Assignment : Backtracking Assignment-2

Q1 Given a string containing digits from 2-9 inclusive, return all possible letter combinations that the number could represent. Return the answer in any order.
A mapping of digits to letters (just like on the telephone buttons) is given below. Note that 1 does not map to any letters.

Sample Input: “22”
Sample Output: ["aa","ab","ac","ba","bb","bc","ca","cb","cc"]
Sample Input: “34”
Sample Output: ["dg","dh","di","eg","eh","ei","fg","fh","fi"]

Q2 Given n pairs of parentheses, write a function to generate all combinations of well-formed parentheses.
Sample Input: n=1
Sample Output: ["()"]
Sample Input: n=3
Sample Output: ["((()))","(()())","(())()","()(())","()()()"]

Q3 You are given an integer array of matchsticks where matchsticks[i] is the length of the ith matchstick. You want to use all the matchsticks to make one square. You should not break any stick, but you can link them up, and each matchstick must be used exactly one time.
Return true if you can make this square and false otherwise.
Sample Input: [1,1,2,2,2]
Sample Output: true
Explanation: The square formed will be of side 2
Sample Input: [1,1,2,3,4]
Sample Output: false
Square cannot be formed.

Q4 Given two integers n and k, return all possible combinations of k numbers chosen from the range [1, n].
Note: The number should not be repeated in the combination.
You may return the answer in any order.
Sample Input: n=4, k=2
Sample Output: [[1,2],[1,3],[1,4],[2,3],[2,4],[3,4]]
Sample Input: n=1, k=1
Sample Output: [[1]]