1. **Numbers of length N and value less than K**

Given a set of digits (A) in sorted order, find how many numbers of length B are possible whose value is less than number C.

NOTE: *All numbers can only have digits from the given set.*

Examples:

```
Input:
  0 1 5
  1
  2
Output:
  2 (0 and 1 are possible)

Input:
  0 1 2 5
  2
  21
Output:
  5 (10, 11, 12, 15, 20 are possible)
```

Constraints:

```
1 <= B <= 9, 0 <= C <= 1e9 & 0 <= A[i] <= 9
```

2. Greatest Common Divisor

Given 2 non negative integers `m` and `n`, find `gcd(m, n)`
GCD of 2 integers m and n is defined as the greatest integer g such that g is a divisor of both m and n.
Both `m` and `n` fit in a 32 bit signed integer.

Example

```
m : 6
n : 9

GCD(m, n) : 3
```

3. Determine whether an integer is a palindrome. Do this without extra space.

A palindrome integer is an integer x for which reverse(x) = x where reverse(x) is x with its digit reversed.
Negative numbers are not palindromic.

Example :

```
Input : 12121
Output : True

Input : 123
Output : False
```

4. Rotate Matrix

BookmarkSuggest Edit

You are given an n x n 2D matrix representing an image.

Rotate the image by 90 degrees (clockwise).

You need to do this in place.

Note that if you end up using an additional array, you will only receive partial score.

Example:
If the array is

```
[
    [1, 2],
    [3, 4]
]
```

Then the rotated array becomes:

```
[
    [3, 1],
    [4, 2]
]
```

5. Amazing Subarrays

BookmarkSuggest Edit

You are given a string **S**, and you have to find all the **amazing substrings** of **S**.
Amazing Substring is one that starts with a **vowel** (a, e, i, o, u, A, E, I, O, U).

Input

```
Only argument given is string S.
```

Output

```
Return a single integer X mod 10003, here X is number of Amazing Substrings in given
string.
```

Constraints

```
1 <= length(S) <= 1e6
S can have special characters
```

Example

```
Input
    ABEC

Output
    6

Explanation
        Amazing substrings of given string are :
        1. A
        2. AB
        3. ABE
        4. ABEC
        5. E
        6. EC
        here number of substrings are 6 and 6 % 10003 = 6.
```

6.