**Array**

**Problem 1**

Give an array X[] of n integers, where some elements are zero and some elements are non-zero. Write a program to move all the zeroes to the end of the array (Propose two ways to solve this problem)

**Example:**

Input: X[] = [4,8,0,0,2,0,1,0]

Output: [4,8,2,1,0,0,0,0]

**Problem 2**

Give an array X[] consisting of 0s, 1s, and 2s, and write a program to sort the array off 0’s, 1’s, and 2’s in ascending order (Not using sorting algorithms) (Propose two ways to solve this problem)

**Example:**

Input: X[] = [0,2,1,0,1,2,1,0]

Output: X[] = [0,0,0,1,1,1,2,2]

**Problem 3**

Given an array of n integers and a value goalSum, write a program to check whether there is a pair of elements in the array whose sum is equal to goalSum. If yes, return true; otherwise, return false.

* Assume all elements are distinct.
* Values in the array can be both negative and positive

**Example**

Input: X[] = [-5, 1, -40, 20, 6, 8, 7], goalSum = 15

Output: true 🡪 (7,8) or (-5, 20)

**Problem 4**

Given an array of integers, return the maximum product of two elements in the array.

**Example**:  
 Input: arr = [3, 4, 5, 2]

Output: 20 (4 \* 5)

**Problem 5**

Given an array nums of n integers, find all unique triplets in the array which give the sum of zero.

**Example**:

Input: arr = [-1, 0, 1, 2, -1, -4]

Output: [[-1, 0, 1], [-1, -1, 2]]

Time: 4h

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