

## Assignment 4

**Deadline: 02/08/2019 11:59 pm**

1. Giving a string, find the first non-repeating character in it and return its index.  
If it doesn't exist, return -1  
For example: "leetcode", return 0
2. Given a non-negative integer num, repeatedly add all its digits until the result has only one digit.  
For example: 38, return 2.  
Explanation:  $3 + 8 = 11 \rightarrow 1 + 1 = 2$
3. Given an array nums, write a function to move all 0's to the end of it while maintaining the relative order of the non-zero elements.  
For example: [0, 1, 0, 3, 12] return: [1, 3, 12, 0, 0]
4. Given a string s, find the longest palindromic substring in s.  
You may assume that the maximum length of s is 1000.  
For example, input: "babad", return "bab", "aba" is also a valid answer, you only need to find one.
5. You are given an  $n \times n$  2D matrix representing an image. Rotate the image by 90 degrees (clockwise).  
For example: given input matrix =  $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ ,  
rotate the input matrix in-place such that it becomes:  $\begin{bmatrix} 7 & 4 & 1 \\ 8 & 5 & 2 \\ 9 & 6 & 3 \end{bmatrix}$ ,