



Assignment 8 – Recursion 3

Note : Do all questions recursively

1. Implement Binary Search.
2. Implement Merge Sort.
3. Given a String return all the subsequences.
 - a. Instead of returning print these i.e void printSubsequences (String input,...).

For e.g. Input : "abc" Output : "", a, b, c, ab, ac, bc, abc

4. Using the phone keypad, return all possible words that can be produced given input digits. For e.g. 23 --> "ad, ae, af, bd, be, bf, cd, ce, cf"
 - a. Instead of returning print all these
5. Return all permutations of a given string.
 - a. Instead of returning print these.

For Eg – Input – "abc" , Output – "abc",
"bac", "bca", "acb", "cab", "cba"

6. Assume that value of a=1, b=2, c=3, d=4, z=26. You are given a numeric string S. Write a program to find and print list of all possible codes that can be generated from the given string.

For e.g. Input : "1123"
Output : aabc, kbc, alc, aaw, kw
7. Return all subsets of an array
 - a. Instead of returning print all these
8. Given an array find all subsets of A, which sum to K.
 - a. Instead of returning print all these

9. Suppose you have a string made up of only the letters 'a' and 'b'.

Write a recursive function that checks if the string was generated using the following rules -

- b. the string begins with an 'a'
- c. each 'a' is followed by nothing or an 'a' or "bb"
- d. each "bb" is followed by nothing or an 'a'

10. A child is running up a staircase with n steps, and can hop either 1 step, 2 steps or 3 steps at a time. Implement a method to count how many possible ways the child can run up to the stairs.