Arrays Assignment

1. Find the element that appears once in a sorted array where all other elements appear twice one after another. Find that element in 0(logn) complexity.

Input:arr[] = {1, 1, 3, 3, 4, 5, 5, 7, 7, 8, 8}Output:4

Youtube Links:

Logic: <https://youtu.be/RJQA_SIeKWI>

Code: <https://youtu.be/y9Aikufgz0E>

1. A magic index in an array A[0...n-1] isdefined to be an index such that A[i] = i. Given a sorted array of distinct integers, write a method to find a magic index if one exists, in an array A. FOLLOW UP: What if the values are not distinct?

Logic: <https://youtu.be/uG8J9bXrPqE>

Code: <https://youtu.be/Cje20qr4DrE>

1. Given a sorted array of n integers that has been rotated an unknown number of times, write code to find an element in the array. You may assume that the array was originally sorted in increasing order.

Logic: Part 1: <https://youtu.be/qGACG7Kk2wU>

Part 2: <https://youtu.be/C4SHw0PN3jA>

Code: <https://youtu.be/r_0RupXBW2Y>

1. Given an array that contains numbers from 1 to n-1 and exactly 1 duplicate, find that duplicate.

Logic: <https://youtu.be/1peL6oGC__k>

Code: <https://youtu.be/wrzr4RnNZrc>

1. Search an element in an array where difference between adjacent elements is 1.

For example: arr[] = {8, 7, 6, 7, 6, 5, 4, 3, 2, 3, 4, 3}Search for 3 and Output: Found at index 7

Logic: <https://youtu.be/yH5LLmscHeQ>

Code: <https://youtu.be/5wgu--jYRvg>

1. Given an array of numbers, split the array into two where one array contains the sum of n-1 numbers and the other array with all the n-1 elements.

Logic: <https://youtu.be/7P2Me6ySsQE>

Code: <https://youtu.be/DsrX-psQVzo>

1. Write an efficient program to find the sum of contiguous subarray within a one-dimensional array of numbers which has the largest sum.

Logic: <https://youtu.be/PjeXCQd9q4k>

Code: <https://youtu.be/oC3rHyUpX3Q>

1. You are given a list of n-1 integers and these integers arein the range of 1 to n. There are no duplicates in list. One of the integers is missing in the list. Write an efficient code to find the missing integer.

Logic and code: <https://youtu.be/oFpaKpHeyLU>

1. Given an unsorted array of nonnegative integers, find a continous subarray which adds to a given number. And
2. Given an unsorted array of integers, find a subarray which adds to a given number. If there are more than one subarrays with sum as the given number, print any of them.

Same problems 9 and 10.

Logic: <https://youtu.be/-TmHwrfnquU>

Code: <https://youtu.be/61c2RNdSAi4>

1. Write a program to sort an array of 0's,1's and 2's in ascending order.

Logic: <https://youtu.be/D1c-qY3FufI>

Code: <https://youtu.be/JXtFut_qzI8>

1. Equilibrium index of an array is an index such that the sum of elements at lower indexes is equal to the sum of elements at higher indexes.
2. Write a function int equilibrium(int[] arr, int n); that given a sequence arr[] of size n, returns an equilibrium index (if any) or -1 if no equilibrium indexes exist.

12 and 13 only one problem.

Logic and code : <https://youtu.be/wR6CqtjNjwY>

1. Write a program to print all the LEADERS in the array. An element is leader if it is greater than all the elements to its right side. And the rightmost element is always a leader. For example int the array {16, 17, 4, 3, 5, 2}, leaders are 17, 5 and 2.

Logic: <https://youtu.be/ddjt0ti2w1s>

Code: <https://youtu.be/X71go5C21bY>

1. Given an array and a number k where k is smaller than size of array, we need to find the k’th smallest element in the given array. It is given that ll array elements are distinct.

Logic and code: <https://youtu.be/hJQOr_XBdMM>

1. Given a 2D array, print it in spiral form.

Logic: Part 1: <https://youtu.be/RACLOT05-Xs>

Logic Part 2: <https://youtu.be/JMxYYBxU5JM>

Code: <https://youtu.be/J36u64GRIro>

1. Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.

Logic Part 1: <https://youtu.be/Tdb_jtAgMm0>

Logic Part 2: <https://youtu.be/7hABo7aen34>

Code: <https://youtu.be/YCgTRlkfnMo>