Name :- Date :-

Signature :- Supervisor :-

(Record full screen from start to end of the test using an i-top screen recorder, after the test, we'll give you the drive link and then upload the recorded video on that drive folder with your name.)

Marking depends on all pages' functionality RIGHT way and WORKING manner.

Make functions for each question. Then pass the given variable as props.

Don't use any predefined functions.

1. Given a positive integer n, find the sum of all integers in the range [1, n] **inclusive** that are divisible by 3, 5, or 7.
   Input: n = 7

   Output: 21

   Explanation: Numbers in the range [1, 7] that are divisible by 3, 5, or 7 are 3, 5, 6, 7. The sum of these numbers is 21.

2. Given a m x n binary matrix mat, find the **0-indexed** position of the row that contains the **maximum** count of **ones,** and the number of ones in that row.

   In case there are multiple rows that have the maximum count of ones, the row with the **smallest row number** should be selected.

   Return *an array containing the index of the row, and the number of ones in it.*

   Example 1:

   Input: mat = [[0,1],[1,0]]

   Output: [0,1]

   Explanation: Both rows have the same number of 1's. So we return the index of the smaller row, 0, and the maximum count of ones (1). So, the answer is [0,1].

   Example 2:

   Input: mat = [[0,0,0],[0,1,1]]

   Output: [1,2]

   Explanation: The row indexed 1 has the maximum count of ones (2). So we return its index, 1, and the count. So, the answer is [1,2].

Example 3:

Input: mat = [[0,0],[1,1],[0,0]]

Output: [1,2]

Explanation: The row indexed 1 has the maximum count of ones (2). So the answer is [1,2].

3. You are given a 0-indexed two-dimensional integer array nums.

Return *the largest **prime** number that lies on at least one of the **diagonals** of* nums. In case, no prime is present on any of the diagonals, return *0.*

Example 1:

Input: nums = [[1,2,3],[5,6,7],[9,10,11]]

Output: 11

Explanation: The numbers 1, 3, 6, 9, and 11 are the only numbers present on at least one of the diagonals. Since 11 is the largest prime, we return 11.

Example 2:

Input: nums = [[1,2,3],[5,17,7],[9,11,10]]

Output: 17

Explanation: The numbers 1, 3, 9, 10, and 17 are all present on at least one of the diagonals. 17 is the largest prime, so we return 17.

4. Given two arrays of **unique** digits nums1 and nums2, return *the **smallest** number that contains **at least** one digit from each array*.

Example 1:

Input: nums1 = [4,1,3], nums2 = [5,7]

Output: 15

Explanation: The number 15 contains the digit 1 from nums1 and the digit 5 from nums2. It can be proven that 15 is the smallest number we can have.

Example 2:

Input: nums1 = [3,5,2,6], nums2 = [3,1,7]

Output: 3

Explanation: The number 3 contains the digit 3 which exists in both arrays.

5. A **sentence** is a list of words that are separated by a single space with no leading or trailing spaces. Each of the words consists of **only** uppercase and lowercase English letters (no punctuation).

   For example, "Hello World", "HELLO", and "hello world hello world" are all sentences.

   You are given a sentence s and an integer k. You want to **truncate** s such that it contains only the **first** k words. Return s *after* ***truncating*** *it.*

   Example 1:

   Input: s = "Hello how are you Contestant", k = 4

   Output: "Hello how are you"

   Explanation:

   The words in s are ["Hello", "how" "are", "you", "Contestant"].

   The first 4 words are ["Hello", "how", "are", "you"].

   Hence, you should return "Hello how are you".

   Example 2:

   Input: s = "What is the solution to this problem", k = 4

   Output: "What is the solution"

   Explanation:

   The words in s are ["What", "is" "the", "solution", "to", "this", "problem"].

   The first 4 words are ["What", "is", "the", "solution"].

   Hence, you should return "What is the solution".

   Example 3:

   Input: s = "chopper is not a tanuki", k = 5

   Output: "chopper is not a tanuki"

6. Given a binary array nums, return *the maximum number of consecutive 1's in the array*.

   Example 1:

   Input: nums = [1,1,0,1,1,1]

   Output: 3

   Explanation: The first two digits or the last three digits are consecutive 1s. The maximum number of consecutive 1s is 3.

   Example 2:

   Input: nums = [1,0,1,1,0,1]

   Output: 2

7. 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]]

   Example 2:

   Input: image = [[1,1,0,0],[1,0,0,1],[0,1,1,1],[1,0,1,0]]

   Output: [[1,1,0,0],[0,1,1,0],[0,0,0,1],[1,0,1,0]]

   Explanation: First reverse each row: [[0,0,1,1],[1,0,0,1],[1,1,1,0],[0,1,0,1]].

   Then invert the image: [[1,1,0,0],[0,1,1,0],[0,0,0,1],[1,0,1,0]]