Basics of Python

Challenges

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1. Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to target.
   input: nums = [2,7,11,15], target = 9
   Output: [0,1]
   Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

2. Write a function to find the longest common prefix string amongst an array of strings assuming that there is atleast one common prefix.
   input: strs = ["flower","flow","flight"]
   Output: "fl"

3. You are climbing a staircase. It takes n steps to reach the top. Each time you can either climb 1 or 2 steps. In how many distinct ways can you climb to the top?
   input: n = 2
   Output: 2
   Explanation: There are two ways to climb to the top.
   1. 1 step + 1 step
   2. 2 steps

4. You are given an array prices where prices[i] is the price of a given stock on the ith day. You want to maximize your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock. Return the maximum profit you can achieve from this transaction. If you cannot achieve any profit, return 0.
   input: prices = [7,1,5,3,6,4]
   Output: 5
   Explanation: Buy on day 2 (price = 1) and sell on day 5 (price = 6), profit = 6-1 = 5. Note that buying on day 2 and selling on day 1 is not allowed because you must buy before you sell.

5. Given an integer array nums, find the subarray with the largest sum for a given subarray size and return its sum.
   input: nums = [-2,1,-3,4,-1,2,1,-5,4] subarray size = 4
   Output: 6
   Explanation: The subarray [4,-1,2,1] has the largest sum 6.

6. Given an integer numRows, return the first numRows of Pascal's triangle.
   input: numRows = 5
   Output: [[1],[1,1],[1,2,1],[1,3,3,1],[1,4,6,4,1]]

7. Given an array nums with n objects colored red, white, or blue, sort them in-place so that objects of the same color are adjacent, with the colors in the order red, white, and blue. We will use the integers 0, 1, and 2 to represent the color red, white, and blue, respectively. You must solve this problem without using the library's sort function.
   input: nums = [2,0,2,1,1,0]
   Output: [0,0,1,1,2,2]

8. Given an array of integers nums containing n + 1 integers where each integer is in the range [1, n] inclusive. There is only one repeated number in nums, return this repeated number. You must solve the problem without modifying the array nums.
   input: nums = [1,3,4,2,2] **Output**: 2

9. You are given two integer arrays nums1 and nums2, sorted in non-decreasing order, and two integers m and n, representing the number of elements in nums1 and nums2 respectively. Merge nums1 and nums2 into a single array sorted in non-decreasing order. Do not use any in-built python functions.
   input: nums1 = [1,2,3,0,0,0], m = 3, nums2 = [2,5,6], n = 3
   Output: [1,2,2,3,5,6]
   Explanation: The arrays we are merging are [1,2,3] and [2,5,6]. The result of the merge is [1,2,2,3,5,6] with the underlined elements coming from nums1.

10. 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.
    input: nums = [2,2,1,1,1,2,2] **Output**: 2