
☑ Question 1

You are given a matrix of size `m × n`, where each cell contains either `'x'` or `'y'`.
Find the maximum rectangular area in the matrix consisting only of `'x'`, and the maximum rectangular area consisting only of `'y'`.

- A rectangle is defined as a contiguous submatrix (set of adjacent rows and columns).
- The area is the total number of cells in that rectangle.

◈ Example 1

Matrix (2×2):

```
x x
x y
```

- Largest rectangle of `'x'`:
- `x x`
- `x`

  → area = 2

- Largest rectangle of `'y'`: only one `'y'` → area = 1

✅ Answer: `'x'` = 2, `'y'` = 1

◈ Example 2

Matrix (3×3):

```
x x y
x y y
x x y
```

- Largest `'x'` rectangle: column 1 →
- `x`
- `x`
- `x`

  area = 3

- Largest `'y'` rectangle: rightmost column →
- `y`
- `y`
- `y`

  area = 3

✅ Answer: `'x'` = 3, `'y'` = 3

🔷 Example 3

Matrix (4×4):

```
x x x y
x y y y
x x y y
y y y y
```

- Largest `'x'` rectangle: top-left block (row 1: `x x x`) → area = 3
- Largest `'y'` rectangle: bottom-right block (2×3 rectangle of `y`) → area = 6

✅ Answer: `'x'` = 3, `'y'` = 6

🔷 Example 4

Matrix (4×5):

```
x x y y y
x y y y y
x y x y y
y y y y y
```

- Largest `'x'` rectangle: column 1 (`x, x, x`) → area = 3
- Largest `'y'` rectangle: bottom 2 rows (2×5 block of `'y'`) → area = 10

✅ Answer: `'x'` = 3, `'y'` = 10

☑️ Question 2

Kung fu Panda's Sacred Scroll Challenge

Story: Master Oogway once said, "The path to wisdom is paved with challenges." To honor the great Kung Fu masters, Po and his friends have created the 8 Sacred Scroll Challenge. Only the brightest and most determined students can complete it and become true warriors of code. Your task is to solve these seals, each created by a Kung Fu legend, by following the ancient rules of logic and programming.

Challenge: Solve the 8 Sacred Seals

Your journey begins here. Follow the steps carefully, as each seal presents a unique challenge.

Seal 1: Shifu’s Split Challenge

Master Shifu wants to test your ability to break down a problem. Given a single string of concatenated words, split the string into individual words. Words are separated by the transition between uppercase letters.

Input:

KungFuPandaDragon555Racecar

Output:

["Kung", "Fu", "Panda", "Dragon555", "Racecar"]

Seal 2: Tai Lung’s Challenge

Tai Lung tests your ability to transform and manipulate data. Replace any digit in the words of the previous output with #.

Output:

["Kung", "Fu", "Panda", "Dragon###", "Racecar"]

Seal 3: Oogway’s Subarray Wisdom

Oogway challenges you to find patterns within patterns.

For the third word in the previous output:

If its length is greater than 6, print the first 6 characters starting from the 2nd character.

If its length is 6 or less, print the entire word starting from the 2nd character.

Output Example:

If the word is "Dragon###" -> Output: "ragon#"

Seal 4: Tigress’ Palindrome Test

Tigress demands perfection in symmetry.

Check if the last word of the previous output is a palindrome of at least 5 letters.

If it isn’t, fall back to the second seal's output and identify the longest palindrome string among them.

Output:

"Racecar"

Seal 5: Monkey’s Length and Factorial

Monkey challenges your numerical skills. Find the length of the string from the previous seal and calculate its factorial.

Input:

7 (length of "Racecar")

Output:

5040

Seal 6: Mantis’ Prime Check

Mantis demands precision in checking the primality of numbers.

Check if the factorial result is a prime number. If not, convert the number into words.

Input:

5040

Output:

"five thousand forty"

Seal 7: Crane’s Fibonacci Flight

Crane tests your agility with Fibonacci sequences. Use the total number of letters in the word from Seal 6's output as the length of the Fibonacci sequence.

Input:

20

Output:

[0, 1, 1, 2, 3, 5, 8, 13, ...]

Seal 8: Viper’s Summation Strike

Finally, Viper demands that you sum the elements of the Fibonacci series and convert the result into words.

Output Example:

If the sum is 17710 -> Output: "seventeen thousand seven hundred ten"

Rules:

Do NOT use inbuilt functions or libraries for string manipulation, number conversion, or Fibonacci calculations.

Each seal must be solved step by step, with the output from one seal used as the input for the next.