2020-09-13 - Handout – BackTracking

# Q1. Conditional Combinations

Link:https://www.techiedelight.com/find-combinations-of-elements-satisfies-given-constraints

Given a positive number N, find all combinations of 2\*N elements such that every element from 1 to N appears exactly twice and distance between its two appearances is exactly equal to value of the element.

**Example   
Input: N=3  
Output:   
3 1 2 1 3 2  
2 3 1 2 1 3**

**Input: N = 4  
Output:  
4 1 3 1 2 4 3 2**

**2 3 4 2 1 3 1 4**

# Q2. Subsets

Link: <https://leetcode.com/problems/subsets/>

Given a set of **distinct** integers, *nums*, return all possible subsets (the power set).

**Note:** The solution set must not contain duplicate subsets.  
**Example:**  
**Input:** nums = [1,2,3]

**Output:**

[

[3],

  [1],

  [2],

  [1,2,3],

  [1,3],

  [2,3],

  [1,2],

  []

]

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Q3. **Combination Sum**

Link: https://leetcode.com/problems/combination-sum/

Given a **set** of candidate numbers (candidates) **(without duplicates)** and a target number (target), find all unique combinations in candidates where the candidate numbers sums to target.

The **same** repeated number may be chosen from candidates unlimited number of times.

**Note:**

* All numbers (including target) will be positive integers.
* The solution set must not contain duplicate combinations.

**Example 1:**

**Input:** candidates = [2,3,6,7], target = 7,

**A solution set is:**

[

[7],

[2,2,3]

]

**Example 2:**

**Input:** candidates = [2,3,5], target = 8,

**A solution set is:**

[

  [2,2,2,2],

  [2,3,3],

  [3,5]

]

**Constraints:**

* 1 <= candidates.length <= 30
* 1 <= candidates[i] <= 200
* Each element of candidate is unique.
* 1 <= target <= 500

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