Lab-4

perform merge sort algorithm by hand on the array [7, 6, 5, 4, 3, 2, 1]. Show all steps

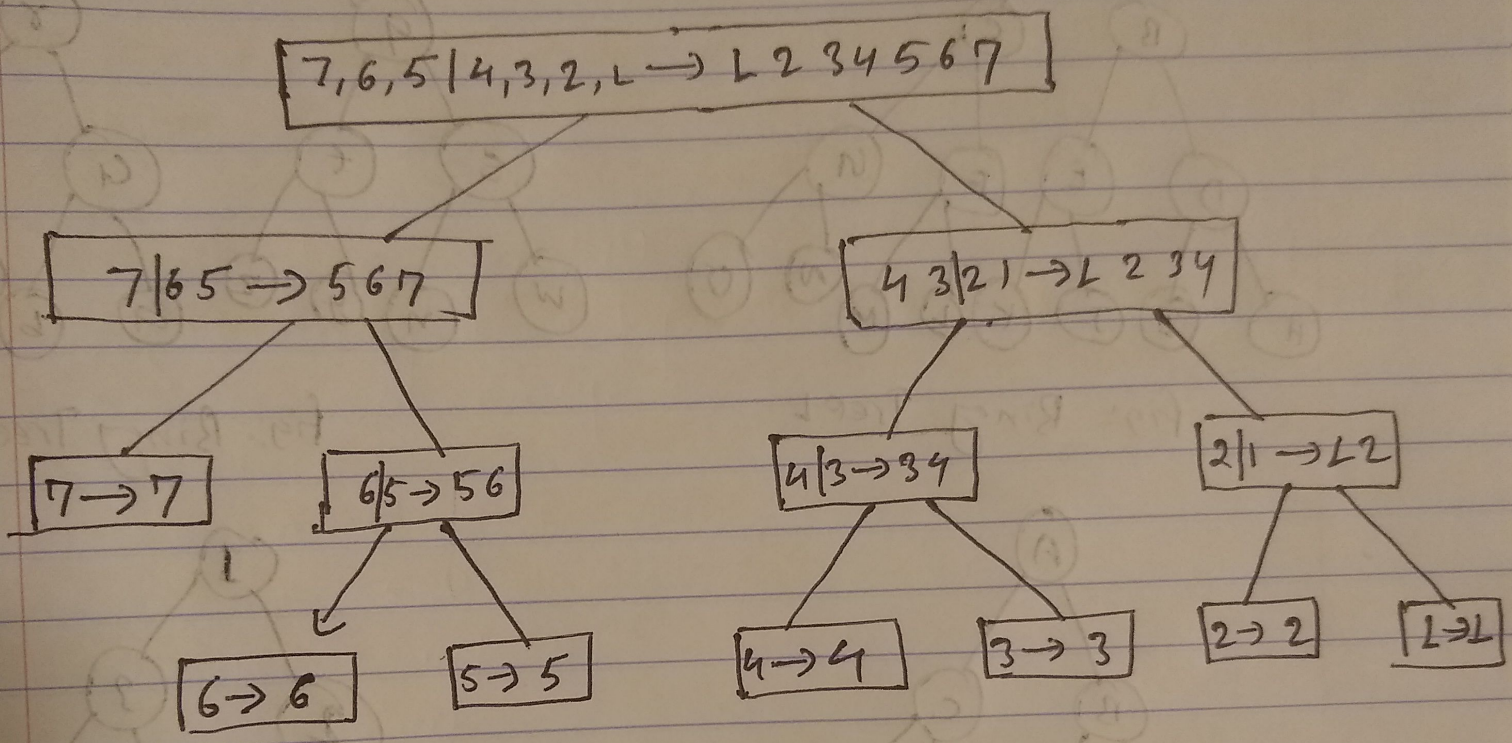

fig: merge sort.

4. 4 - different binary tree:

A.

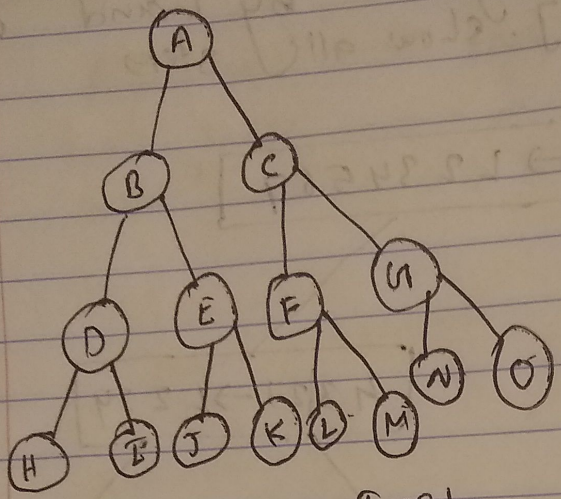

Fig: Bing Tree1.

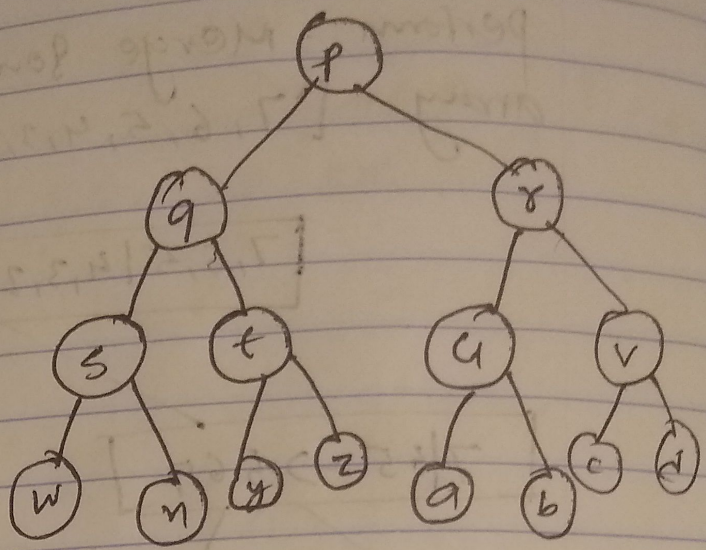

Fig. Bing Tree2.

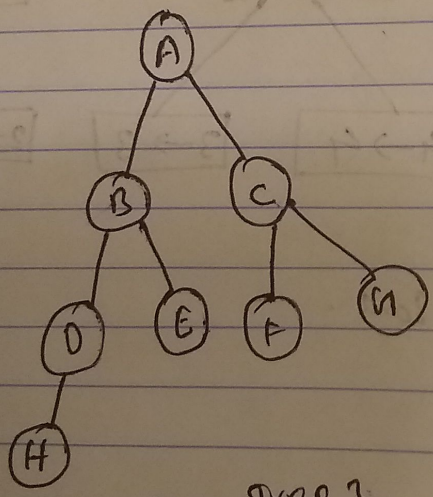

Fig: Bing Tree 3

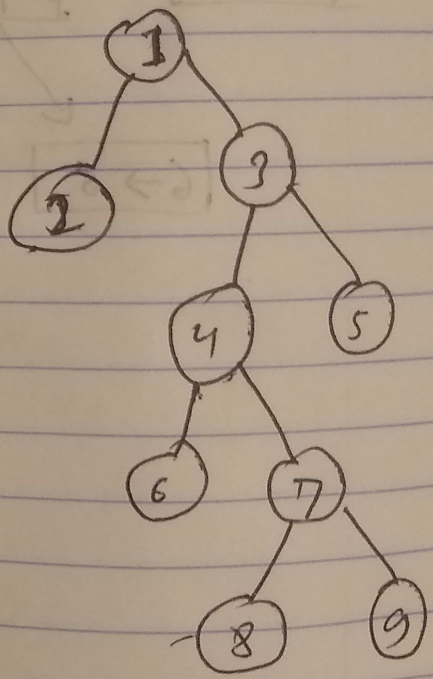

Fig: bing Tree4.

B. Yes, it is true that, Every binary tree of height 3 has at least $2^3 = 8$ leaves. For example, In figure 1, exactly shown maximum posible leaves. i.e. 8.

C. The number of leaves in a tree of height n is no more than 2^n.

- All the leaf nodes in a perfect binary tree of height 'h' has a depth equal to h.

nodes at depth n in perfect binary tree $= 2^h$.

∴ No. of leaf nodes in perfect binary tree of height $h = 2^h$.