Week 8- Day 3 : Coding Challenge
Arrays and Space complexity

(Maximum marks - 15)

Q - 1) Tell space complexity of following piece of code: (5 marks)

```
for i in range(n):
    for j in range(n):
        print("Space complexity")
```

Q - 2) https://leetcode.com/problems/plus-one/

Given a non-empty array of decimal digits representing a non-negative integer, increment one to the integer.

The digits are stored such that the most significant digit is at the head of the list, and each element in the array contains a single digit.

You may assume the integer does not contain any leading zero, except the number 0 itself.

Example 1:

```
Input: digits = [1,2,3]
Output: [1,2,4]
Explanation: The array represents the integer 123.
```

Example 2:

```
Input: digits = [4,3,2,1]
Output: [4,3,2,2]
Explanation: The array represents the integer 4321.
```

Example 3:

```
Input: digits = [0]
Output: [1]
```

Constraints:

- `1 <= digits.length <= 100`
- `0 <= digits[i] <= 9`

(5 marks)

<u>Solve this question in any one approach other than the one discussed in the class.</u>

Code discussed in class:

```
class Solution:
    def plusOne(self, digits: List[int]) -> List[int]:
        sum = 0
        if digits[-1] == 9:
            wt = 1
            for i in digits[::-1]:
                sum += i*wt
                wt *= 10
            # print(sum + 1)
            new = [int(i) for i in str(sum+1)]
            return new


        else:
            digits[-1] += 1
        return digits
```

<u>Compare T(n) of your code and this code, don't ignore constants in T(n).</u>

Q - 3) https://leetcode.com/problems/flipping-an-image/

Leet code link :

Given an `n x n` binary matrix `image`, flip the image horizontally, then invert it, and return *the resulting image*.

To flip an image horizontally means that each row of the image is reversed.

- For example, flipping `[1,1,0]` horizontally results in `[0,1,1]`.

To invert an image means that each `0` is replaced by `1`, and each `1` is replaced by `0`.

- For example, inverting `[0,1,1]` results in `[1,0,0]`.

Example 1:

```
Input: image = [[1,1,0],[1,0,1],[0,0,0]]
Output: [[1,0,0],[0,1,0],[1,1,1]]
Explanation: First reverse each row: [[0,1,1],[1,0,1],[0,0,0]].
Then, invert the image: [[1,0,0],[0,1,0],[1,1,1]]
```

(5 Marks)

Q - 4) (Objective of this question is to make you utilise memory(space better)) (2 marks)

Reverse an array of integers and do not use inbuilt functions like “reverse”, don’t use shorts hands like “arr[::-1]”. Only use following approach:

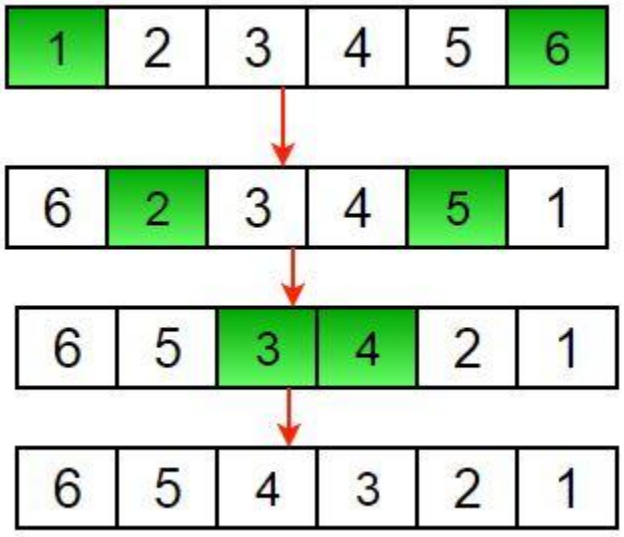
swap first and last element,

then second and second last element,

till middle.

DO NOT USE TEMPORARY VARIABLE TO SWAP TWO VARIABLES.

As shown below:



Marks distribution:
Question 1,2, and 3 carry 5 marks each.
Question 4 is a bonus question, that means if you leave that question you don't lose a mark, but if you solve it, you can get an extra 2 marks.

Remark: maximum marks you can get is 15, bonus question helps only if you are not able to solve another question.