1. Given an array nums of size n, return the majority element.

   The majority element is the element that appears more than ⌊n / 2⌋ times. You may assume that the majority element always exists in the array.

   Suppose that the given array must have a major element.

   Example 1:

```
Input: nums = [3,2,3]
Output: 3
```

   Example 2:

```
Input: nums = [2,2,1,1,1,2,2]
Output: 2
```

Note: you can input the length n of the array

2. A magic index in an array A[0...n-1] is defined to be an index such that A[i] = i. Given a sorted array of integers, write a method to find a magic index, if one exists, in array A. If not, return -1. If there are more than one magic index, return the smallest one.

   Example1:

```
Input: nums = [0, 2, 3, 4, 5]
Output: 0
```

   Example2:

```
Input: nums = [1, 1, 1]
Output: 1
```

Note: you can input the length n of the array

3. Given an integer array nums, move all the even integers at the beginning of the array followed by all the odd integers.

   Return an array of odd and even integers sorted in ascending order, respectively.

```
Example 1:

Input: nums = [3,1,2,4]
Output: [2,4,1,3]
Example 2:

Input: nums = [0]
Output: [0]
```

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Note: you can input the length n of the array

4. Given an integer numRows, return the first numRows of Pascal's triangle.
   In Pascal's triangle, each number is the sum of the two numbers directly above it as shown:

```
Example 1:

Input: numRows = 5
Output: [[1],[1,1],[1,2,1],[1,3,3,1],[1,4,6,4,1]]
Example 2:

Input: numRows = 1
Output: [[1]]
```