

Backtracking

Assignment Questions



1. Given n as input. Generate all strings that are palindromes with the number of digits as ' n '.
For example a palindrome of size 3 can be 313, 121, 030.

Note it can even contain leading zeros

Input : $n = 2$

Output : 00, 11, 22, 33, 44, 55, 66, 77, 88, 99

2. Check if the product of some subset of an array is equal to the target value.

Where n is the size of the input array.

Note: Each index value can be used only once.

Input : $n = 5$, target = 16

Array = [2 3 2 5 4]

Here the target will be equal to $2 \times 2 \times 4 = 16$

Output : YES

3. Given an integer array `nums` that may contain duplicates, return all possible subsets (the power set).

The solution set must not contain duplicate subsets. Return the solution in any order.

Sample Input: `nums=[1,1,2]`

Sample Output: `[],[1],[1,2],[1,1],[1,1,2],[2]`

Sample Input: `nums=[1,2]`

Sample Output: `[],[1],[2],[1,2]`

4. Given a string `s`, you can transform every letter individually to be lowercase or uppercase to create another string.

Return a list of all possible strings we could create. Return the output in any order.

Sample Input: `s="a1"`

Sample Output : `["a1","A1"]`

Sample Input: `s="bc12"`

Sample Output: `["bc12","bC12","Bc12","BC12"]`

5. 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"]

6. 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: ["((())","(())()","(())()","()()()","()()()"]

7. You are given an integer array of matchsticks where `matchsticks[i]` is the length of the i th 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.

8. 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]]