

# Meta Cracker Sheet

- By Sunyul Hossen

Note: [To Use this sheet optimally go and watch the "Cracking the Meta coding interview🔥: The definitive prep guide" video on Debug Buzz Channel.

Link - [https://youtu.be/\\_TpCVwVYT8Y](https://youtu.be/_TpCVwVYT8Y) ]

**Q) 6th August, 2022**

<https://leetcode.com/problems/valid-palindrome/>

Follow up 1: if a specific charset needs to be matched (a,e,z) and exclude anything else.

How would you do it?

Follow up 2: if a string is infinitely large and you cannot load it all in RAM and can only access blocks of string which will contain some k contiguous chars.

**Q) 6th August, 2022**

<https://leetcode.com/problems/subarray-sum-equals-k/>

**Q) 23rd July, 2022**



## Missing Mail

Level 2

Time limit: 15s

Not started

You are the manager of a mail room which is frequently subject to theft. A period of  $N$  days is about to occur, such that on the  $i$ th day, the following sequence of events will occur in order:

1. A package with a value of  $V_i$  dollars will get delivered to the mail room (unless  $V_i = 0$ , in which case no package will get delivered).
2. You can choose to pay  $C$  dollars to enter the mail room and collect all of the packages there (removing them from the room), and then leave the room
3. With probability  $S$ , all packages currently in the mail room will get stolen (and therefore removed from the room).

Note that you're aware of the delivery schedule  $V_1 \dots V_N$ , but can only observe the state of the mail room when you choose to enter it, meaning that you won't immediately be aware of whether or not packages were stolen at the end of any given day.

Your profit after the  $N$ th day will be equal to the total value of all packages which you collected up to that point, minus the total amount of money you spent on entering the mail room.

Please determine the maximum expected profit you can achieve (in dollars).

Note: Your return value must have an absolute or relative error of at most  $10^{-6}$  to be considered correct.

### Constraints

$$1 \leq N \leq 4,000$$

$$0 \leq V_i \leq 1,000$$

$$1 \leq C \leq 1,000$$

$$0.0 \leq S \leq 1.0$$

### Sample test case #1

```
N = 5
V = [10, 2, 8, 6, 4]
C = 5
S = 0.0
```

Expected Return Value = 25.00000000

### Sample test case #2

```
N = 5
V = [10, 2, 8, 6, 4]
C = 5
S = 1.0
```

Expected Return Value = 9.00000000

### Sample test case #3

```
N = 5
V = [10, 2, 8, 6, 4]
C = 3
S = 0.5
```

Expected Return Value = 17.00000000

### Sample test case #4

```
N = 5
V = [10, 2, 8, 6, 4]
C = 3
S = 0.15
```

Expected Return Value = 20.10825000

### Sample Explanation

In the first case, packages will never be stolen. You should therefore enter the mail room just once, on the final day, at which point there are sure to be 5 packages there with a total value of  $10 + 2 + 8 + 6 + 4 = 30$  dollars. Subtracting the 5-dollar fee for entering the mail room, your profit is guaranteed to be  $30 - 5 = 25$  dollars.

In the second case, each package is sure to be stolen at the end of the day on which its delivered. You should enter the mail room on days 1, 3, and 4, each time collecting just the package delivered on that day. This yields a guaranteed profit of  $10 + 8 + 6 - (3 * 5) = 9$  dollars.

In the third case, on each day, there's a 50% chance that all packages in the mail room will be stolen. You should enter the mail room on days 1, 3, 4, and 5. Note that, when you enter on day 3, there will be a 50% chance of the room having 2 packages (with values of 2 and 8 dollars), and a 50% chance of the room having just 1 package (worth 8 dollars).

In the fourth case, you should only enter the mail room on days 1 and 5.

## Q) 4th July, 2022

you have a list such as

(a,3) (b,1) , (d, 5) and (c,2)

a batch can contain only those elements whose total count is less than or equal to a total sum

for example - if the total sum is 5, there will be three batches

(a,b) , (c) and d

if the sum is 7

(a,b,c) and d

## Q) 28th June, 2022

### By Recruiter -

1. Which protocol is used for syncing time servers ?
2. Which protocol is used to convert IP to MAC address ?
3. Which command is used to look for i/o errors in the system ?
4. What is process id 1 ?
5. Which command is used to print system calls for a command ?
6. What is the output of `uname -r` ?
7. Which data structure is used for constant retrieval ?
8. Which is the best time complexity  $n \log n$  ?
9. Which algorithm is used for traversal of BST inorder ? DFS or BFS ?

## Q) 17th June, 2022

<https://leetcode.com/problems/subsets/>

## Q) 17th June, 2022

Find the local minimum in the given array. Same as finding the peak element.

## Q) 29th May, 2022

<https://leetcode.com/problems/max-consecutive-ones-iii/>

## Q) 29th May, 2022

<https://leetcode.com/problems/binary-tree-vertical-order-traversal/>

**Q) 29th May, 2022**

<https://leetcode.com/problems/nested-list-weight-sum/>

**Q) 29th May, 2022**

<https://leetcode.com/problems/top-k-frequent-elements/>

**Q) 29th May, 2022**

<https://leetcode.com/problems/valid-palindrome/>

**Q) 29th May, 2022**

<https://leetcode.com/problems/next-permutation/>

**Q) 18th May, 2022**

Write a function to generate something similar to n-grams. Input: ['a','b','c','d','e'] and N=3 and Output = [['a','b','c'],['b','c','d'],['c','d','e']].

Problem is asking for sub-lists with consecutive elements of length N

Follow up: ['a','b','c','d','e'] , N=3 and skip=1 and Output =

[['a','b','c'],['a','b','d'],['a','b','e'],['b','c','d'],['b','c','e'],['c','d','e']]

skip means that we skip few elements to get more permutations. So, if skip=1 then after 'a', 'b' we goto 'd' i.e., skip 'c'; similarly after 'a' we could skip 'b' and goto 'c' and 'd'.

**Q) 17th May, 2022**

Leetcode - 1762. Buildings With an Ocean View

**Q) 17th May, 2022**

Leetcode - 236. Lowest Common Ancestor of a Binary Tree

**Q) 17th May, 2022**

<https://leetcode.com/problems/remove-all-adjacent-duplicates-in-string-ii/>

**K is infinite**

**Q) 17th May, 2022**

Given a vacuum with obstacles give the farthest room where the vacuum can go.

**Q) 17th May, 2022**

Leetcode - 408. Valid Word Abbreviation

**Q) 17th May, 2022**

Alien dictionary variation "Given a sorted dictionary of an alien language, find order of characters"

**Q) 16th May, 2022**

By Recruiter -

1. What is a Linux command to synchronize two servers?
2. What is the process that has an id of 1?
3. What system call should you use to find disk errors in Linux?
4. What to do when you want to call a system API?
5. Which command is used to print system calls of a process?

**Q) 10th May, 2022**

<https://leetcode.com/problems/product-of-array-except-self/>

**Q) 10th May, 2022**

<https://leetcode.com/problems/top-k-frequent-elements/>

**Q) 10th May, 2022**

<https://leetcode.com/problems/valid-palindrome-ii/>

follow up -

<https://leetcode.com/problems/valid-palindrome-iii>

Q) 10th May, 2022

<https://leetcode.com/problems/merge-intervals/>

Q) 10th May, 2022

<https://leetcode.com/problems/nested-list-weight-sum/>

Q) 10th May, 2022

<https://leetcode.com/problems/closest-binary-search-tree-value>

Q) 9th May, 2022

<https://leetcode.com/problems/valid-palindrome/>

Q) 9th May, 2022

<https://leetcode.com/problems/powx-n/>

Q) 8th May, 2022

<https://leetcode.com/problems/binary-tree-vertical-order-traversal/>

Q) 8th May, 2022

<https://leetcode.com/problems/valid-number/>

Q) 6th May, 2022

<https://leetcode.com/problems/binary-tree-vertical-order-traversal/>

Q) 6th May, 2022

<https://leetcode.com/problems/valid-word-abbreviations/>

Q) 4th May, 2022

<https://leetcode.com/problems/merge-k-sorted-lists/>

Q) 4th May, 2022

<https://leetcode.com/problems/convert-sorted-list-to-binary-search-tree/>

Q) 4th May, 2022

<https://leetcode.com/problems/diameter-of-binary-tree/>

Q) 4th May, 2022

<https://leetcode.com/problems/valid-palindrome-ii/>

Q) 4th May, 2022

<https://leetcode.com/problems/plus-one/>

Q) 4th May, 2022

Given array of length  $n$  with  $m$  sorted segments, Sort the entire array in the most optimal way.

Focus on the  $m$  sorted segment and how to use them wisely.

For Instance [4, 5, 6, 1, 2, 3, 8, 7] here  $n = 8$  and  $m = 3$

3 sorted segment being - [4,5,6], [1, 2, 3, 8], [7]

Q) 22nd April, 2022

<https://leetcode.com/problems/evaluate-reverse-polish-notation/>

Q) 22nd April, 2022

<https://leetcode.com/problems/evaluate-reverse-polish-notation/>

Q) 22nd April, 2022

<https://leetcode.com/problems/valid-palindrome-ii>

Q) 22nd April, 2022

<https://leetcode.com/problems/diameter-of-binary-tree>

Q) 22nd April, 2022

<https://leetcode.com/problems/valid-word-abbreviation>

Q) 22nd April, 2022

<https://leetcode.com/problems/shortest-path-in-binary-matrix>

Q) 22nd April, 2022

<https://leetcode.com/problems/lru-cache>

Q) 22nd April, 2022

<https://leetcode.com/problems/minimum-remove-to-make-valid-parentheses/>

Q) 21st April, 2022

Min window substring that contains all ch of another str including duplicates

Q) 21st April, 2022

<https://leetcode.com/problems/minimum-remove-to-make-valid-parentheses/>



**Q) 21st April, 2022**

<https://leetcode.com/problems/binary-tree-right-side-view/>:

Followup questions: Try DFS, when BFS and when DFS and why?

**Q) 21st April, 2022**

<https://leetcode.com/problems/lowest-common-ancestor-of-a-binary-tree-iii/>

**Q) 21st April, 2022**

<https://leetcode.com/problems/valid-palindrome-iii/>

**Q) 21st April, 2022**

Find consecutive sequence sum equal target

**Q) 20th April, 2022**

<https://leetcode-cn.com/problems/find-first-and-last-position-of-element-in-sorted-array/>

**Q) 20th April, 2022**

<https://leetcode-cn.com/problems/binary-tree-vertical-order-traversal/>

**Q) 16th April, 2022**

<https://leetcode.com/problems/diameter-of-binary-tree/>

**Q) 16th April, 2022**

Create an iterator, that has K lists of maximum N lengths. All the lists are already sorted.

Also needed to build functions like hasNext() and int next()

**Q) 15th April, 2022**

<https://leetcode.com/problems/plus-one/>

**Q) 15th April, 2022**

<https://leetcode.com/problems/vertical-order-traversal-of-a-binary-tree/>

**Q) 14th April, 2022**

<https://leetcode.com/problems/first-bad-version/>

**Q) 14th April, 2022**

<https://leetcode.com/problems/binary-tree-vertical-order-traversal/>

**Q) 13th April, 2022**

Print the list of user visited to website in reverse order by avoiding duplicates.

**\*\*Scenario 1 : \*\***

Lets say user visited to, "A", "B", "E" and "C"

Output - [C,E,B,A]

**Scenario 2 :**

Lets say user visited to, "A", "B", "E", "C", "A", "B"

Output - [B, A, C, E]

Note : TimeComplexity and SpaceComplexity should be minimum.

**Q) 13th April, 2022**

1. Binary Tree Right Side View
2. Top K Frequent Elements




## Q) 10th April, 2022



### Slippery Trip

Level 3

Time limit: 5s

 Solved

There's a grid of cells with  $R$  rows (numbered from 1 to  $R$  from top to bottom) and  $C$  columns (numbered from 1 to  $C$  from left to right). The grid wraps around horizontally, meaning that column 1 is just to the right of column  $C$  (and column  $C$  is just to the left of column 1).

The cell in row  $i$  and column  $j$  initially contains one of the following (indicated by the character  $G_{i,j}$ ):

- If  $G_{i,j} = "."$ , the cell is empty.
- If  $G_{i,j} = "*"$ , the cell contains a coin.
- If  $G_{i,j} = ">"$ , the cell contains an arrow pointing right.
- If  $G_{i,j} = "\n"$ , the cell contains an arrow pointing down.

You may cyclically shift each row to the right as many times as you'd like (including not at all). Each such shift causes each of the row's cells to move 1 column to the right, with its rightmost cell (in column  $C$ ) wrapping around and moving to column 1.

After you've finished rotating the rows to your liking, you'll take a trip through the grid, starting by entering the cell at the top-left corner (in row 1 and column 1) downward from above the grid. Upon entering a cell, if it contains a coin that you haven't yet collected, you'll collect it. If it contains an arrow, your direction of travel will change to that of the arrow (either right or down). Either way, you'll then proceed to the next adjacent cell in your direction of travel. If you move rightward from column  $C$ , you'll wrap around to column 1 in the same row, and if you move downward from row  $R$ , you'll end your trip. Note that you may only collect each cell's coin at most once, that your trip might last forever, and that once you begin your trip you cannot shift the grid's rows further.

Determine the maximum number of coins you can collect on your trip.

#### Constraints:

$$2 \leq R, C \leq 400,000$$

$$R * C \leq 800,000$$

$$G_{i,j} \in \{".", "*", ">", "\n"\}$$

### Sample test case #1

```
R = 3  
C = 4  
G = .***  
    **V>  
    .*..
```

Expected Return Value = 4

### Sample test case #2

```
R = 3  
C = 3  
G = >**  
    *>*  
    **>
```

Expected Return Value = 4

### Sample test case #3

```
R = 2  
C = 2  
G = >>  
    **
```

Expected Return Value = 0

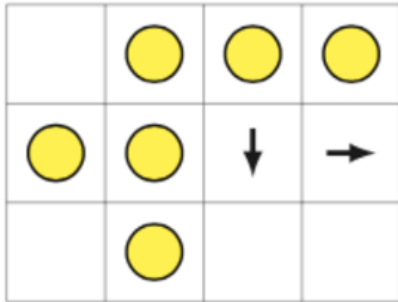
### Sample test case #4

```
R = 4  
C = 6  
G = >*V*>*  
    *V*V*>*  
    .*>...*  
    .*...*V
```

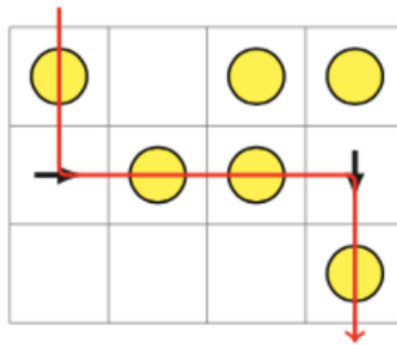
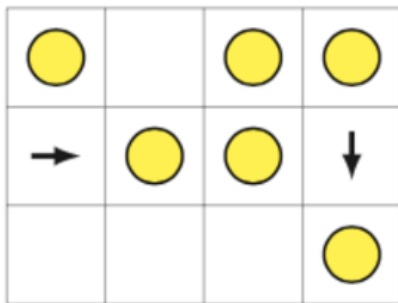
Expected Return Value = 6

## Sample Explanation

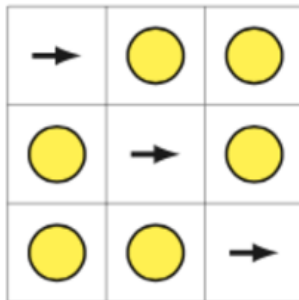
The first case is depicted below:



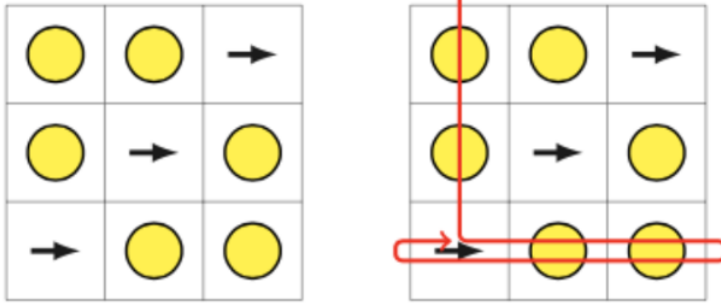
To collect the maximum number of coins, the grid can be rotated as follows, and traversed with the highlighted path  $(1, 1) \rightarrow (2, 1) \rightarrow (2, 2) \rightarrow (2, 3) \rightarrow (2, 4) \rightarrow (3, 4)$ , ultimately ending the trip:



The second case is depicted below:



To collect the maximum number of coins, the grid can be rotated as follows, and traversed with the highlighted path  $(1, 1) \rightarrow (2, 1) \rightarrow (3, 1) \rightarrow (3, 2) \rightarrow (3, 3) \rightarrow (3, 1) \rightarrow \dots$ , at which point you'll loop around row 3 indefinitely:



In the third case, you cannot collect any coins.

In the fourth case, you can collect at most 6 coins.

**Q) 9th April, 2022**



# Stack Stabilization (Chapter 2)

Level 3

Time limit: 5s

In progress

Note: [Chapter 1](#) is an easier version of this puzzle.

There's a stack of  $N$  inflatable discs, with the  $i$ th disc from the top having an initial radius of  $R_i$  inches.

The stack is considered *unstable* if it includes at least one disc whose radius is larger than or equal to that of the disc directly under it. In other words, for the stack to be *stable*, each disc must have a strictly smaller radius than that of the disc directly under it.

As long as the stack is unstable, you can repeatedly choose a disc and perform one of the following operations:

- Inflate the disc, increasing its radius by 1 inch. This operation takes  $A$  seconds and may be performed on discs of any radius (even those that exceed  $10^9$  inches).
- Deflate the disc, decreasing its radius by 1 inch. This operation takes  $B$  seconds and may only be performed if the resulting radius is a positive integer number of inches (that is, if the disc has a radius of at least 2" before being deflated).

Determine the minimum number of seconds needed in order to make the stack stable.

## Constraints

$$1 \leq N \leq 50$$

$$1 \leq R_i \leq 1,000,000,000$$

$$1 \leq A, B \leq 100$$

## Sample test case #1

$N = 5$   
 $R = [2, 5, 3, 6, 5]$   
 $A = 1$   
 $B = 1$

Expected Return Value = 5

## Sample test case #2

$N = 3$   
 $R = [100, 100, 100]$   
 $A = 2$   
 $B = 3$

Expected Return Value = 5

## Q) 8th April, 2022

1. Local minimum ( $O(n)$ ,  $O(\log N)$ )
2. Powerset



**Q) 8th April, 2022**

<https://leetcode.com/problems/minimum-depth-of-binary-tree/>

**Q) 8th April, 2022**

<https://leetcode.com/problems/valid-number/>

**Q) 8th April, 2022**

<https://leetcode.com/problems/remove-all-adjacent-duplicates-in-string/>

**Q) 8th April, 2022**

<https://leetcode.com/problems/powx-n/>

**Q) 8th April, 2022**

<https://leetcode.com/problems/palindrome-linked-list/>

**Q) 8th April, 2022**

<https://leetcode.com/problems/minimum-add-to-make-parentheses-valid>

**Q) 8th April, 2022**

<https://leetcode.com/problems/lowest-common-ancestor-of-a-binary-tree/>

**Q) 7th April, 2022**

We have  $N$  different apps with different user growth rates. At a given time  $t$ , measured in days, the number of users using an app is  $g^t$  (for simplicity we'll allow fractional users), where  $g$  is the growth rate for that app. These apps will all be launched at the same time and no user ever uses more than one of the apps. We want to know how many total users there are when you add together the number of users from each app.

After how many full days will we have 1 billion total users across the N apps?

Signature

```
int getBillionUsersDay(float[] growthRates)
```

Input

$1.0 < \text{growthRate} < 2.0$  for all growth rates

$1 \leq N \leq 1,000$

Output

Return the number of full days it will take before we have a total of 1 billion users across all N apps.

Examples

Example 1

```
growthRates = [1.5]
```

```
output = 52
```

Example 2

```
growthRates = [1.1, 1.2, 1.3]
```

```
output = 79
```

Example 3

```
growthRates = [1.01, 1.02]
```

```
output = 1047
```

**Q) 7th April, 2022**

<https://leetcode.com/problems/missing-ranges/>

**Q) 7th April, 2022**

<https://leetcode.com/problems/minimum-add-to-make-parentheses-valid/>

**Q) 7th April, 2022**

<https://leetcode.com/problems/minimum-remove-to-make-valid-parentheses/>

**Q) 7th April, 2022**

<https://leetcode.com/problems/basic-calculator-ii/>

**Follow up -**

<https://leetcode.com/problems/basic-calculator/>

**Q) 6th April, 2022**

Leetcode 71. Simplify Path

Leetcode 560. Subarray Sum Equals K

**Q) 2nd April, 2022**

<https://leetcode.com/problems/vertical-order-traversal-of-a-binary-tree/>

**Q) 1st April, 2022**

<https://leetcode.com/problems/remove-all-adjacent-duplicates-in-string/>

**Q) 1st April, 2022**

<https://leetcode.com/problems/powx-n/>

**Q) 31st March, 2022**

<https://leetcode.com/problems/k-closest-points-to-origin/>

**Q) 30th March, 2022**

<https://leetcode.com/problems/valid-palindrome-ii/>

**Q) 30th March, 2022**

<https://leetcode.com/problems/k-closest-points-to-origin/>

**Q) 25th March, 2022**

<https://leetcode.com/problems/random-pick-index/>

**Q) 25th March, 2022**

<https://leetcode.com/problems/top-k-frequent-elements/>

**Q) 25th March, 2022**

<https://leetcode.com/problems/sum-root-to-leaf-numbers/description/>

**Q) 25th March, 2022**

<https://leetcode.com/problems/remove-all-adjacent-duplicates-in-string/description/>

**Q) 25th March, 2022**

Design a Data Structure that can do insert(), remove(), and getRandomAccess()

Follow-up: How can we do this with O(1) time and O(n) space.

**Q) 25th March, 2022**

Given a friend class and given an API to get the neighbors of friends, return all 2nd-degree connections for a given user\_id?

Follow-up: Utilizing the API, find the kth most individuals with the most friends

**Q) 19th March, 2022**

<https://leetcode.com/problems/basic-calculator-ii/>

**Q) 19th March, 2022**

<https://leetcode.com/problems/continuous-subarray-sum/>

**Q) 17th March, 2022**

<https://leetcode.com/problems/random-pick-with-weight/>

**Q) 17th March, 2022**

<https://leetcode.com/problems/making-a-large-island/>

**Q) 16th March, 2022**

Minimum remove to make valid paranthesis

**Q) 16th March, 2022**

Binary tree vertical order traversal

**Q) 16th March, 2022**

<https://leetcode.com/problems/merge-two-binary-trees/>

**Q) 16th March, 2022**

<https://leetcode.com/problems/word-search/>

**Q) 16th March, 2022**

There is a binary tree with N nodes. You are viewing the tree from its left side and can see only the leftmost nodes at each level. Return the number of visible nodes.

Note: You can see only the leftmost nodes, but that doesn't mean they have to be left nodes. The leftmost node at a level could be a right node.

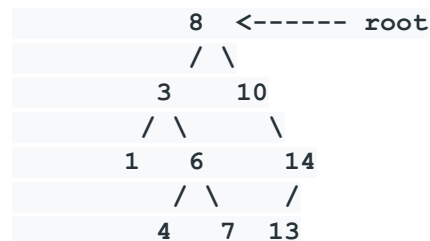
Input

The root node of a tree, where the number of nodes is between 1 and 1000, and the value of each node is between 0 and 1,000,000,000

## Output

An int representing the number of visible nodes.

## Example



output = 4

## Q) 16th March, 2022

You've devised a simple encryption method for alphabetic strings that shuffles the characters in such a way that the resulting string is hard to quickly read, but is easy to convert back into the original string.

When you encrypt a string S, you start with an initially-empty resulting string R and append characters to it as follows:

- Append the middle character of S (if S has even length, then we define the middle character as the left-most of the two central characters)
- Append the encrypted version of the substring of S that's to the left of the middle character (if non-empty)
- Append the encrypted version of the substring of S that's to the right of the middle character (if non-empty)

For example, to encrypt the string "abc", we first take "b", and then append the encrypted version of "a" (which is just "a") and the encrypted version of "c" (which is just "c") to get "bac".

If we encrypt "abcxcba" we'll get "xbacbca". That is, we take "x" and then append the encrypted version "abc" and then append the encrypted version of "cba".

## Input

S contains only lower-case alphabetic characters

$1 \leq |S| \leq 10,000$

## Output

Return string R, the encrypted version of S.

### Example 1

S = "abc"

R = "bac"

### Example 2

S = "abcd"

R = "bacd"

### Example 3

S = "abcxcba"

R = "xbacbca"

### Example 4

S = "facebook"

R = "eafcobok"

**Q) 12th March, 2022**

<https://leetcode.com/problems/remove-nth-node-from-end-of-list/>

**Q) 12th March, 2022**

<https://leetcode.com/problems/accounts-merge/>

