1. Merge Sorted Array

Easy

Given two sorted integer arrays *nums1* and *nums2*, merge *nums2* into *nums1* as one sorted array.

**Note:**

* The number of elements initialized in *nums1* and *nums2* are *m* and *n* respectively.
* You may assume that *nums1* has enough space (size that is greater or equal to *m* + *n*) to hold additional elements from *nums2*.

**Example:**

Input:  
nums1 = [1,2,3,0,0,0], m = 3  
nums2 = [2,5,6], n = 3  
  
Output: [1,2,2,3,5,6]

**Solution**

原地归并的实现

class Solution {  
public:  
 void merge(vector<int>& nums1, int m, vector<int>& nums2, int n) {  
 for(int i = 0; i < n; ++i){  
 nums1[m+i] = nums2[i];  
 }  
 merge\_inplace(nums1, m);  
 }  
 void merge\_inplace(vector<int>& nums, int pos){  
 int p = 0, q = pos;  
 while(p < q && q < nums.size()){  
 if(nums[p] <= nums[q])p++;  
 else{  
 int pre = q;  
 while(q < nums.size() && nums[q] < nums[p])q++;  
 reverse(nums.begin() + p, nums.begin() + pre);  
 reverse(nums.begin() + pre, nums.begin() + q);  
 reverse(nums.begin() + p, nums.begin() + q);  
 p += (q - pre);  
 }  
 }  
 }  
};