Top-20 Training Program
(Adhoc Thinking)

Apply the solution building strategies discussed in class to solve following problems.

Group1: 2-SUM & 3-SUM Problems
https://leetcode.com/problems/two-sum/description/
https://leetcode.com/problems/two-sum-ii-input-array-is-sorted/description/
https://leetcode.com/problems/3sum/description/
https://leetcode.com/problems/3sum-closest/description/

Group2: Missing Numbers
https://leetcode.com/problems/missing-number/description/
https://leetcode.com/problems/single-number/description/
https://leetcode.com/problems/first-missing-positive/description/
https://leetcode.com/problems/find-all-numbers-disappeared-in-an-array/description/

Group3: Removing Duplicates
https://leetcode.com/problems/remove-duplicates-from-sorted-array/description/
https://leetcode.com/problems/remove-duplicates-from-sorted-array-ii/description/
https://leetcode.com/problems/remove-element/description/

Group4: Basic Matrix Problems
https://leetcode.com/problems/spiral-matrix/description/
https://leetcode.com/problems/spiral-matrix-ii/description/
https://leetcode.com/problems/set-matrix-zeroes/description/

Group5: Miscellaneous Problems
Given an array of alpha-numeric characters with the length appended to the string, write an efficient function to remove the length part of it.
Function Prototype:
    void remLength(char [ ]s)
Example
Input: JamesBond00712
    where, 12 is length of string JamesBond007
Output: JamesBond007

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Given an array of size M+N in which first M numbers are sorted in non-decreasing order and last N slots are empty. Also given an another array of size N which is sorted in nondecreasing order. Write an efficient function to merge these two arrays without using any extra space so that the array of M+N size is sorted.

Function Prototype:

```
void Merge(int[ ] a1, int[ ] a2, int m, int n) // array a1 is of size m+n
```

Given a real number x, and a sequence of real numbers c0, c1, …cn, Write an efficient function to find out the value of following polynomial of degree 'n':

$p_n(x) = c_n x^n + c_{n-1} x^{n-1} + \ldots + c_2 x^2 + c_1 x + c_0$

Function Prototype:

```
double EvalPolynom(int[ ] coef, int x, int n)
```