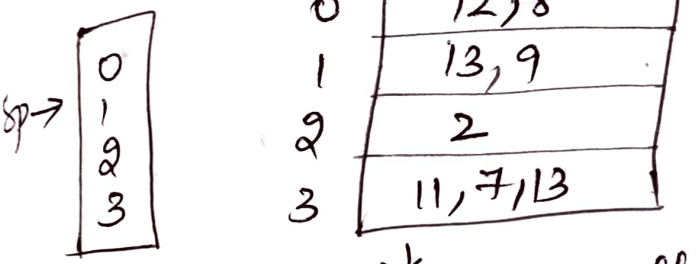
Insert 2, Hash 1 mod 2 = 0, mod 4 = 2



Insert 3, hash 1 mod 3 = 1, mod 4 = 3



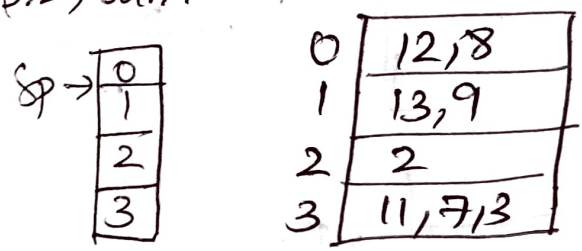
Create one more bucket



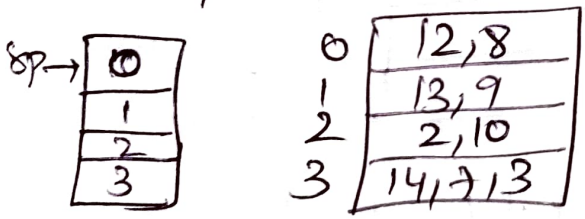
Hash table after round 3

hash 2 = value mod 4 for bucket
= 13 mod 4 = 1
4 mod 4 = 3
9 mod 4 = 1
7 mod 4 = 3
3 mod 4 = 3

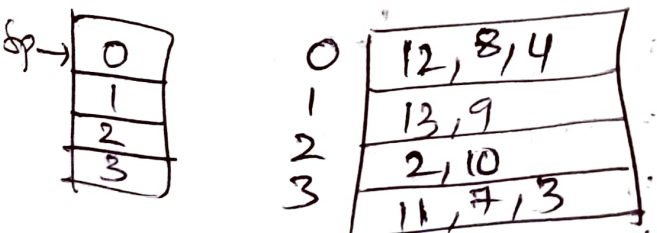
3.2) Soln :-



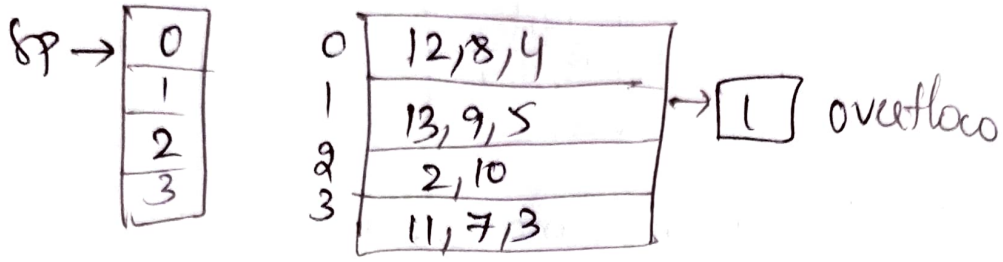
Insert 10, mod 4 = 2



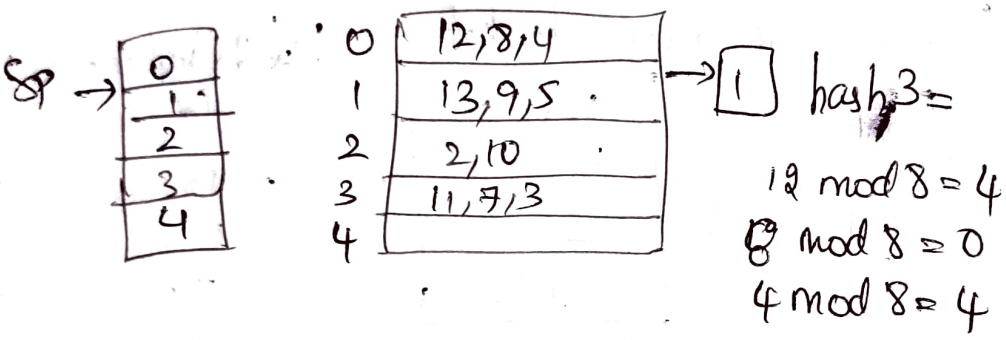
Insert 4, Hash 2 = 4 mod 4 = 0

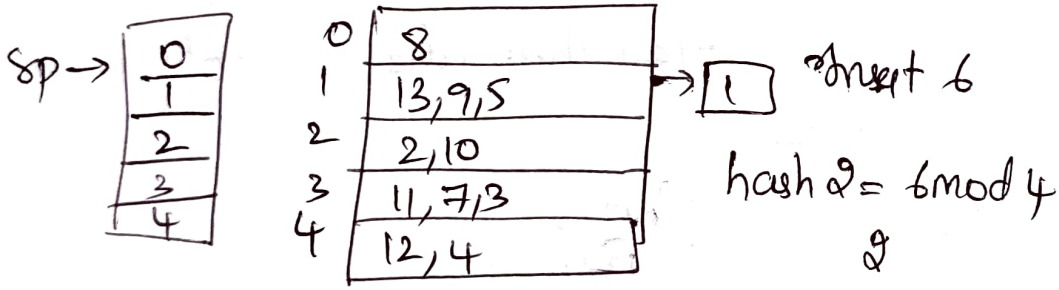


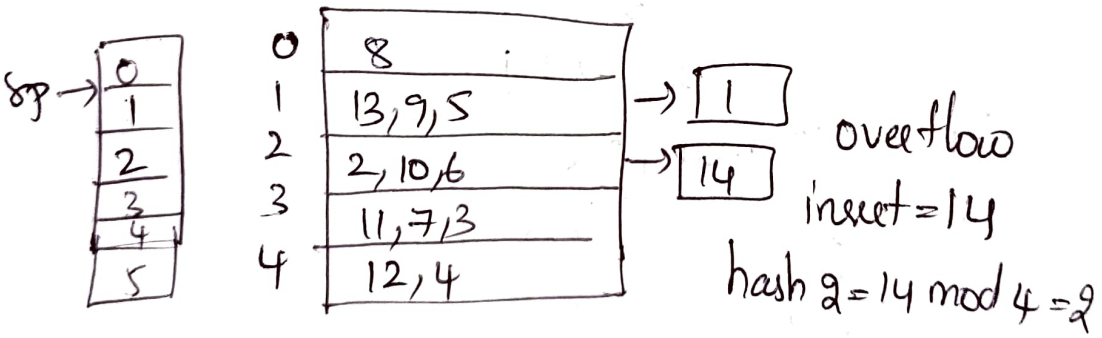
Insert 5, Hash 2 = 5 mod 4 = 1



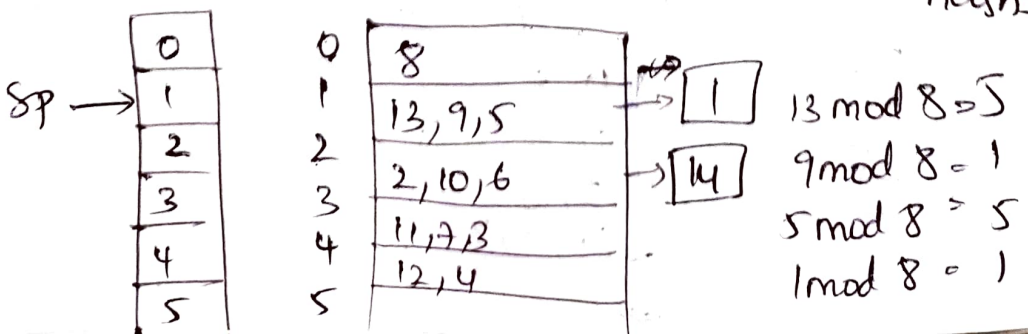
Rehash bucket 0, add one more bucket & hash 3 = value mod 8

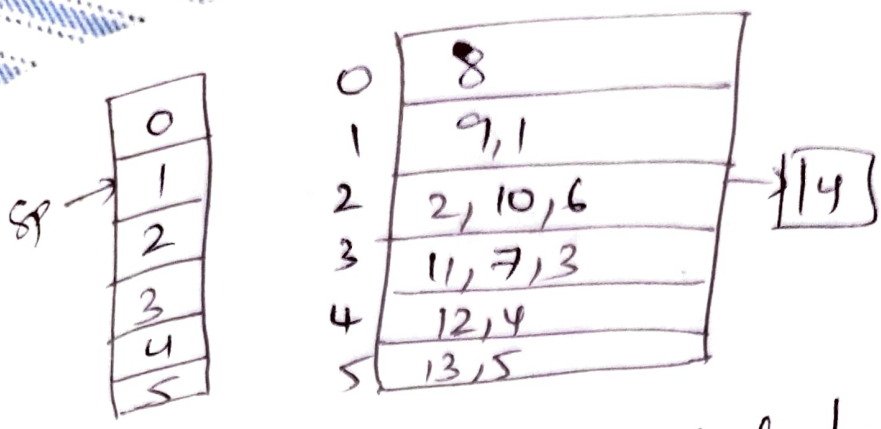




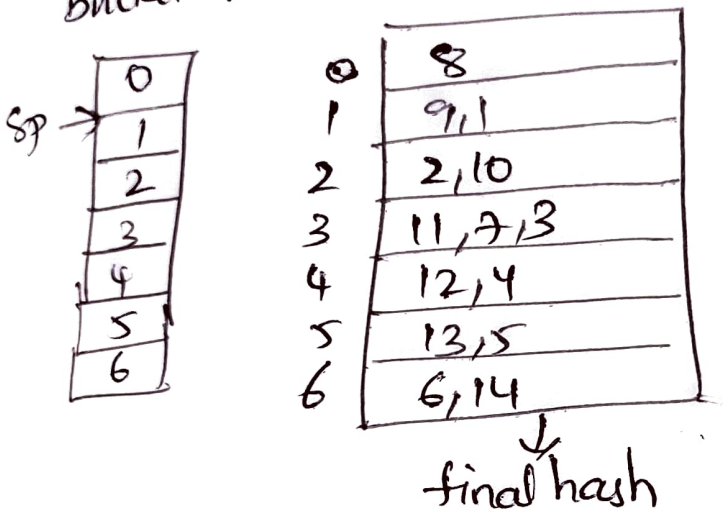


add one more bucket 4 rehash on bucket 1 with hash 3





add one more bucket and do hashing on bucket 2



2 mod 8 = 2
10 mod 8 = 2
6 mod 8 = 6
14 mod 8 = 6