***LeetCode 90. Subsets II – Algo 1***:

We need to find all subsets of a list. First we can sort the list

a= [4,4,5,3,6,1,1,7]

After sorting:

a.sort( )= [1,1,3,4,4,5,6,7]

First, we put the empty subset into the output:

Res = [[ ]]

Now, the algo goes like iterating from the first element to the last.

1. For the first element, put all the subset of the first element into res
2. When the iteration goes to the second element, all subsets of first two elements = all subsets of the first element “combines(+)” new element (which is the second element)
3. When the iteration goes to the third element, all subsets of first three elements = all subset of the first two elements “combines(+)” new element (which is the third element)
4. Go on and on
5. \*\* The special situation is when the element of the next iteration is the same as the last iteration:

To get the subsets caused from the new element, we only combine the new subsets caused by the last element and this new element.

Trying mathematical expression:

n --- the no. of iteration

--- The subsets of the first n elements

--- The nth element of the sorted list