Smart Coding & Interview Series
Top-20 Basic Program
(Divide & Prune Thinking)

First, understand the solution building strategies and coding for the problems in LIVE/VIDEO session and then you apply those strategies discussed in LIVE/VIDEO session to solve the following problems. Use your favourite language(C/C++/Java/C#/Python/Scala) for coding.

1) Peak Element: A peak element is an element that is greater than its neighbors. Given an input array `nums`, where `nums[i] ≠ nums[i+1]`, find a peak element and return its index. The array may contain multiple peaks, in that case return the index to any one of the peaks is fine. You may imagine that `nums[-1] = nums[n] = -∞`.

Example:

```
Input: nums = [1,2,3,1]
Output: 2
Explanation: 3 is a peak element and your function should return the index number 2.
```

Source: *https://leetcode.com/problems/find-peak-element/description/*

2) Min in Rotated Sorted Array-I(No Duplicates) : Suppose an array sorted in ascending order is rotated at some pivot unknown to you beforehand. (i.e., `[0,1,2,4,5,6,7]` might become `[4,5,6,7,0,1,2]`). Find the minimum element. You may assume no duplicate exists in the array.

Example:

```
Input: [3,4,5,1,2]
Output: 1
```

Source: *https://leetcode.com/problems/find-minimum-in-rotated-sorted-array/description/*

3) Min in Rotated Sorted Array-II(With Duplicates) : Suppose an array sorted in ascending order is rotated at some pivot unknown to you beforehand. (i.e., `[0,1,2,4,5,6,7]` might become `[4,5,6,7,0,1,2]`). Find the minimum element. The array may contain duplicates.

Example:

```
Input: [1,3,5]
Output: 1
```

Source: *https://leetcode.com/problems/find-minimum-in-rotated-sorted-array-ii/description/*

4) Median of Two Sorted Arrays: There are two sorted arrays **nums1** and **nums2** of size m and n respectively. Find the median of the two sorted arrays. The overall run time

complexity should be O(log (m+n)). You may assume **nums1** and **nums2** cannot be both empty.

Example:

```
nums1 = [1, 3]
nums2 = [2]
The median is 2.0
```

Source: *https://leetcode.com/problems/median-of-two-sorted-arrays/description/*