

R14

ArrayList/ Vector Questions

118. Pascal's Triangle

Easy

Topics

Companies

Given an integer `numRows`, return the first `numRows` of **Pascal's triangle**.

In **Pascal's triangle**, each number is the sum of the two numbers directly above it as shown:



→ 2D arraylist

→ 2D vector

$$\begin{bmatrix} [1] \\ [1, 1] \\ [1, 2, 1] \\ [1, 3, 3, 1] \end{bmatrix}$$

Example 1:

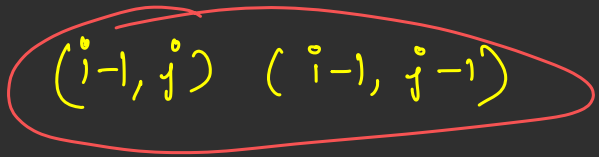
Input: `numRows = 5`

Output: `[[1], [1, 1], [1, 2, 1], [1, 3, 3, 1], [1, 4, 6, 4, 1]]`

Example 2:

Input: `numRows = 1`

Output: `[[1]]`



6. Zigzag Conversion

Solved ✓

Medium

Topics

Companies

The string "PAYPALISHIRING" is written in a zigzag pattern on a given number of rows like this: (you may want to display this pattern in a fixed font for better legibility)

P	A	H	N			
A	P	L	S	I	I	G
Y	I	R				

?

And then read line by line: "PAHNAPLSIIGYIR"

Write the code that will take a string and make this conversion given a number of rows:

```
string convert(string s, int numRows);
```

Example 1:

Input: s = "PAYPALISHIRING", numRows = 3

Output: "PAHNAPLSIIGYIR"

Example 2:

Input: s = "PAYPALISHIRING", numRows = 4

Output: "PINALSIGYAHRPI"

Explanation:

P	I	N		
A	L	S	I	G
Y	A	H	R	
P	I			

abcdefghijklmnopqrstuvwxyz

k = 3

→ a e i
b d f h
c g

→ row

aeibdfhcg

PAYPAL IS HIRING

k = 3

→ P A H N
→ A P L S I I G
→ Y I R



PAHN | APLSIIIG | YIR }

vector < vector < char > > ad(3);

2I
→ [a e i]
→ [b d f h]
→ [c g]
→

abcde f g h i
→



aei b d f h c g

2I = 2I - 2

169. Majority Element

Solved 

Easy

Topics

Companies

Given an array `nums` of size `n`, return the majority element.

The majority element is the element that appears more than $\lfloor n / 2 \rfloor$ times. You may assume that the majority element always exists in the array.

Example 1:

Input: `nums = [3,2,3]`

Output: 3

Example 2:

Input: `nums = [2,2,1,1,1,2,2]`

Output: 2

Constraints:

- `n == nums.length`
- `1 <= n <= 5 * 104`
- `-109 <= nums[i] <= 109`

$$\frac{n}{2} + 1$$

$$n = 7 \quad 2 \rightarrow 4 \text{ times}$$
$$\frac{7}{2} = 3$$

n $< 0 \rightarrow$ frequency array

-1 $[2, 1, 1, 2, 2, 2, 2]$ $\frac{n}{2}$

count = 3
number = 2

$c = 0$
number = 2
 $c = 1$

~~2~~, ~~1~~, 1
 $\uparrow \quad \uparrow \quad \uparrow$
count = 1

$c! = 0$
 number! = arr[i]
c--

~~2~~, ~~1~~, ~~1~~, ~~2~~

~~1~~, ~~1~~, ~~1~~, ~~2~~, ~~2~~, ~~2~~

\uparrow

-1

485. Max Consecutive Ones

Solved ✓

Easy

Topics

Companies

Hint

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. $\rightarrow \underline{\underline{3}}$

Example 2:

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

Output: 2

Constraints:

- `1 <= nums.length <= 105`
- `nums[i]` is either 0 or 1.

ans = 2

sum = 0

3 > 2

[1, 1, 0, 1, 1, 1]
↑ ↓ ↓
↑ ↑ ↑

sum = sum + 1

sum > answer $\rightarrow 2$

answer = sum $\rightarrow 3$

sum = consecutive sum of 1's

0 \rightarrow sum = 0

answer sum > answer
 \uparrow

1, 1, 1, 1 \rightarrow sum = sum + 1

Kadane's Algorithm

[PUBLIC] [PUBLISHED]

Difficulty: **Medium**

Accuracy: **36.28%**

Submissions: **986K+**

Points: **4**

Given an integer array **arr[]**. You need to find and return the **maximum** sum possible from all the subarrays.

Examples:

[1, 2, 3, -2, 5]

↳ +ve

Input: arr[] = [1, 2, 3, -2, 5]

Output: 9

Explanation: Max subarray sum is 9 of elements (1, 2, 3, -2, 5).

Input: arr[] = [-1, -2, -3, -4]

Output: -1

Explanation: Max subarray sum is -1 of element (-1).

Input: arr[] = [5, 4, 7] → (5 + 4 + 7)

Output: 16

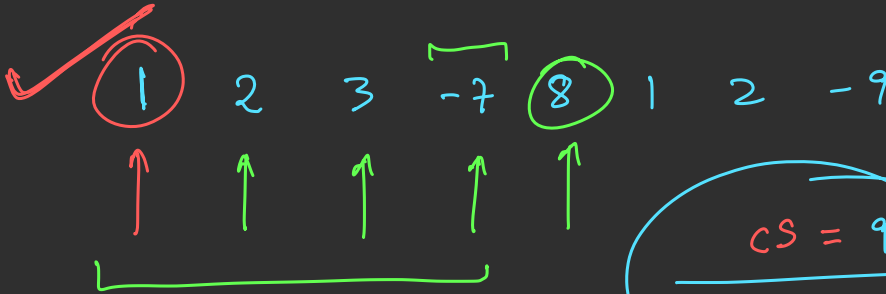
Explanation: Max subarray sum is 16 of elements (5, 4, 7)

Kadane's
Algo

[1, 2, 3, -7, 8, 1, 2, -9]

↓
-1

↓
11
↳ 2



$$CS > MS$$

$$6 > 3$$

$$MS = CS$$

