



Basic Array Problems

1. Write a java program to Print elements from 1D array using for-loop.

Input : arr[]={1,2,3,4,5,6};

Output: 1 2 3 4 5 6

2. Write a java program to Print elements from 1D array using while-loop.

Input : arr[]={1,2,3,4,5,6};

Output: 1 2 3 4 5 6

3. Write a java program to Print elements from 1D array using do-while loop.

Input : arr[]={1,2,3,4,5,6};

Output: 1 2 3 4 5 6

4. Write a java program to Print elements from 1D array using for-each loop.

Input : arr[]={1,2,3,4,5,6};

Output: 1 2 3 4 5 6

5. Write a java program to Print elements from 2D array using for-loop.

Ip : a={{1,2,3},{4,5,6}};

Op: 1 2 3

4 5 6



6. Write a java program to Print elements from 2D array using while loop.

Ip : a={{1,2,3},{4,5,6}};

Op: 1 2 3

4 5 6

7. Write a java program to Print elements from 2D array using do-while loop.

Ip : a={{1,2,3},{4,5,6}};

Op: 1 2 3

4 5 6

8. Write a java program to Print elements from 2D array using for-each loop.

Ip : a={{1,2,3},{4,5,6}};

Op: 1 2 3

4 5 6

9. Write a java program to Print elements from 3D array using for-loop.

Ip : a={{{1,2},{2,3}},{{4,5},{5,6}}};

Op: 1 2

2 3

4 5

5 6



10. Write a java program to Print elements from 3D array using while-loop.

Ip : a={{1,2},{2,3}},{4,5},{5,6}};

Op: 1 2

2 3

4 5

5 6

11. Write a java program to Print elements from 3D array using do-while loop.

Ip : a={{1,2},{2,3}},{4,5},{5,6}};

Op: 1 2

2 3

4 5

5 6

12. Write a java program to Print elements from 3D array using for-each loop.

Ip : a={{1,2},{2,3}},{4,5},{5,6}};

Op: 1 2

2 3

4 5

5 6



13.Find number of elements without using length variable.

Ip : a={1, 2, 3, 4, 5, 6}

Op : 6

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14.Find sum of all elements present in an array.

Ip : a={2, 2, 4, 4, 6, 6}

Op : 24

15.Reverse elements in an array.

Ip : a={1, 2, 3, 4, 5, 6}

Op : 6 5 4 3 2 1

16.Find product of all elements present in an array.

Ip : a={2, 2, 4, 4, 6, 6}

Op : 2304

17.Find all even elements present in an array.

Ip : a={2, 8, 5, 4, 7, 9}

Op : 2 8 4

18.Find all odd elements present in an array.

Ip : a={2, 8, 5, 4, 7, 9}

Op : 5 7 9

19.Find all prime elements present in an array.

Ip : a={2, 8, 5, 4, 7, 9}

Op : 2 5 7

20.Find count of positive and negative elements present in an array.

Ip : a={7, -6, 4, -1, 5}

Op : Positive : 3

Negative : 2

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21.Find odd elements and store it in a new array.

Ip : a={1, 2, 3, 4, 5, 6}

Op :b={1,3,5}

22.Find even elements and store it in a new array.

Ip : a={1, 2, 3, 4, 5, 6}

Op :b={2,4,6}

23.Find first 10 prime numbers and store it in an array.

Op :a={2,3,5,7,11,13,17,19,23,29}

24.Find first 10 prime numbers and store it in an array.

Op :a={2,3,5,7,11,13,17,19,23,29}

25.Find first 10 Fibonacci numbers and store it in an array.

Op :a={0,1,1,2,3,5,8,13,21,34}

26.Find sum of all elements at even indices in an array.

Ip : a={6,5,4,3,7,8,0}

Op : 17

27.Find sum of all elements at odd indices in an array.

Ip : a={6,5,4,3,7,8,0}

Op : 17

28.Merge two 1D arrays.

Ip : a={1,2,3}

b={4,5,6}

Op : c={1,2,3,4,5,6}

29. Merge three 1D arrays.

Ip : a={1,2,3}

b={4,5,6}

c={7,8,9}

Op : c={1,2,3,4,5,6,7,8,9}

30. Merge elements of a 2D array.

Ip : a={{4,5,6},{3,2,1}};

Op: 4 5 6 3 2 1

31. Find factors of a number and store them in an array.

Ip : num : 12

Op : a={1,2,3,4,6,12}

32. Create a clone of 1D array without using clone().

Ip : a={4,5,6}

Op : copy={4,5,6}

33. Create a clone of 2D array without using clone().

Ip : a={{5,6,4},{7,3,8}}

Op : copy={{5,6,4},{7,3,8}}

34. Create a clone of 3D array without using clone().

Ip : a={{{{1,2},{2,3}},{{4,5},{5,6}}}}

Op : copy={{{{1,2},{2,3}},{{4,5},{5,6}}}}



35. Perform Zig Zag merging of arrays.

Ip : a={1,2,3}

b={4,5,6,7,8}

Op : c={1,4,2,5,3,6,7,8}

36.Find duplicate elements in an array.

Ip : a={6,5,4,6,5,8,6}

Op : 6 , 5

37.Find all distinct elements in an array and store them in a new array.

Ip : a={4,3,2,3,4,5,6,7}

Op : b={4,3,2,5,6,7}

38. Write a java program to find Palindrome numbers from an array.

Input: arr[]={121,432,535,986,222};

Output: 121,535,222

39. Write a java program to find Palindrome strings from an array.

Array: ["madam", "racecar", "apple", "civic", "level", "hello"]

Output: madam,racecar, civic, level

40. Write a java program to convert a string into char array.

Input: String str="java"

Output: ['j', 'a', 'v', 'a']

41. Write a java program to create a subarray from an array.

Input: arr: [1, 2, 3, 4, 5, 6, 7, 8, 9]Start Index: 2,End Index: 5

Output: [3, 4, 5]



42. Write a java program to store user elements in an array and take length from user.

43. Write a java program to Rotate an array 'k' times forward.(left-rotate)

arr[] = {1,2,3,4,5}; k=2

output: 3,4,5,1,2

44. Write a java program to Rotate an array 'k' times backward.(right-rotate)

arr[] = {1,2,3,4,5};

k=2;

output: 4,5,1,2,3

45. Write a java program to check if 2 arrays are equal or not.

Array 1: [1, 2, 3, 4, 5], Array 2: [1, 2, 3, 4, 5]

Output: true

Array 1: [7, 14, 21,45,35], Array 2: [7, 14, 21, 36]

Output: false

46. Write a java program to find largest element from an array without using sorting method.

Array :[7, 84, 21,45,35]

Output: 84

Array :[2,2,2]

Output: 2

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47. Write a java program to find smallest element from an array without using sorting method.

Array :[7, 84, 21,5,35]

Output: 5

Array Problems based on Sorting and Searching Techniques

48. Write a java program to sort an array in ascending order using Bubble sort.

arr[]={4,2,1,3,5};

Output: 1,2,3,4,5

49. Write a java program to sort an array in ascending order using Selection sort.

50. Write a java program to sort an array in ascending order using Insertion sort.

51. Write a java program to sort an array in descending order using Bubble sort.

52. Write a java program to sort an array in descending order using Selection sort.

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53. Write a java program to sort an array in descending order using Insertion sort.

54. Write a java program to find the largest element from an array using sorting.

Arr[]={32,54,76,23,2};

Output: 76

55. Write a java program to find the smallest element from an array using sorting.

Arr[]={32,54,76,23,2};

Output: 2

56. Write a java program to find the Second Largest element from an array using sorting.

Arr[]={32,12,76,23,28};

Output: 32

57. Write a java program to find the Third Largest element from an array using sorting.

Arr[]={32,54,76,23,2};

Output:32

58. Write a java program to find the Third Smallest element from an array using sorting.

Arr[]={7, 44, 21,45,35};

Output: 35

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59. Write a java program to find the Second Smallest element from an array using sorting.

Arr[]={7, 44, 21, 45, 35};

Output: 44

60. Find Missing and Repeating Numbers from an array.

Given an unsorted array *arr* of size n of positive integers. One number 'A' from set {1, 2, ..., N} is missing and one number 'B' occurs twice in array. Find these two numbers.

Input: n=3, arr[]={1,3,3}

Output: 3 2

Explanation: Repeating number is 3 and smallest positive missing number is 2.

61. In the assembly line, the factor assembles three parts 'a', 'b', 'c' of a triangle toy. A valid toy is one where the two shorter sides added together are greater in length than the longest side.

- There are two forms of valid triangles to identify.

1. if 2 parts are of equal length ,the form is 'isosceles'.

2. if all 3 parts are of equal length, the form is 'Equilateral'.

Input: 36 36 30, output: Isosceles

Input: 47 8 60, output: None of these

Input: 86 86 86, output: Equilateral

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62. Maximum Candies : There is a candy shop near your house.

There are two types of candies:

1. Candy with a plastic wrapper, which costs A rupees.
2. Candy with a paper wrapper, which costs B rupees.

You can also sell the plastic wrapper for C rupees ($C < A$).

You have N rupees. you want to buy maximum candies.

Input: N=9, A=8, B=10, C=7

Output: 2

Explanation: You can buy a plastic candy, return its wrapper, and buy one more plastic candy. Thus, you will have 2 candies.

63. In a household, a family keeps tracks of their monthly expenses using matrix of size NXN, with each row representing different month, and each column representing an expense category.

They want your help in determining the month with the highest expenses using a program.

The program must print all expenses of the month that has the highest total expenditure. If more than one month has the same highest sum then print the expenditure of the month that occurs first.

Input: N=3

1 2 3

4 5 6

7 8 9

Output: 7 8 9

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Explanation: The sum of expenditure amount for 1st month is:

$$1+2+3=6$$

The sum of expenditure amount for 2nd month is: $4+5+6=15$

The sum of expenditure amount for 3rd month is: $7+8+9=24$

Among all three months, the 3rd month has the highest expenses.

So, expenditure amounts are 7, 8, 9 will be printed as output.

64. A stock trader trades in N selected stocks. The trader has calculated the relative stock price changes in the N stocks from the previous day stock prices. The lucky number of the trader is K, so the trader wishes to invest in the particular stock that has the kth smallest relative stock value.

Input: arr[]={10,5,7,88,19}, k=3

Output: 1

65. Partition Number of an Integer :

Given a positive integer n, return the magic number of n where n is defined as the sum of the squares of all integers i such that :

$1 \leq i \leq n$, and the decimal representation of i^2 can be partitioned into contiguous substrings such that the sum of the integer values of these substrings equals i.

Input: n=10, Output: 182

Explanation: There are exactly 3 integers i that satisfy the conditions in the statement: 1 since $1^2=1$

: 9 since $9^2=81$ and 81 can be partitioned into 8+1

: 10 since $10^2=100$ and 100 partitioned into 10+0.

Hence, the partition number of 10 is $1+81+100=182$.

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66. Word Dominance: Who Rules the Textual Kingdom ?

In short, write a java program to return a maximum times occurring string in string array.

Input: "apple", "banana", "apple", "banana", "apple", "cherry"

Output: apple

67. Given an integer array nums, return an array answer such that answer[i] is equal to the product of all the elements of nums except nums[i].

Ip : nums={1, 2, 3, 4}

Op :answer={24,12,8,6}

68. Given an integer array nums, move all 0's to the end of it while maintaining the relative order of the non-zero elements. Note that you must do this in-place without making a copy of the array.

Ip : nums={0,1,0,3,12}

Op :answer={1,3,12,0,0}

69. You are given an array of prices where prices[i] is the price of a given stock on an ith day. You want to maximise your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock. Return the maximum profit you can achieve from this transaction. If you cannot achieve any profit, return 0.

Ip : prices={7,1,5,3,6,4}

Op : 5

Explanation : Buy on day 2 (price = 1) and sell on day 5 (price = 6),
profit = 6-1 = 5.

Note that buying on day 2 and selling on day 1 is not allowed because
you must buy before you sell.

70. The next permutation of an array of integers is the next lexicographically greater permutation of its integer. Given an array of integers nums, find the next permutation of nums.

The replacement must be in place and use only constant extra memory.

Ip : nums={1,2,3}

Op : answer={1,3,2}

71. Given an array of integers and an integer target, return indices of the two numbers such that they add up to target.

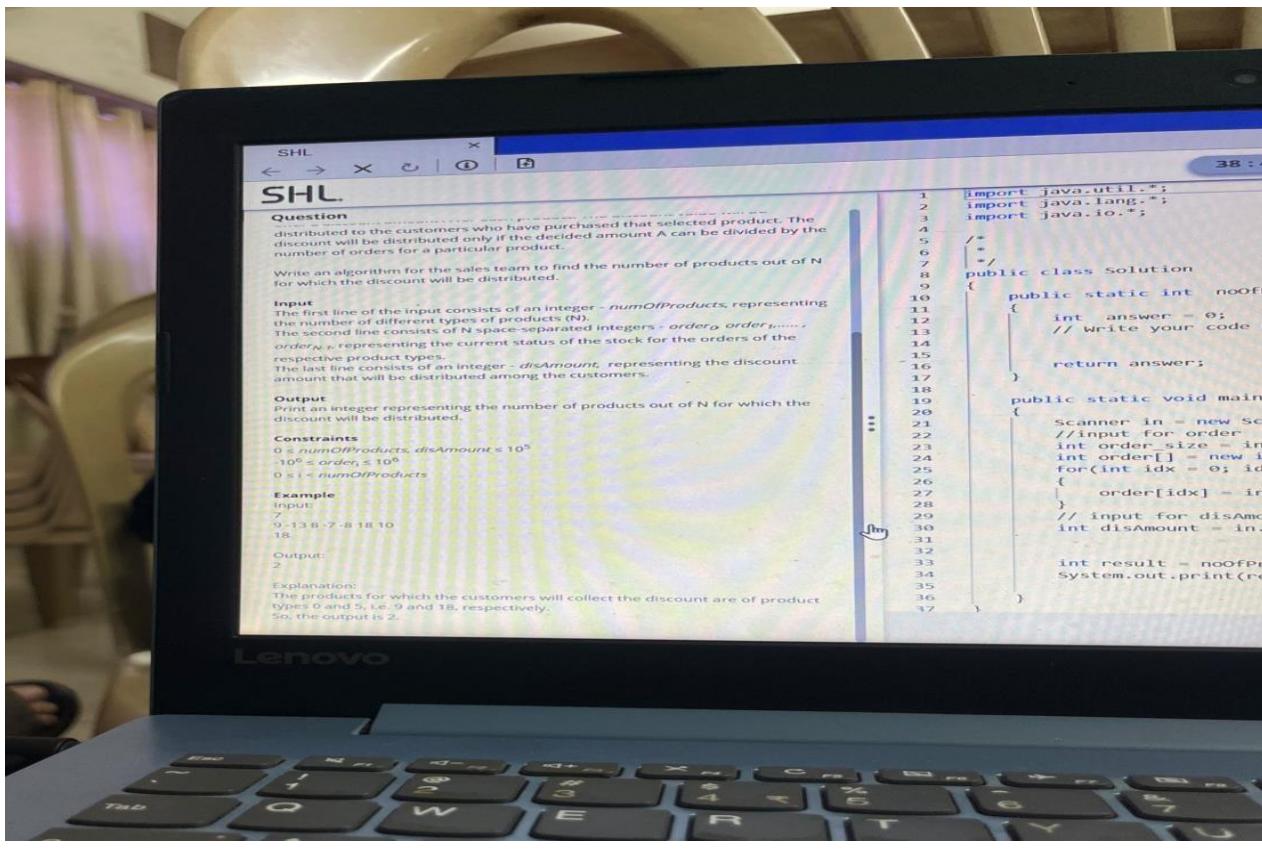
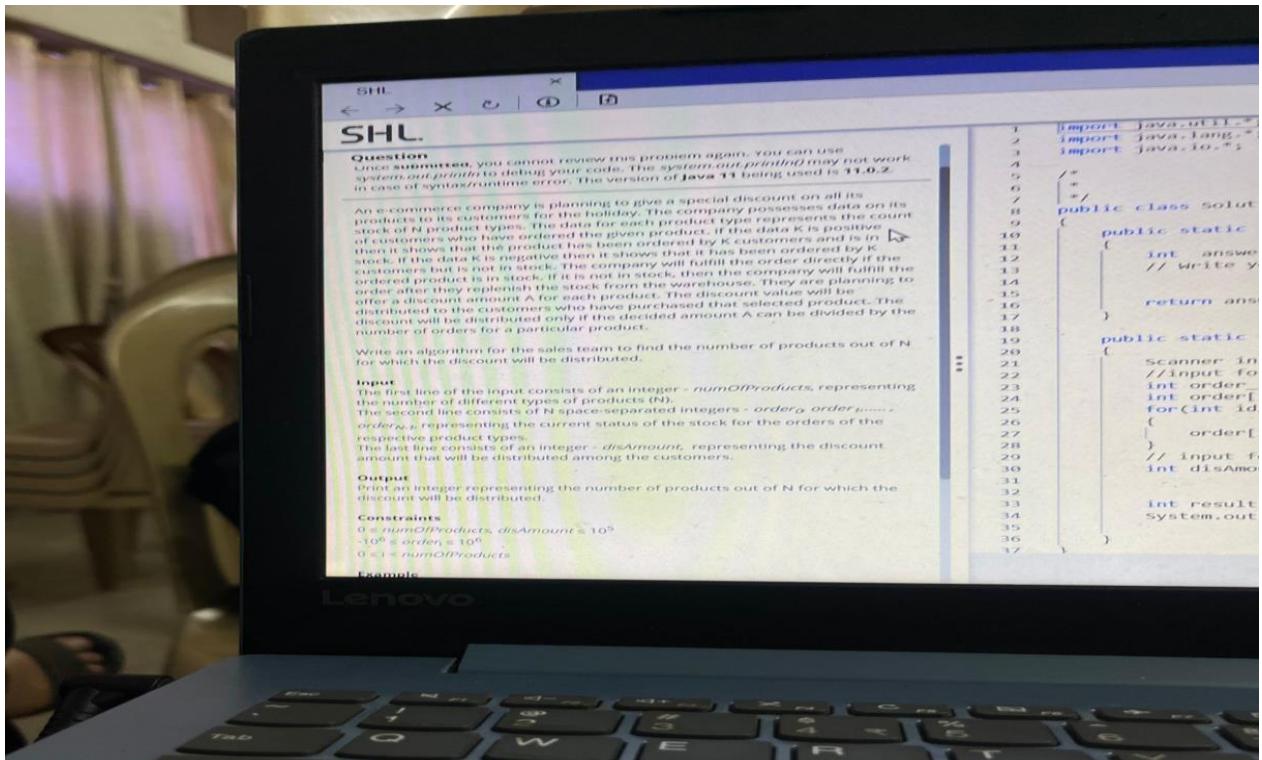
Ip : nums={2,7,11,15} target=9

Op : answer={0,1}

Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

Assessment Questions :

72.



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73.

The current selected programming language is **Java**. We emphasize the submission of a fully working code over partially correct but efficient code. Once **submitted**, you cannot review this problem again. You can use **System.out.println()** to debug your code. The **System.out.println()** may not work in case of syntax/runtime error. The version of **JDK** being used is **1.8**.

Note: The main class name must be "**Solution**".

A stock trader trades in N selected stocks. The trader has calculated the relative stock price changes in the N stocks from the previous day stock prices. The lucky number of the trader is K , so the trader wishes to invest in the particular stock that has the K^{th} smallest relative stock value.

Write an algorithm for the trader to find the K^{th} smallest stock price out of the selected N stocks.

Input

The first line of the input consists of an integer - stock_size , representing the number of selected stocks (N). The second line consists of N space-separated integers- $\text{stock}_0, \text{stock}_1, \dots, \text{stock}_{N-1}$, representing the relative stock prices of the selected stocks. The third line consists of an integer- value_K , representing the value K for which the trader wishes to find the stock price.

Output

Print an integer representing the K^{th} smallest stock price of selected N stocks.

Constraints

$0 < \text{value}_K \leq \text{stock_size} \leq 10^6$

$0 \leq \text{stock}_i \leq 10^6$

$0 \leq i < \text{stock_size}$

Example
Input:

```
5
10 5 7 88 19
3
```

Output:

```
10
```

```

37 - 52
1 import java.util.*;
2 import java.lang.*;
3 /*
4 */
5 public class Solution
6 {
7     public static int smallestStockPrice(int[] stock, int value)
8     {
9         int answer = 0;
10        // Write your code here
11        return answer;
12    }
13
14    public static void main(String[] args)
15    {
16        Scanner in = new Scanner(System.in);
17        // Input for stock
18        int stock_size = in.nextInt();
19        int stock[] = new int[stock_size];
20        for(int idx = 0; idx < stock_size; idx++)
21        {
22            stock[idx] = in.nextInt();
23        }
24        // Input for value
25        int value_k = in.nextInt();
26
27        int result = smallestStockPrice(stock, value_k);
28
29        System.out.print(result);
30
31    }
32
33
34
35
36
37

```



The first line of the input consists of an integer - stock_size , representing the number of selected stocks (N). The second line consists of N space-separated integers- $\text{stock}_0, \text{stock}_1, \dots, \text{stock}_{N-1}$, representing the relative stock prices of the selected stocks. The third line consists of an integer- value_K , representing the value K for which the trader wishes to find the stock price.

Output

Print an integer representing the K^{th} smallest stock price of selected N stocks.

Constraints

$0 < \text{value}_K \leq \text{stock_size} \leq 10^6$

$0 \leq \text{stock}_i \leq 10^6$

$0 \leq i < \text{stock_size}$

Example
Input:

```
5
10 5 7 88 19
3
```

Output:

```
10
```

Explanation:

The sorted relative stock prices are $[5, 7, 10, 19, 88]$.

So, the 3rd smallest stock price is 10.

```

3 import java.util.*;
4 import java.lang.*;
5 /*
6 */
7 public class Solution
8 {
9     public static int smallestStockPrice(int[] stock, int value)
10    {
11        int answer = 0;
12        // Write your code here
13        return answer;
14    }
15
16    public static void main(String[] args)
17    {
18        Scanner in = new Scanner(System.in);
19        // Input for stock
20        int stock_size = in.nextInt();
21        int stock[] = new int[stock_size];
22        for(int idx = 0; idx < stock_size; idx++)
23        {
24            stock[idx] = in.nextInt();
25        }
26        // Input for value
27        int value_k = in.nextInt();
28
29        int result = smallestStockPrice(stock, value_k);
30
31        System.out.print(result);
32
33    }
34
35
36
37

```


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74.

mthree 10 / 13 Completed

Programming question Coding 67min 00sec

Question 11 Max. score: 20.00

Profits

John is a shopkeeper. He can buy N items from the producer, the i^{th} of which costs $cost[i]$. He can sell the i^{th} item at $sell[i]$. Initially, he has K dollars and 0 items in his shop. At any moment, his store can accommodate at most 1 item, which means he has to sell the previous item before buying the next one from the producer.

What is the maximum profit he can achieve?

Notes

- He can buy and sell any number of items.
- He can use the profit previously earned to buy new items.
- One item can be bought and sold at most once.
- Items can be bought and sold in any order and not necessarily in the order given as input.

Function description

Complete the function `solution()`. The function takes the following 4 parameters and returns the solution:

- N : Represents the number of items
- K : Represents the initial amount
- $cost$: Represents the cost price of items
- $sell$: Represents the selling price of items

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mthree 10 / 13 Completed

Programming question Coding 66min 50sec

- He can buy and sell any number of items.
- Items can be bought and sold in any order and not necessarily in the order given as input.

Function description

Complete the function `solution()`. The function takes the following 4 parameters and returns the solution:

- N : Represents the number of items
- K : Represents the initial amount
- $cost$: Represents the cost price of items
- $sell$: Represents the selling price of items

Input format for custom testing

Note: Use this input format if you are testing against custom input or writing code in a language where we don't provide boilerplate code

- The first line contains N , denoting the number of items.
- The second line contains K , denoting the initial amount.
- The third line contains $cost$, denoting the cost price of items.
- The fourth line contains $sell$, denoting the selling price of items.

Output format

Print an integer representing the maximum total profit.

• The fourth line contains $sell$, denoting the selling price of items.

Programming question Coding 66min 46sec

Print an integer representing the maximum total profit.

Constraints

$$\begin{aligned} 1 \leq N \leq 10^5 \\ 0 \leq K \leq 10^9 \\ 1 \leq cost[i] \leq 10^9 \\ 1 \leq sell[i] \leq 10^9 \end{aligned}$$

Sample input	Sample output
2 50 25 30 25 37	7

Explanation

Given

Input:

$N = 2$

$K = 50$

< Previous Question

Programming question Coding 66min 46sec

Explanation

Given

Input:

$N = 2$

$K = 50$

$cost = [25, 30]$

$sell = [25, 37]$

Output: 7

Approach :

Buy and sell the second item. The current profit is $37-30=7$, total profit is 7 and money left is 57.

Buy and sell the first item. The current profit is $25-25=0$, total profit is $7+0=7$ and money left is 57.

Note:

Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Limits

Time Limit: 1.0 sec(s) for each input file

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75.

Programming question 66min 33sec

Coding

Max. score: 20.00

Question 12

One block

You are working in the resource distribution team of your company. A *One block* is a block of data having exactly one resource which has value 1. You are given an array *Arr* containing *N* resource values.

What is the number of ways to divide the array into continuous blocks such that each block is *One block*.

NOTE - If we cannot form a block with *One block*, then output **0**.

Function description

Complete the function *OneBlock()*. This function takes the following 2 parameters and returns the required answer:

- *N*: Represents the number of resources
- *Arr*: Represents the value of resources

Input format for custom testing

Note: Use this input format if you are testing against custom input or writing code in a language where we don't provide boilerplate code

- The first line contains an integer *N* denoting the number of resources.

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Coding

Input format for custom testing

Note: Use this input format if you are testing against custom input or writing code in a language where we don't provide boilerplate code

- The first line contains an integer *N* denoting the number of resources.
- The second line contains *N* space-separated integers denoting the value of resources.

Output format

Print the number of ways to divide the array into continuous blocks such that each block is *One block*.

Constraints

$1 \leq N \leq 100$

$0 \leq Arr_i \leq 1$

Sample input

3
0 1 0

Sample output

1

Programming question 66min 20.00

Coding

Constraints

$1 \leq N \leq 100$

$0 \leq Arr_i \leq 1$

Sample input

3
0 1 0

Sample output

1

Explanation

Given

- $N = 3$
- $Arr = [0, 1, 0]$

Approach

There is exactly one resource that has the value of 1. Hence, the number of ways is 1.

Note:

Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Limits

Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB

Scoring

Score is assigned if any testcase passes

Allowed Languages

Bash, C, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java 8, Java 14, Java 17, JavaScript(Node.js), Julia, Kotlin, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Scala, Swift, TypeScript, Visual Basic

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Explanation

Given

- $N = 3$
- $Arr = [0, 1, 0]$

Approach

There is exactly one resource that has the value of 1. Hence, the number of ways is 1.

Note:

Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Limits

Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB

Scoring

Score is assigned if any testcase passes

Allowed Languages

Bash, C, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java 8, Java 14, Java 17, JavaScript(Node.js), Julia, Kotlin, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Scala, Swift, TypeScript, Visual Basic

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76.

Coding

Max. score: 20.00

Question 13

Candle bunch

Mary has baked K cakes and she wants to put numbered candles on top of each of them. She wants to put candles numbered $1, 2, \dots, K$ on the cakes (one candle on each cake). She went to the store to buy candles. The candle shop has a row of N candle boxes. The shopkeeper will sell only a consecutive subset of candles. Mathematically, Mary can choose L and R ($1 \leq L \leq R \leq N$) and she can buy the candles $candle[L], candle[L+1], \dots, candle[R]$, considering 1-based indexing. Since Mary does not want to spend extra money, She wants to buy the minimum number of candles to get her desired candles.

You are given a row of candles. Find out the minimum number of candles that Mary has to buy in order to have at least the candles numbered $1, 2, \dots, K$.

Note: All the boxes in the stack have one unique numbered candle.

Function description

Complete the function `solution()`. The function takes the following 3 parameters and returns the solution:

- N : Represents the number of boxes of candles
- K : Represents the number of candles Mary needs
- $candle$: Represents the row of candle boxes

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Note: All the boxes in the stack have one unique numbered candle.

Function description

Complete the function `solution()`. The function takes the following 3 parameters and returns the solution:

- N : Represents the number of boxes of candles
- K : Represents the number of candles Mary needs
- $candle$: Represents the row of candle boxes

Input format

Note: This is the input format that you must use to provide custom input (available above the **Compile and Test** button).

- The first line contains N denoting the number of boxes of candles.
- The second line contains K denoting the number of candles Mary needs.
- The third line contains an array `candle` denoting the row of candle boxes.

Output format

Print an integer denoting the minimum number of candles Mary must buy.

Constraints

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Output format

Print an integer denoting the minimum number of candles Mary must buy.

Constraints

$1 \leq K \leq N \leq 10^5$
 $1 \leq candle[i] \leq N$

Sample Input

```
7
3
4 5 3 1 7 2 6
```

Sample output

```
4
```

Explanation

Given

Input

- $N = 7$
- $K = 3$
- $candle = [4, 5, 3, 1, 7, 2, 6]$

[Previous Question](#)

Explanation

Given

Input

- $N = 7$
- $K = 3$
- $candle = [4, 5, 3, 1, 7, 2, 6]$

Output:

If Mary buys the candles from the 3rd position to the 6th position, she will have $[3, 1, 7, 2]$. These are the minimum candles she needs to buy.

Note:

Your code must be able to print the sample output from the provided sample input. However, your code is run against multiple hidden test cases. Therefore, your code must pass these hidden test cases to solve the problem statement.

Limits

Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB

Scoring

Score is assigned if any testcase passes

Allowed Languages

Bash, C, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java 8, Java 14, Java 17, JavaScript(Node.js), Julia, Kotlin, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift, TypeScript, Visual Basic

[Previous Question](#) [Next Question >](#)



77.

STC.

Question

The current selected programming language is **C**. We emphasize the submission of a fully working code over partially correct but efficient code. Once **submitted**, you cannot review this problem again. You can use **printf()** to debug your code. The **printf()** may not work in case of syntax/runtime error. The version of **GCC** being used is **5.5.0**.

You are playing an online game. In the game, a number is displayed on the screen. In order to win the game, you have to count the trailing zeros in the factorial value of the given number. Write an algorithm to count the trailing zeros in the factorial value of the given number.

Input
The input consists of an integer *num*, representing the number displayed on the screen.

Output
Print an integer representing the count of trailing zeros in the factorial of the given number.

Note
The factorial of the number is calculated as the product of integer numbers from 1 to *num*.

Example

Input:
5

Output:
1

Explanation:
On calculating the factorial of 5, the factorial value is 120 ($1 \times 2 \times 3 \times 4 \times 5$). There is only one trailing 0 in 120, so the output is 1.

```
1 //Header
2 #include <stdio.h>
3 #include <math.h>
4 #include <limits.h>
5 #include <assert.h>
6
7 */
8 */
9 */
10 int main()
11 {
12     int num;
13     // Input
14     scanf("%d", &num);
15     // Output
16     printf("%d", trailingZeroes(num));
17 }
18
19 int trailingZeroes(int num)
20 {
21     int ans = 0;
22     while (num != 0)
23     {
24         if (num % 5 == 0)
25             ans++;
26         num /= 5;
27     }
28     return ans;
29 }
30
31 assert(trailingZeroes(0) == 0);
32 assert(trailingZeroes(5) == 1);
33 assert(trailingZeroes(25) == 6);
```

78.



The current selected programming language is **Java 11**. We emphasize the submission of a fully working code over partially correct but efficient code. Once submitted, you cannot review this problem again. You can use `System.out.println` to debug your code. The `System.out.println()` may not work in case of syntax/runtime error. The version of Java 11 being used is **11.0.2**.

A company is transmitting its data to another server. To secure the data against malicious activity, they plan to reverse the data before transmitting. They want to know the number of data characters that do not change position even after the data stream is reversed. The network administrator has been tasked with ensuring the smooth transmission of the data.

Write an algorithm for the network administrator to help in finding the number of data characters that do not change position even after the data stream is reversed.

Input
The input consists of a string - `dataStream`, representing the data to be transmitted through the network (N).

Output
Print an integer representing the number of data characters that do not change position even after the data stream is reversed. If no such character is found or the input string is empty then print 0.

Constraints
 $0 \leq \text{length of } \text{dataStream} \leq 10^5$

Note
The input string `dataStream` is case sensitive and made up of English letters only. Uppercase characters and lowercase characters are counted as different.

Example
Input:
`alphxxdida`

Output:
4

Explanation:
The reversed data stream is "adidxxhpla".
The characters that do not change position after the data stream is reversed are the characters 'a' at the start and end position and the characters 'x' in the middle positions.

```
1 import java.util.*;
2 import java.io.*;
3 import java.math.*;
4
5 /**
6 * 
7 */
8 public class Main {
9
10    public static void main(String[] args) {
11        Scanner scanner = new Scanner(System.in);
12        String dataStream = scanner.nextLine();
13        int count = 0;
14
15        for (int i = 0; i < dataStream.length(); i++) {
16            if (dataStream.charAt(i) == dataStream.charAt(dataStream.length() - 1 - i)) {
17                count++;
18            }
19        }
20
21        System.out.println(count);
22    }
23}
24
25
26
27
28
29
30
31}
```

By – Shrikant sir



79.

The current selected programming language is **Java 11**. We emphasize the submission of a fully working code over partially correct but efficient code. Once **submitted**, you cannot review this problem again. You can use `System.out.println` to debug your code. The `System.out.println` may not work in case of syntax/runtime error. The version of **Java 11** being used is **11.0.2**.

In a science research lab, the combination of two nuclear chemicals produces initial energy as X. This energy X changes at a consistent rate R every second. The scientist wishes to calculate the total energy produced if the reaction is allowed to occur for N seconds.

Write an algorithm to find the total energy produced.

Input
The first line of input consists of an integer- `initialEnergy`, representing the initial energy produced upon combining the nuclear chemicals (X).
The second line consists of an integer- `rate`, representing the consistent rate of change.
The last line consists of an integer- `timeN`, representing the N^{th} second for which the scientist wishes to calculate the total energy produced.

Output
Print an Integer representing the total energy produced by the N^{th} second.

Example
Input:
5
3
3
Output:
24
Explanation:
For $N=1$, an initial energy of 5 is generated.
For $N=2$, a consistent rate of 3 is added, so it becomes 8.
For $N=3$, again 3 is added to previous energy value, so it becomes 11.
The total energy produced after 3 seconds is 24 ($5+8+11$).

1 import java
2 import java
3 import java
4 /*
5 *
6 */
7 public class Main
8 {
9 public static void main(String[] args)
10 {
11 int initialEnergy = 5;
12 int rate = 3;
13 int timeN = 3;
14 int totalEnergy = initialEnergy;
15 for (int i = 1; i <= timeN; i++)
16 {
17 totalEnergy += rate;
18 }
19 System.out.println(totalEnergy);
20 }
21 }
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

80.

Superset :: Universit... Pod women safety devic... 4/5 Reverse a special string

Reverse A Special String

We need to reverse a string. But the string which needs to be reversed is a special string. It is special because it contains 3 special characters like @, _ and \$.

Write a function to reverse the special string such that:

1. alphabets are reversed
2. special characters does not leave their positions

Example1:

Input:
Ni@te_sh\$

Output:
hs@et_IN\$

Example2:

Input:
@_

Output:
 @_

Constraints:
1 <= s.length < 200
String can contain only special characters or only alphabets or a mixture of both

Java (OpenJDK 13.0.1)

```
1 import java.util  
2 import java.util.Scanner  
3 class Main {  
4     public static void main(String[] args) {  
5         Scanner scanner = new Scanner(System.in);  
6         String str = scanner.nextLine();  
7         System.out.println(reverseSpecialString(str));  
8     }  
9     public static String reverseSpecialString(String str) {  
10        char[] arr = str.toCharArray();  
11        int n = arr.length;  
12        int i = 0, j = n - 1;  
13        while (i < j) {  
14            if (!Character.isLetter(arr[i])) {  
15                i++;  
16            } else if (!Character.isLetter(arr[j])) {  
17                j--;  
18            } else {  
19                char temp = arr[i];  
20                arr[i] = arr[j];  
21                arr[j] = temp;  
22                i++;  
23                j--;  
24            }  
25        }  
26        return String.valueOf(arr);  
27    }  
28}
```

Test case input detail
Test-Case 1 Input:
Ni@te_sh\$

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81.

4/5 Magic Number of an Integer

Magic Number Of An Integer

Description:
Given a positive integer n , return the magic number of n .
The magic number of n is defined as The sum of the squares of all integers i such that:

- $1 \leq i \leq n$
- The decimal representation of $i * i$ can be partitioned into contiguous substrings such that the sum of the integer values of these substrings equals i .

Constraints: $1 \leq n \leq 1000$

Input Format:
A single line containing an integer.

Example 1:
Input: $n = 10$ Output: 182 Explanation: There are exactly 3 integers i that satisfy the conditions in the statement: - 1 since $1 * 1 = 1$ - 9 since $9 * 9 = 81$ and 81 can be partitioned into $8 + 1$ - 10 since $10 * 10 = 100$ and 100 can be partitioned into $10 + 0$. Hence, the magic number of 10 is $1 + 81 + 100 = 182$

Example 2:
Input: $n = 37$ Output: 1478 Explanation: There are exactly 4 integers i that satisfy the conditions in the statement: - 1 since $1 * 1 = 1$ - 9 since $9 * 9 = 81$ and 81 can be partitioned into $8 + 1$ - 10 since $10 * 10 = 100$ and 100 can be partitioned into $10 + 0$ - 36 since $36 * 36 = 1296$ and 1296 can be partitioned into $1 + 29 + 6$. Hence, the magic number of 37 is $1 + 81 + 100 + 1296 = 1478$

Java (OpenJDK 11) code snippet:

```

16.    }
17.    }
18.    }
19.    }
20.    }
21.    }
22.    }
23.    }
24.    }
25.    }
26.    }
27.    }
28.    }
29.    }
30.    }
31.    }
32.    }
33.    }
34.    }
35.    }
36.    }
37.    }

Test case input details
Test-Case 1: Input:
75

```

82.

Leaders in array

Leaders in Array

Description:
Given an array A of positive integers. Your task is to find the leaders in the array. An element of an array is leader if it is greater than or equal to all the elements to its right side. The rightmost element is always a leader. If no leader is found then return -1

Input Format:
Line1: Array of integers

Output Format:
Return the leaders in the order in which they occur in the array

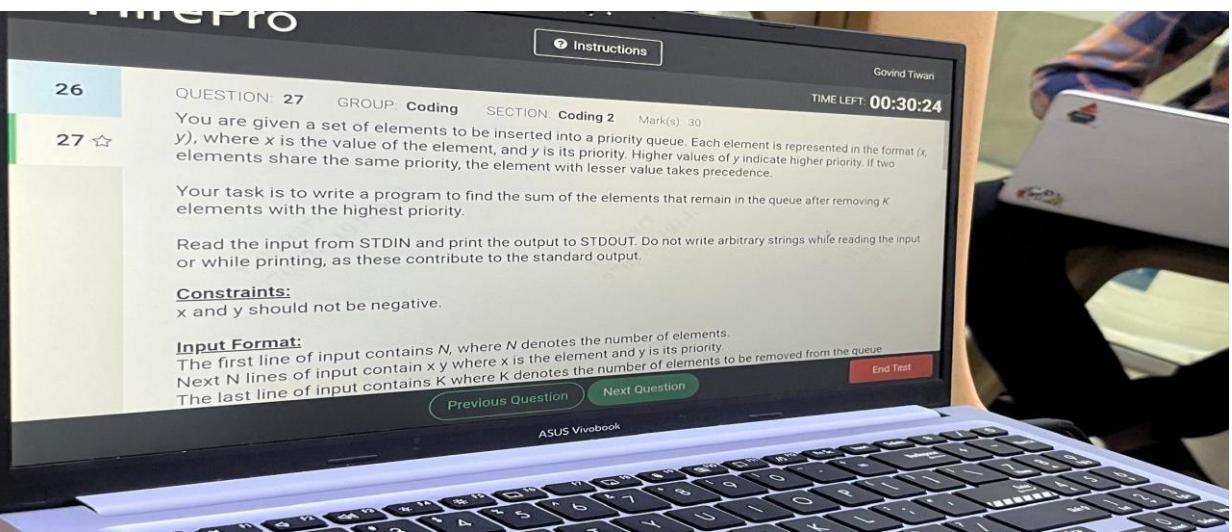
Constraints:
 $1 \leq n \leq 10^7$
 $0 \leq A_i \leq 10^7$

Examples:

Example 1:
Input:
16 17 4 3 5 2
Output:
17 5 2

Explanation:
The first leader is 17 as it is greater than all the elements to its right. Similarly, the next leader is 5. The right-most element is always a leader so it is also included.

83.



QUESTION: 27 GROUP: Coding SECTION: Coding 2 Mark(s): 30 TIME LEFT: 00:30:24

You are given a set of elements to be inserted into a priority queue. Each element is represented in the format (x, y) , where x is the value of the element, and y is its priority. Higher values of y indicate higher priority. If two elements share the same priority, the element with lesser value takes precedence.

Your task is to write a program to find the sum of the elements that remain in the queue after removing K elements with the highest priority.

Read the input from STDIN and print the output to STDOUT. Do not write arbitrary strings while reading the input or while printing, as these contribute to the standard output.

Constraints:
 x and y should not be negative.

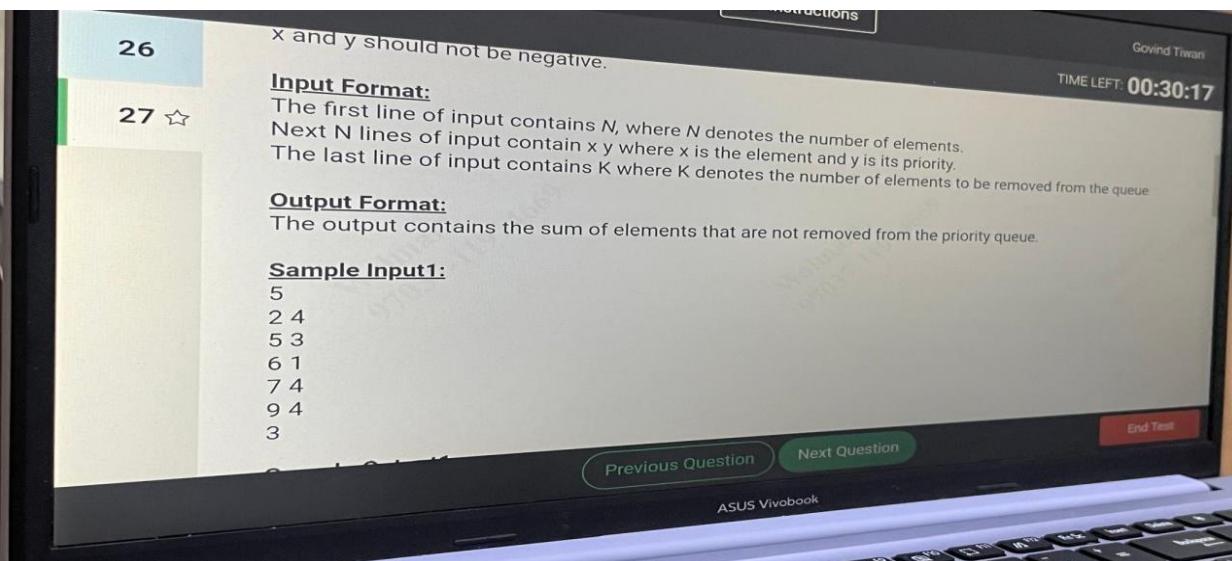
Input Format:
The first line of input contains N , where N denotes the number of elements.
Next N lines of input contain $x \ y$ where x is the element and y is its priority.
The last line of input contains K where K denotes the number of elements to be removed from the queue.

Output Format:
The output contains the sum of elements that are not removed from the priority queue.

Sample Input1:
5
2 4
5 3
6 1
7 4
9 4
3

Sample Output1:
11

Explanation1:
From the given Sample Input1, we have:
Total number of elements in the queue is 5
Total number of elements to be removed is 3
So clearly 2, 7, and 9 are the highest priority elements whose priority value is 4. So they are removed from the queue leaving 6 & 5 and their sum is 11, which will be printed as an output.



QUESTION: 27 GROUP: Coding SECTION: Coding 2 Mark(s): 30 TIME LEFT: 00:30:17

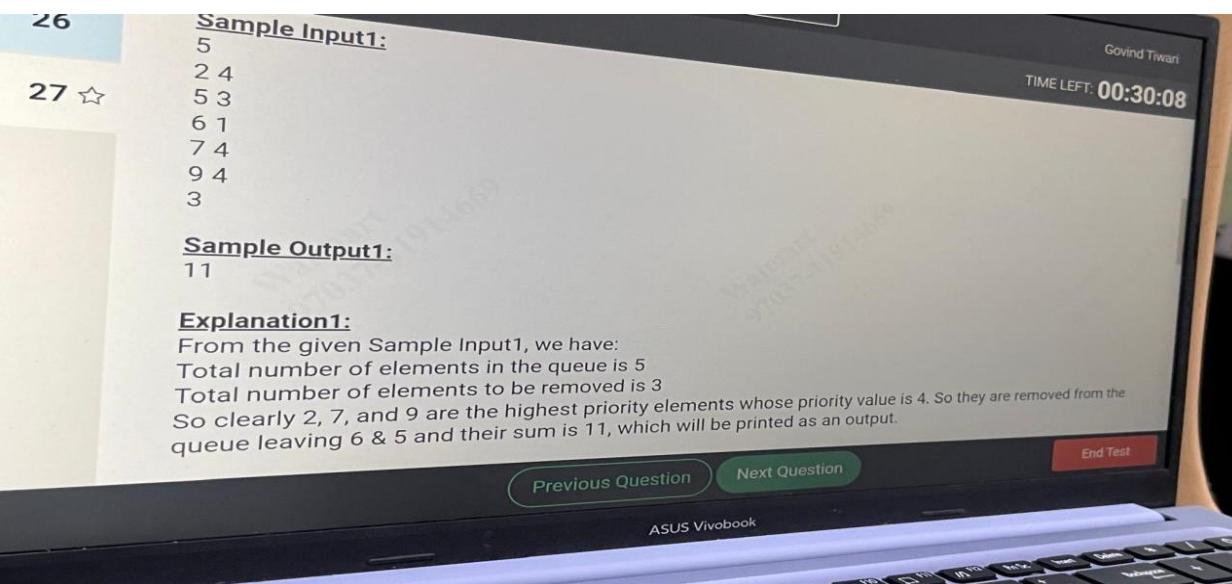
Input Format:
The first line of input contains N , where N denotes the number of elements.
Next N lines of input contain $x \ y$ where x is the element and y is its priority.
The last line of input contains K where K denotes the number of elements to be removed from the queue.

Output Format:
The output contains the sum of elements that are not removed from the priority queue.

Sample Input1:
5
2 4
5 3
6 1
7 4
9 4
3

Sample Output1:
11

Explanation1:
From the given Sample Input1, we have:
Total number of elements in the queue is 5
Total number of elements to be removed is 3
So clearly 2, 7, and 9 are the highest priority elements whose priority value is 4. So they are removed from the queue leaving 6 & 5 and their sum is 11, which will be printed as an output.



QUESTION: 27 GROUP: Coding SECTION: Coding 2 Mark(s): 30 TIME LEFT: 00:30:08

Input Format:
The first line of input contains N , where N denotes the number of elements.
Next N lines of input contain $x \ y$ where x is the element and y is its priority.
The last line of input contains K where K denotes the number of elements to be removed from the queue.

Output Format:
The output contains the sum of elements that are not removed from the priority queue.

Sample Input1:
5
2 4
5 3
6 1
7 4
9 4
3

Sample Output1:
11

Explanation1:
From the given Sample Input1, we have:
Total number of elements in the queue is 5
Total number of elements to be removed is 3
So clearly 2, 7, and 9 are the highest priority elements whose priority value is 4. So they are removed from the queue leaving 6 & 5 and their sum is 11, which will be printed as an output.

By – Shrikant sir

QUESTION

6 Sample Output1:
11

7 ★ **Explanation1:**
From the given Sample Input1, we have:
Total number of elements in the queue is 5
Total number of elements to be removed is 3
So clearly 2, 7, and 9 are the highest priority elements whose priority value is 4. So they are removed from the queue leaving 6 & 5 and their sum is 11, which will be printed as an output.

Sample Input2:
6
3 7
17 4
2 7
8 7
8 2
5 6
2

Previous Question Next Question End Test

Govind Tiwari TIME LEFT: 00:30:01

26 Sample Input2:
6
3 7
17 4
2 7
8 7
8 2
5 6
2

27 ★ **Explanation2:**
From the given Sample Input2, we have:
Total number of elements in the queue is 6
Total number of elements to be removed is 2
So clearly 3, and 2 are the highest priority elements whose priority value is 7. So they are removed from the queue leaving 17, 8, 8 & 5 and their sum is 38, which will be printed as an output.

Sample Output2:
38

Previous Question Next Question

TIME LEFT: 00:29:44

Sample Output2:
38

Govind Tiwari TIME LEFT: 00:29:44

Explanation2:
From the given Sample Input2, we have:
Total number of elements in the queue is 6
Total number of elements to be removed is 2
So clearly 3, and 2 are the highest priority elements whose priority value is 7. So they are removed from the queue leaving 17, 8, 8 & 5 and their sum is 38, which will be printed as an output.

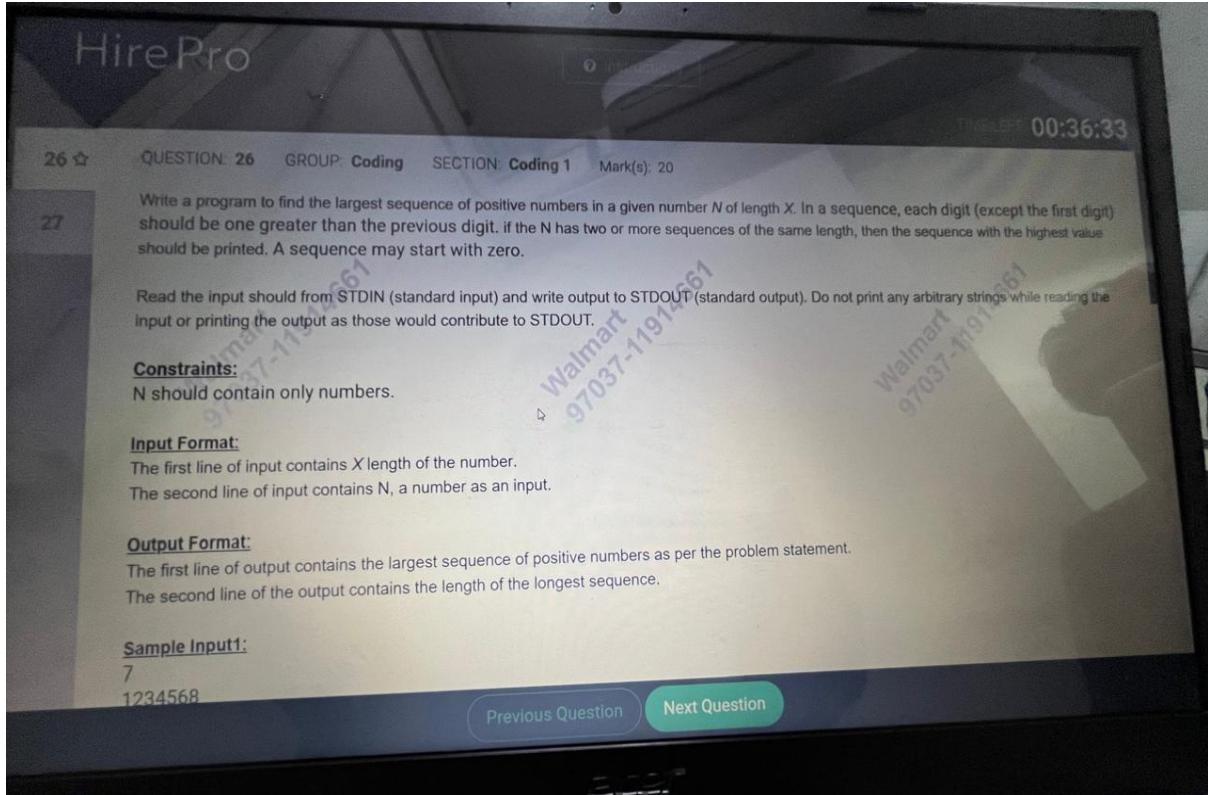
Current Code Previous Versions Java 8

```
1 import java.util.Scanner;
2
3 public class TestClass {
4     public static void processData(int n, int nums, int[] x, int[] y)//n , nums is a integer
```

Previous Question Next Question End Test

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84.



QUESTION: 26 GROUP: Coding SECTION: Coding 1 Mark(s): 20 TIME LEFT: 00:36:33

Write a program to find the largest sequence of positive numbers in a given number N of length X . In a sequence, each digit (except the first digit) should be one greater than the previous digit. If the N has two or more sequences of the same length, then the sequence with the highest value should be printed. A sequence may start with zero.

Read the input from STDIN (standard input) and write output to STDOUT (standard output). Do not print any arbitrary strings while reading the input or printing the output as those would contribute to STDOUT.

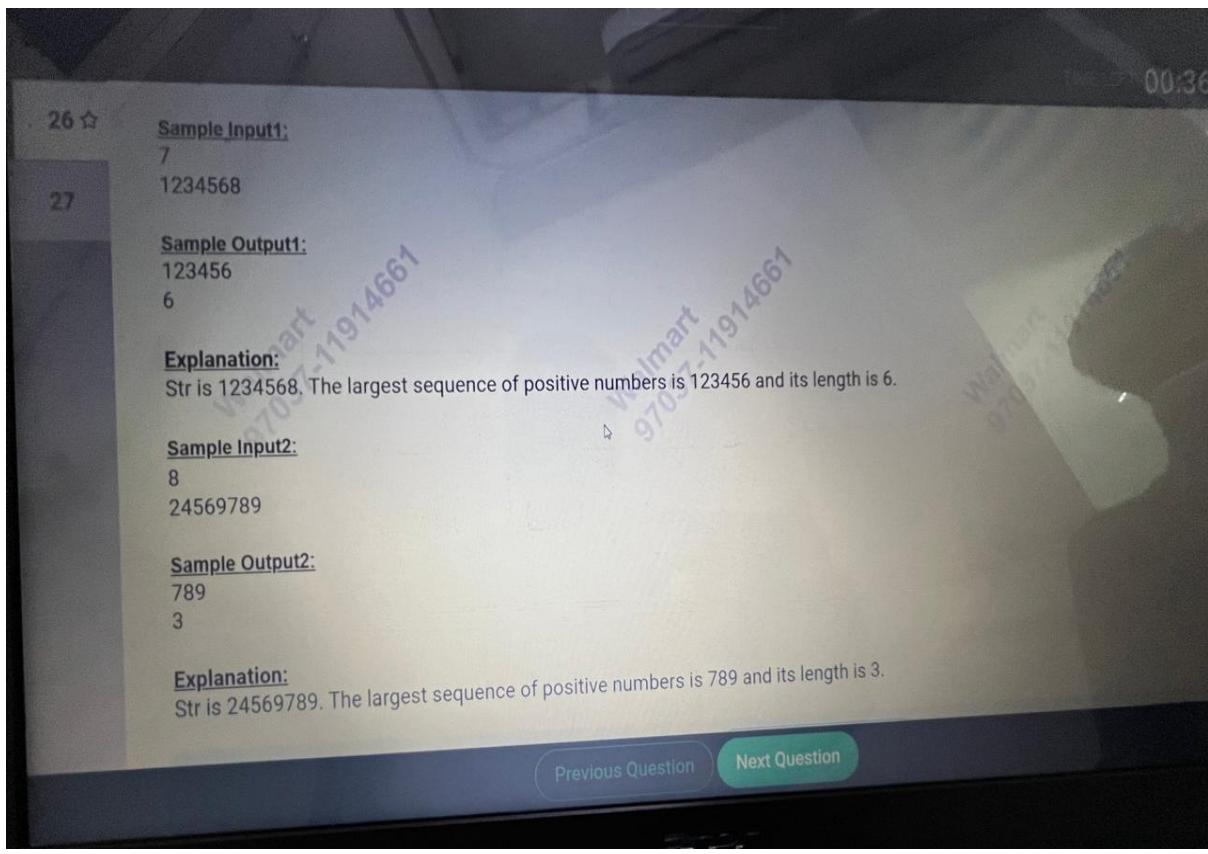
Constraints:
 N should contain only numbers.

Input Format:
The first line of input contains X length of the number.
The second line of input contains N , a number as an input.

Output Format:
The first line of output contains the largest sequence of positive numbers as per the problem statement.
The second line of the output contains the length of the longest sequence.

Sample Input1:
7
1234568

Previous Question Next Question



QUESTION: 26 GROUP: Coding SECTION: Coding 1 Mark(s): 20 TIME LEFT: 00:36:33

Sample Input1:
7
1234568

Sample Output1:
123456
6

Explanation:
Str is 1234568. The largest sequence of positive numbers is 123456 and its length is 6.

Sample Input2:
8
24569789

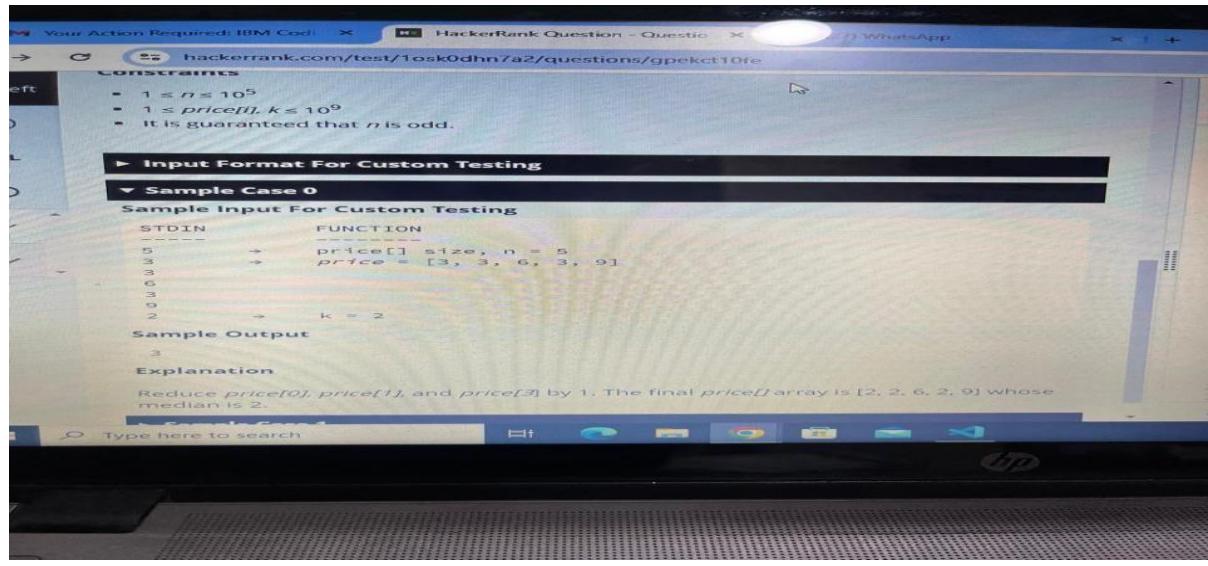
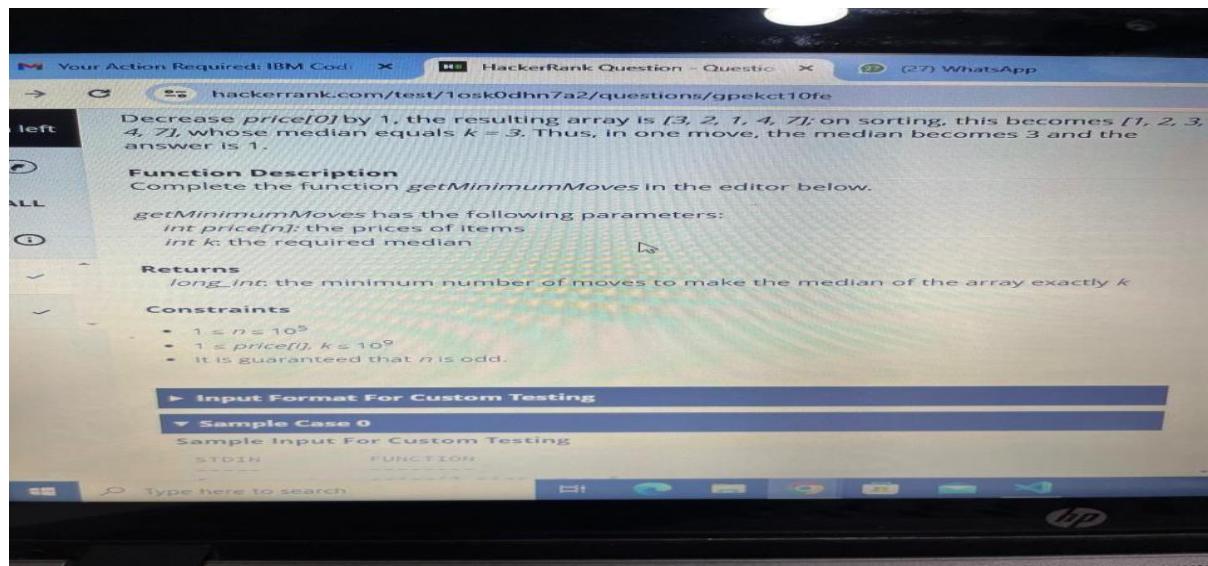
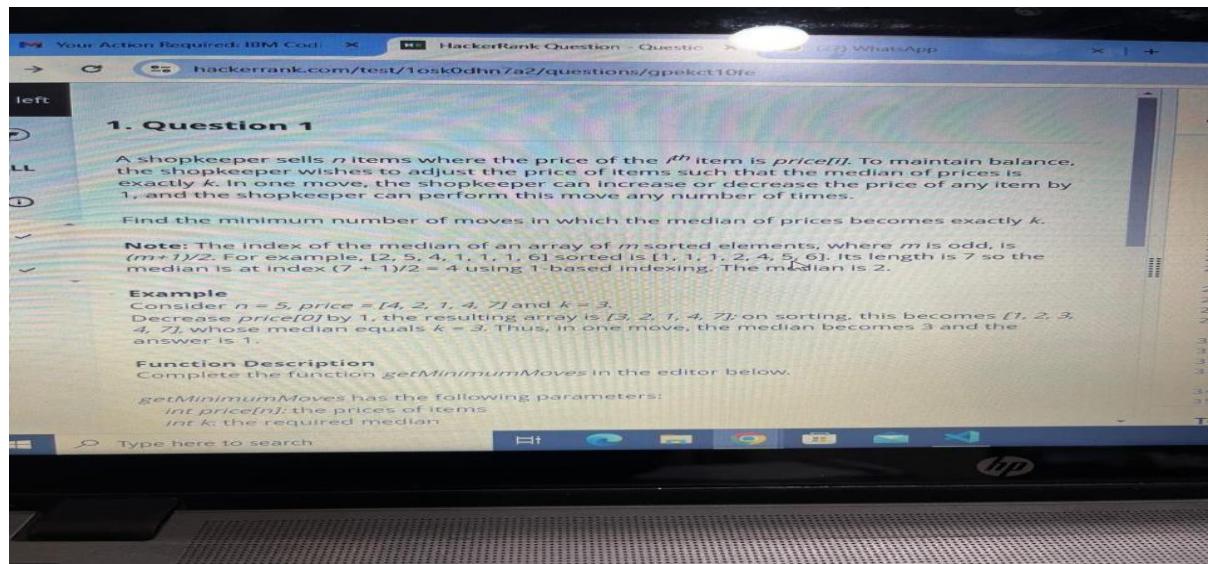
Sample Output2:
789
3

Explanation:
Str is 24569789. The largest sequence of positive numbers is 789 and its length is 3.

Previous Question Next Question

By – Shrikant sir

85.



By – Shrikant sir

86.

1. Question 1

ALL

Implement a student registration and student information retrieval system for a school using a simple class roster in Java. When a student is registered, the system must assign an integer ID (*enrollmentNumber*), starting at 1 and adding 1 as each student is registered. The student's name is stored with the assigned *enrollmentNumber*. The retrieval request should return a student's registration information.

1

2 The *Student* class should implement:

3 • The constructor *Student(String name)*
 4 • The method *String toString()* to return the string "
 5 *{enrollmentNumber}: {name}*"

6

7 The locked stub code in the editor validates the implementation of the *Student* class.
 After each student is registered, the code stub requests and prints the student's information to test your code.

8

Constraints

9 • $1 \leq \text{numberOfStudents} \leq 10^3$

NIFTY +1.34%

Input Format For Custom Testing

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ALL

1

2

3 • $1 \leq \text{numberOfStudents} \leq 10^3$

4 ▶ **Input Format For Custom Testing**

5 ▼ **Sample Case 0**

6 **Sample Input For Custom Testing**

STDIN	Function
-----	-----
3	$\rightarrow \text{numberOfStudents} = 3$
Pat	$\rightarrow \text{student 1 name} = \text{'Pat'}$
Sam	$\rightarrow \text{student 2 name} = \text{'Sam'}$
Chris	$\rightarrow \text{student 3 name} = \text{'Chris'}$

7 **Sample Output**

8 1: Pat
 9 2: Sam
 3: Chris

4 **Explanation**

5 The three students are registered in the following order:

6 • The first student to be registered is Pat so Pat is assigned 1 as the enrollment number by the portal.

7 • Sam is second, so Sam is assigned the number 2.

8 • Chris is third, so Chris is assigned the number 3.

9 Now, the information of all the students is printed in the order in which they are registered.

NIFTY +1.34%

Search

By – Shrikant sir



87.

41m left

2. Question 2

Two circles on a Cartesian plane, A and B , are each defined by three descriptors:

- X : the x-coordinate of the circle's center
- Y : the y-coordinate of the circle's center
- R : the radius of the circle

1 Circles A and B will both be centered either on the X -axis (i.e. $Y_A = 0$ and $Y_B = 0$), or on the Y -axis (i.e. $X_A = 0$ and $X_B = 0$), but not both.

2 A pair of circles (A and B) will have one of the following relationship types:

- **Touching**: they touch each other at a single point
- **Concentric**: they have the same center point
- **Intersecting**: they intersect each other (touching at two points)
- **Disjoint-Outside**: disjoint with one existing outside of the other
- **Disjoint-Inside**: disjoint with one contained inside the other (but not concentric)

Example

26°C

Search

Test

left

Example

circlePairs = ['3 0 10 5 0 3', '0 1 4 0 1 5']

Each string has 6 integers that represent X , Y and R for circles A and B .

1. The circles are Disjoint-Inside.

- Circle A is centered at $(3, 0)$ and extends 10 units along the x-axis from -7 to 13.
- Circle B is centered at $(5, 0)$ and extends 3 units along the x-axis from 2 to 8.

2. The circles are Concentric.

- Circle A is centered at $(0, 1)$ and extends 4 units along the y-axis from -3 to 5.
- Circle B is centered at $(0, 1)$ and extends 5 units along the y-axis from -4 to 6.

2 Function Description

Complete the function `circles` in the editor.

`circles` has the following parameter(s):

`string circlePairs[n]:` each string contains six space-separated integers. The first three integers are X , Y , and R for circle A , and the last three are X , Y , and R for circle B .

Returns:
`string [n]:` each string i is the relation between the circles described in

1 26°C

Search

By – Shrikant sir



41m left

Function Description
Complete the function *circles* in the editor.

ALL

circles has the following parameter(s):
string circlePairs[n]: each string contains six space-separated integers. The first three integers are *X*, *Y*, and *R* for circle *A*, and the last three are *X*, *Y*, and *R* for circle *B*.

Returns:
string [n]: each string *i* is the relation between the circles described in *circlePairs[i]*

1 Constraints

2

- $1 \leq n \leq 5000$
- $0 \leq X, Y, R \leq 5000$

▶ Input Format for Custom Testing

▼ Sample Case 0

Sample Input

STDIN Function

▶ Input Format for Custom Testing

▼ Sample Case 0

Sample Input

STDIN	Function
-----	-----
4	→ <i>circlePairs[] size n = 4</i>
12 0 21 14 0 23	→ <i>circlePairs = ['12 0 21 14 0 23', '0 45 8 0 94 9', '35 0 13 10 0 38', '0 26 8 0 9 25']</i>
0 45 8 0 94 9	
35 0 13 10 0 38	
0 26 8 0 9 25	

Sample Output

Touching
Disjoint-Outside
Touching
Touching

By – Shrikant sir



Explanation

1. The circles touch at $(-9, 0)$.
 - Circle A is centered at $(12, 0)$ and extends along the x-axis from -9 to 33.
 - Circle B is centered at $(14, 0)$ and extends along the x-axis from -9 to 37.
2. The circles share no points in common.
 - Circle A is centered at $(0, 45)$ and extends along the y-axis from 37 to 53.
 - Circle B is centered at $(0, 94)$ and extends along the y-axis from 85 to 103.
3. The circles touch at $(48, 0)$.
 - Circle A is centered at $(35, 0)$ and extends along the x-axis from 22 to 48.
 - Circle B is centered at $(10, 0)$ and extends along the x-axis from -28 to 48.
4. The circles touch at $(0, 34)$.
 - Circle A is centered at $(0, 26)$ and extends along the y-axis from 18 to 34.
 - Circle B is centered at $(0, 9)$ and extends along the y-axis from -15 to 34.

The array `result = ['Touching', 'Disjoint-Outside', 'Touching', 'Touching']` is returned.

19
20
21
22
23
S
24
as
25
26
27 /*
28 */
you
29 /*
30 ret
31 *
32 * F
33 * cl
return

41m left

▼ Sample Case 1

Sample Input

STDIN	Function
ALL	----- 5 0 5 9 0 9 7 16', '26 0 10 39 0 23', '37 0 5 30 0 11', '41 0 0 28 0 13' 0 15 11 0 20 16 26 0 10 39 0 23 37 0 5 30 0 11 41 0 0 28 0 13

1

Sample Output

2	1
Intersecting	
Touching	
Touching	
Intersecting	
Touching	

Explanation

1. The circles intersect.

- Circle A is centered at $(0, 5)$ and extends along the y-axis from -4 to 14.

By – Shrikant sir

88.

50m left

ALL

1

2

A shopkeeper sells n items where the price of the i^{th} item is $price[i]$. To maintain balance, the shopkeeper wishes to adjust the price of items such that the median of prices is exactly k . In one move, the shopkeeper can increase or decrease the price of any item by 1, and the shopkeeper can perform this move any number of times.

Find the minimum number of moves in which the median of prices becomes exactly k .

Note: The index of the median of an array of m sorted elements, where m is odd, is $(m+1)/2$. For example, $[2, 5, 4, 1, 1, 1, 6]$ sorted is $[1, 1, 1, 2, 4, 5, 6]$. Its length is 7 so the median is at index $(7+1)/2 = 4$ using 1-based indexing. The median is 2.

Example

Consider $n = 5$, $price = [4, 2, 1, 4, 7]$ and $k = 3$. Decrease $price[0]$ by 1, the resulting array is $[3, 2, 1, 4, 7]$; on sorting, this becomes $[1, 2, 3, 4, 7]$, whose median equals $k = 3$. Thus, in one move, the median becomes 3 and the answer is 1.

Function Description

Complete the function `getMinimumMoves` in the editor below.

 `getMinimumMoves` has the following parameters:

- `int price[n]:` the prices of items
- `int k:` the required median

50m left

ALL

1

2

Function Description

Complete the function `getMinimumMoves` in the editor below.

`getMinimumMoves` has the following parameters:

- `int price[n]:` the prices of items
- `int k:` the required median

Returns

`long_int:` the minimum number of moves to make the median of the array exactly k

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq price[i], k \leq 10^9$
- It is guaranteed that n is odd.

By – Shrikant sir

▼ Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
5	\rightarrow price[] size, n = 5
3	\rightarrow price = [3, 3, 6, 3, 9]
3	
6	
3	
9	
2	\rightarrow k = 2



Sample Output

3

Explanation

Reduce $price[0]$, $price[1]$, and $price[3]$ by 1. The final $price[]$ array is [2, 2, 6, 2, 9] whose median is 2.

Up Next

ALL

▼ Sample Case 1

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
1	\rightarrow price[] size, n = 3
1	\rightarrow price = [1, 2, 3]
2	
3	
5	\rightarrow k = 5

19
20
21
22
23
24
25
26
27
28
29
30
31
32
33 > 1

Sample Output

5

Explanation

Increase $price[1]$ from 2 to 5, and $price[2]$ from 3 to 5. The array is [1, 5, 5] whose median is 5. Total moves = $(5 - 2) + (5 - 3) = 5$.

Test Re

89.

2. Question 2

ALL

i

1

2

A Domain Name System (DNS) translates domain names to IP addresses which are then used by browsers to load internet resources. For quicker DNS lookups, browsers often store a number of recent DNS queries in a *DNS cache*. Retrieving data from the cache is often faster than retrieving it from a DNS server. This task aims to simulate DNS resolution and determine the time taken to process different URLs.

Assume that the DNS cache can store a maximum of the *cache_size* most recent DNS requests, i.e., URL-IP mappings. The cache is initially empty. It takes *cache_time* units of time to fetch data from the DNS cache, and *server_time* units of time to fetch data from the DNS server.

Given a list of n URLs visited as an array of strings, *urls*, determine the minimum time taken to resolve each DNS request.

Note: New DNS requests are dynamically added to the cache, and the cache stores mappings according to the order in which the requests were made.

```
1 > import java.util.*;  
14  
15 class List{  
16     private int size;  
17     private Node head;  
18     private Node tail;  
19     public void addFirst(int value){  
20         Node node = new Node(value);  
21         if(head == null){  
22             head = node;  
23             tail = node;  
24         } else {  
25             node.next = head;  
26             head = node;  
27         }  
28     }  
29     public void addLast(int value){  
30         Node node = new Node(value);  
31         if(head == null){  
32             head = node;  
33             tail = node;  
34         } else {  
35             tail.next = node;  
36             tail = node;  
37         }  
38     }  
39     public void removeFirst(){  
40         if(head == null){  
41             return;  
42         }  
43         if(head == tail){  
44             head = null;  
45             tail = null;  
46         } else {  
47             head = head.next;  
48         }  
49     }  
50     public void removeLast(){  
51         if(head == null){  
52             return;  
53         }  
54         if(head == tail){  
55             head = null;  
56             tail = null;  
57         } else {  
58             Node current = head;  
59             while(current.next != tail){  
60                 current = current.next;  
61             }  
62             tail = current;  
63             tail.next = null;  
64         }  
65     }  
66     public int size(){  
67         return size;  
68     }  
69     public void printList(){  
70         Node current = head;  
71         while(current != null){  
72             System.out.print(current.value + " ");  
73             current = current.next;  
74         }  
75     }  
76 }  
77  
78 public class Main{  
79     public static void main(String[] args){  
80         List list = new List();  
81         list.addFirst(1);  
82         list.addFirst(2);  
83         list.addFirst(3);  
84         list.addLast(4);  
85         list.removeFirst();  
86         list.printList();  
87     }  
88 }
```



Example
Suppose `cache_size = 3`, `cache_time = 2`, `server_time = 5`, `urls = ["http://www.hackerrank.com", "http://www.google.com", "http://www.yahoo.com", "http://www.gmail.com", "http://www.yahoo.com", "http://www.hackerrank.com", "http://www.gmail.com"]`

ALL	URL	Current Cache	Time Taken	Updated Cache
1	<code>http://www.hackerrank.com</code>	<code>[]</code>	5	<code>["http://www.hackerrank.com"]</code>
2	<code>http://www.google.com</code>	<code>["http://www.hackerrank.com"]</code>	5	<code>["http://www.hackerrank.com", "http://www.google.com"]</code>
	<code>http://www.gmail.com</code>	<code>["http://www.hackerrank.com", "http://www.google.com"]</code>	5	<code>["http://www.hackerrank.com", "http://www.google.com", "http://www.gmail.com"]</code>
	<code>http://www.yahoo.com</code>	<code>["http://www.hackerrank.com", "http://www.google.com", "http://www.gmail.com"]</code>	5	<code>["http://www.google.com", "http://www.gmail.com", "http://www.yahoo.com"]</code>
	<code>http://www.hackerrank.com</code>	<code>["http://www.google.com", "http://www.gmail.com", "http://www.yahoo.com"]</code>	5	<code>["http://www.gmail.com", "http://www.yahoo.com", "http://www.hackerrank.com"]</code>
	<code>http://www.gmail.com</code>	<code>["http://www.gmail.com", "http://www.yahoo.com", "http://www.hackerrank.com"]</code>	2	<code>["http://www.yahoo.com", "http://www.hackerrank.com", "http://www.gmail.com"]</code>

Hence the answer is [5, 5, 5, 5, 2].

50m left

"http://www.hackerrank.com" "http://www.gmail.com"

Hence the answer is [5, 5, 5, 5, 2].

ALL **Function Description**
Complete the function `getMinTime` in the editor below.

① `getMinTime` has the following parameter(s):
`int cache_size`: the size of the DNS cache
`int cache_time`: the time taken to fetch data from the cache
`int server_time`: the time taken to resolve an address using the DNS server
`string URLs[n]`: the URLs visited by a user

1 2 **Returns**
`int[]`: the minimum time to resolve each DNS request

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq cache_size \leq 100$
- $1 \leq cache_time, server_time \leq 10^9$
- $1 \leq size\ of\ urls[i] \leq 20$

▶ Input Format For Custom Testing

▼ Sample Case 0

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50m left

▼ Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
ALL	cache_size = 2 cache_time = 2 server_time = 3 n = 5 urls = ["www.google.com", "www.yahoo.com", "www.google.com", "www.yahoo.com", "www.coursera.com"]
1	www.google.com www.yahoo.com www.google.com www.yahoo.com www.coursera.com
2	3 3 2 2 3

Sample Output

Explanation			
URL	Current Cache	Time Taken	Updated Cache
www.google.com	[]	3	["www.google.com"]
www.yahoo.com	["www.google.com"]	3	["www.google.com", "www.yahoo.com"]

50m left

▼ Sample Case 1

URL	Current Cache	Time Taken	Updated Cache
www.google.com	[]	3	["www.google.com"]
www.yahoo.com	["www.google.com"]	3	["www.google.com", "www.yahoo.com"]
www.google.com	["www.yahoo.com", "www.google.com"]	2	["www.yahoo.com", "www.google.com"]
www.yahoo.com	["www.yahoo.com", "www.google.com"]	2	["www.google.com", "www.yahoo.com"]
www.coursera.com	["www.yahoo.com", "www.google.com"]	3	{"www.coursera.com", "www.yahoo.com"}

50m left

▶ Sample Case 1

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	www.coursera.com	["www.yahoo.com", "www.google.com"]	3	{"www.coursera.com", "www.yahoo.com"}
--	------------------	-------------------------------------	---	---------------------------------------

ALL ▾ Sample Case 1

Sample Input For Custom Testing

	STDIN	FUNCTION
1	1 3 7 5	cache_size = 1 cache_time = 3 server_time = 7 n = 5
2	www.gmail.com www.hackerrank.com www.youtube.com www.youtube.com www.coursera.com	urls = ["www.gmail.com", "www.hackerrank.com", "www.youtube.com", "www.youtube.com", "www.coursera.com"]

Sample Output

```
7  
7  
7  
3  
7
```

Explanation

Since only one entry can be kept, if a URL is visited consecutively, the time taken is 3. Otherwise, it takes 7.

Language Java 15

```
1 > import java.io.*; ...  
14  
15 class Result {  
16  
17     /*  
18      * Complete the 'getMinTime' function below.  
19      *  
20      * The function is expected to return an INTEGER_ARRAY.  
21      * The function accepts following parameters:  
22      * 1. INTEGER cache_size  
23      * 2. INTEGER cache_time  
24      * 3. INTEGER server_time  
25      * 4. STRING_ARRAY urls  
26      */  
27  
28     public static List<Integer> getMinTime(int cache_size, int cache_time, int server_time, List<String> urls) {  
29         // Write your code here  
30     }  
31 }  
32  
33 }  
34  
35 > public class Solution { ...
```

Test Results Custom Input Run Code Run Test

ENG IN

By – Shrikant sir



90.

53m left

1. Question 1

ALL

Given a binary number as a string, x (a *binary string*), return the binary string of the same length, y , that will produce the maximum value when XORed with x . There is a number of bits that may be set in y called *maxSet*.

1

Example

$bits = 3$

$maxSet = 1$

2

$x = 101$

The binary strings will always have *bits* digits, and leading zeros are fine.

1. First, determine all possible $bits = 3$ digit binary strings with only $maxBits = 1$ or fewer bits set:
 $000, 001, 010, 100$. These are the potential y values.

2. Now, XOR each of the y values with $x = 101$

$$1. 000 \text{ xor } 101 = 101$$

$$2. 001 \text{ xor } 101 = 100$$

$$3. 010 \text{ xor } 101 = 111$$

$$4. 100 \text{ xor } 101 = 001$$

The third value produces the maximal result, where $y = 010$. Return the string '010'.

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Function Description

Complete the function `findYValue` in the editor below.

`findYValue` has the following parameter(s):

int bits: the length of the binary strings x and y

int maxSet: the number of bits that may be set in

y

string x: a binary string

Returns

string: the best y value as a binary string

Constraints

- $1 \leq \text{maxSet} \leq \text{bits} \leq 10^5$
- string *x* contains only 0s and 1s.

▼ Sample Case 0

Sample Input For Custom Testing

STDIN	Function
-----	-----
4	$\rightarrow \text{bits} = 4$
1	$\rightarrow \text{maxSet} = 4$
1011	$\rightarrow x = "1011"$

Sample Output

0100

Explanation

1. All of the values of *y* with $\text{bits} = 4$ digits and $\text{maxSet} = 1$ or fewer bits set are 0000, 1000, 0100, 0010, 0001,
2. XOR each of those values with $x = 1011$
 1. $0000 \text{ xor } 1011 = 1011$
 2. $1000 \text{ xor } 1011 = 0011$
 3. $0100 \text{ xor } 1011 = 1111$
 4. $0010 \text{ xor } 1011 = 0110$

▼ Sample Case 1

Sample Input For Custom Testing

STDIN	Function
-----	-----
3	$\rightarrow bits = 3$
2	$\rightarrow maxSet = 2$
001	$\rightarrow x = "001"$

Sample Output

110

Explanation



1. All of the values of y with $bits = 3$ digits and 2 bits set are $110, 101, 011$.
2. All of the values of y with $bits = 3$ digits and 1 bit set are $100, 010, 001$.
3. Also analyze the identity value 000 , as always.
4. XOR each of those values with $x = 001$
 1. $110 \text{ xor } 001 = 111$
 2. $101 \text{ xor } 001 = 100$
 3. $011 \text{ xor } 001 = 010$
 4. $100 \text{ xor } 001 = 101$
 5. $010 \text{ xor } 001 = 011$

91.

1. Question 1

In an office, a sheet of paper containing some security passcodes were discarded using a shredder. The sheet originally contained the following:

- On the first line, a sequence of numbers denoting the order in which to arrange the characters of the passcodes
- On the remaining lines, a set of security passcodes, with one passcode per line.

The sheet was shredded into vertical strips, with each strip containing a column of characters. Each strip thus starts with a number indicating its order in the sequence, followed by the characters in the corresponding position for each passcode. While cleaning out the shredded pieces, Bob finds these strips and manages to arrange them in some random order. Bob intends to find the passcodes by following the sequence numbers on top of each strip

Refer the given image. The left side shows the sheet before shredding and the right side shows after the shredded pieces were arranged randomly by Bob.

1 2 3 4 5 6 7 8 9	→	1 4 5 7 9 8 2 6 3
A S f u q N u l s		A u q u s l S N f

Given the string of characters as they appear on each strip, the program should reconstruct the original passcodes in the original order and print them line by line.

Note: Do not print the sequence numbers in the output, print only the passcodes.

Example 1

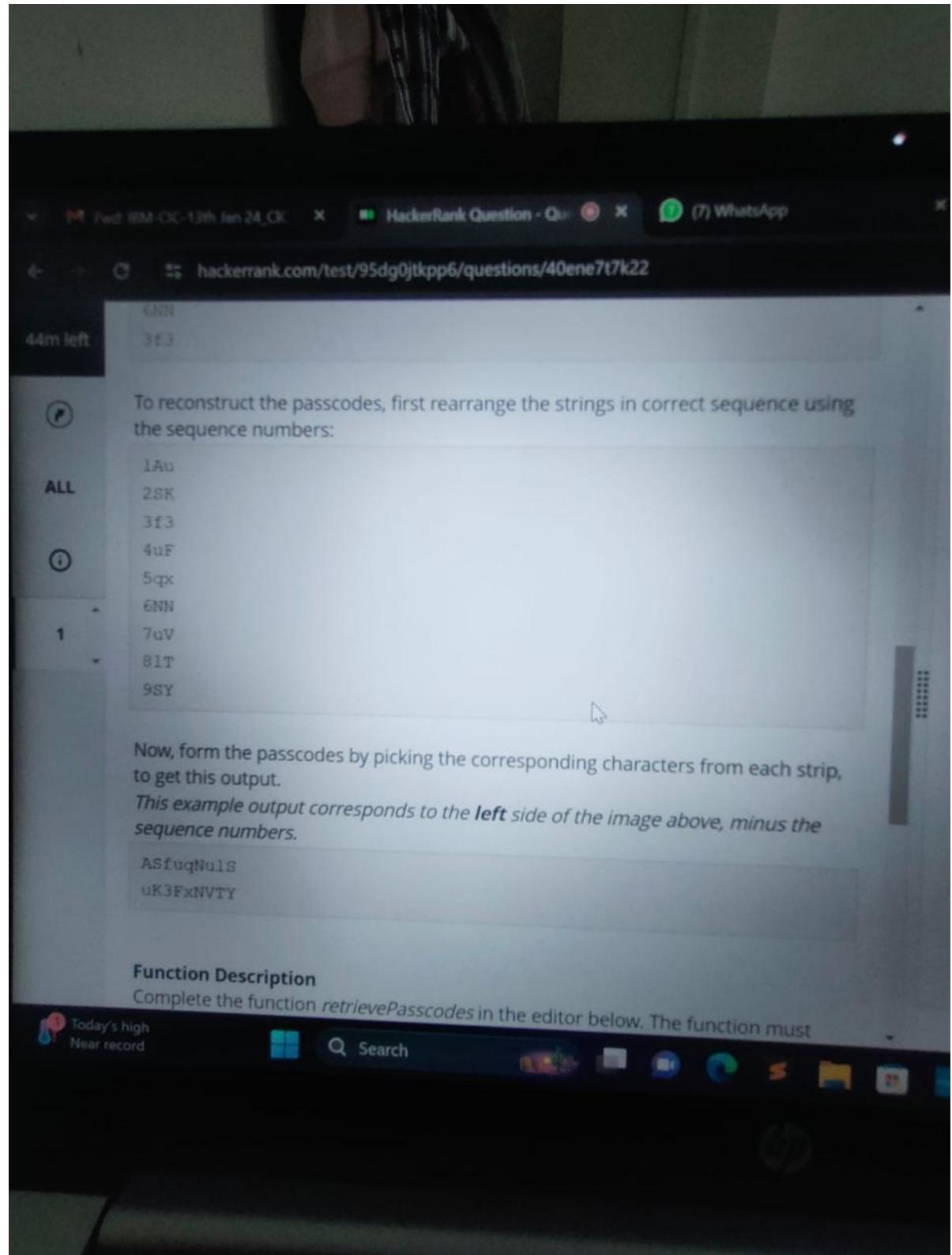
Consider the following inputs, where each line denotes the characters in each strip and the order of the lines is the random order in which Bob arranged them:

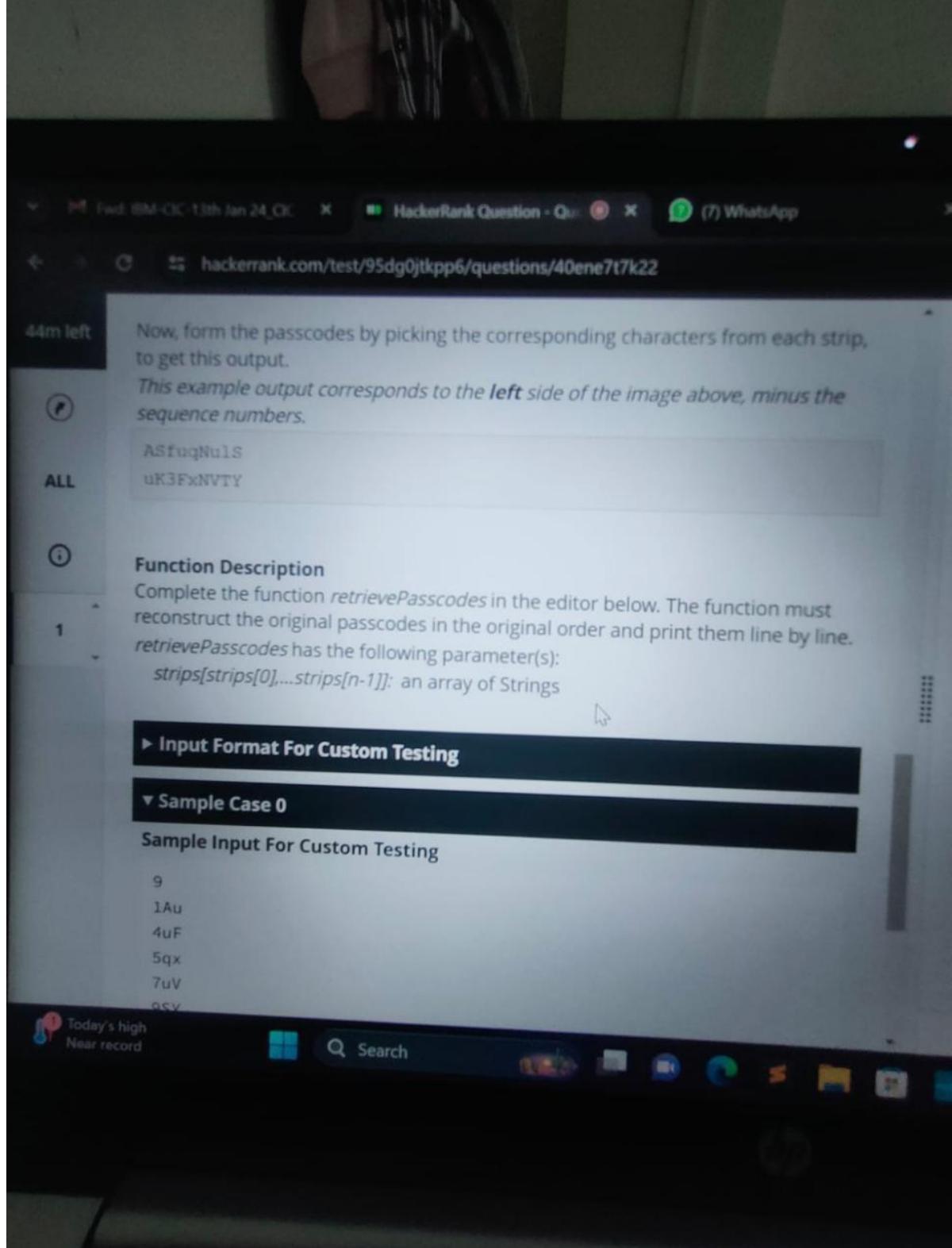
*This example input corresponds to the **right** side of the image above.*

```

1Au
4uF
5qx
7uV
9SY
8lT
2SK
6NN
3f3

```





The screenshot shows a laptop screen displaying a HackerRank question titled "Passcode Strip". The question asks to reconstruct original passcodes from strips of characters. It includes a sample input and output, a function description, and sections for custom testing and sample cases.

Now, form the passcodes by picking the corresponding characters from each strip, to get this output.
*This example output corresponds to the **left** side of the image above, minus the sequence numbers.*

ASfuqNuls
uK3FxNVTY

Function Description
Complete the function `retrievePasscodes` in the editor below. The function must reconstruct the original passcodes in the original order and print them line by line.
`retrievePasscodes` has the following parameter(s):
`strips[strips[0],...strips[n-1]]`: an array of Strings

Input Format For Custom Testing

Sample Case 0

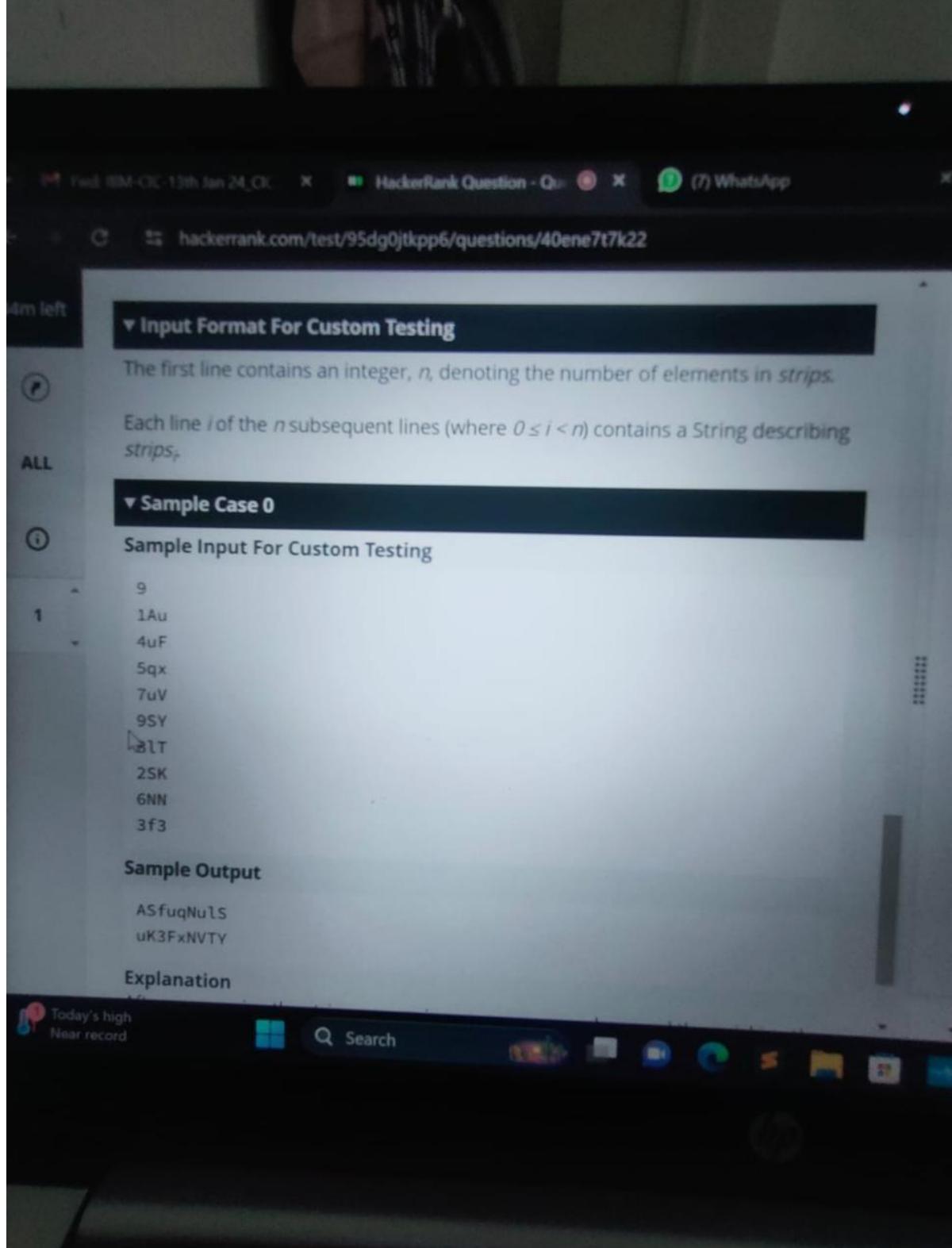
Sample Input For Custom Testing

```
9
1Au
4uF
5qx
7uV
9SV
```

Today's high
Near record

Search

By – Shrikant sir



The first line contains an integer, n , denoting the number of elements in *strips*.

Each line i of the n subsequent lines (where $0 \leq i < n$) contains a String describing *strips_i*.

Sample Case 0

Sample Input For Custom Testing

```
9
1Au
4uF
5qx
7uV
9SY
8LT
2SK
6NN
3f3
```

Sample Output

```
ASfuqNuls
uK3FxNVTY
```

Explanation

Today's high
Near record

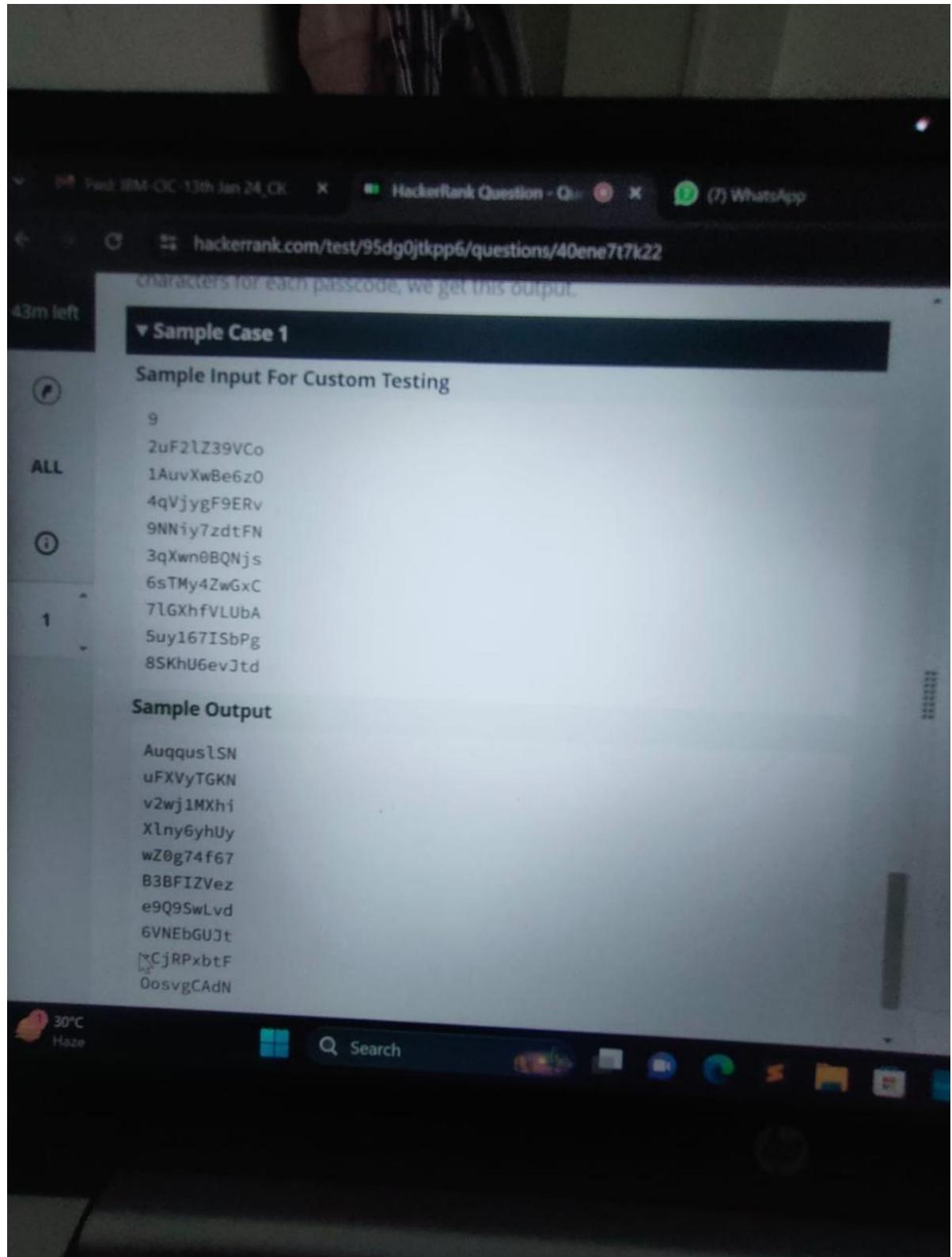
Search

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The screenshot shows a computer screen displaying a HackerRank question page. The title of the page is "Sample Input For Custom Testing". Below the title, there is a list of 10 sequence numbers: 9, 1Au, 4uF, 5qx, 7uV, 9SY, 8LT, 2SK, 6NN, and 3f3. To the left of this list, there are three circular icons with the letters 'P', 'ALL', and 'I'. Below the sequence numbers, there is a section titled "Sample Output" containing the strings "ASfuqNuls" and "uK3FxNVTY". Underneath the output, there is a section titled "Explanation" which states: "After rearranging the strips as per given sequence numbers and then picking the characters for each passcode, we get this output." At the bottom of the page, there is a section titled "▼ Sample Case 1" with its own "Sample Input For Custom Testing" and sequence numbers. The Windows taskbar at the bottom of the screen shows various pinned icons and a search bar.

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92.

1. Question 1

Dioxyribonucleic Acid (DNA) and Ribonucleic Acid are long molecules forming the genetics and is copied over the generations. One of the components of DNA/RNA is a nucleotide which has nucleobases:

1. Cytosine (C)
2. Guanine (G)
3. Adenine (A)
4. Thymine (T) [*Occurs in DNA only instead of Uracil (U)*]
5. Uracil (U) [*Occurs in RNA only instead of Thymine (T)*]

Combination of these nucleobases form a DNA/RNA. Consider this table for solving the problem below:

Nucleobase	C	G	A	T	U
Binary Value	001	010	011	101	110

Additionally, the sequence 000 is used to identify DNA and 111 identifies RNA.

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Consider an example of an input as:

```
000001001011101010010110011
```

Now, the first 3 bits of the input are 000 which depicts that the remaining set of binary digits should be interpreted as DNA sequence. Now, we group the remaining bits into a set of 3-bits which can be represented as 001 001 011 101 010 010 110 011. Upon decoding this, we get the sequence as CCATGGUA. Now, since the letter U is an invalid nucleobase in a DNA, it should be replaced with T. Therefore, after correcting the output, the final output should be:

<https://www.hackerrank.com/test/cb1d0k9or0p/questions/be127egeff>

810 110 011. Upon decoding this, we get the sequence as CCATGGUA. Now, since the letter U is an invalid nucleobase in a DNA, it should be replaced with T. Therefore, after correcting the output, the final output should be:

```
CCATGGTA
```

Function Description
Complete the function `decodeSequence` in the editor below. The function must print the decoded sequence of the DNA/RNA.
`decodeSequence` has the following parameter(s):
`binarySequence`: a string of binary numbers representing the DNA sequence; to be decoded.

Constraints

- Only binary digits should be present in the input.
- The length of the input string should be a multiple of 3.

Language

- 27
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- 34
- 35
- 36
- 37
- 38
- 39

Test

2/1

1

▼ Input Format For Custom Testing

The input contains only one line which is a binary representation of the DNA sequence.

▼ Sample Case 0

Sample Input For Custom Testing

```
000001001011101010010110011
```

Sample Output

```
CCATGGTA
```

Explanation

From the input, we can identify that the first 3 digits are 000 which represents a DNA sequence. That also means that if the input contains U (Uracil) in the sequence it should be replaced with T (Thymine). Upon decoding the sequence, we get CCATGGUA as the output. Since this is a DNA sequence, all the occurrences of U would be replaced by T. Therefore, the above output.

93.

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C

hackerrank.com



YT



WP



Google All

OpenAI API



A

Some developers want to deploy their application on different servers with a load balancer in the front. There are n servers to choose from where the number of requests that can be handled by the i^{th} server is $server[i]$. The number of requests served by any server is a power of 2 i.e. 1, 2, 4, 8, 16,...etc.

Given the array $server$ and an integer $expected_load$, find the minimum number of servers that must be chosen such that the total sum of requests served by all the chosen servers is exactly equal to the $expected_load$. If there is no combination of servers that can serve exactly $expected_load$ requests, report -1 as the answer.

Example

Suppose $n = 4$, $servers = [1, 1, 2, 4]$, and $expected_load = 3$.

It is optimal to choose the first and the third or the second and the third servers serving a total of $1 + 2 = expected_load = 3$ requests. Return the minimum number of servers needed, 2.

Function Description:

Complete the function `getMinServers` in the editor below.

The function `getMinServers` has the following parameter:

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YT WP Google All OpenAI API

Function Description:
Complete the function *getMinServers* in the editor below.

The function *getMinServers* has the following parameter:

int expected_load: the number of requests to be served

int server[n]: the number of requests the servers can serve

Return

int: the minimum number of servers such that the sum of the total requests they can serve is exactly *expected_load*

Constraints:

- $1 \leq n \leq 10^5$
- $1 \leq \text{server}[i] \leq 10^9$
- It is guaranteed that *server[i]* is a power of 2.
- $1 \leq \text{expected_load} \leq 10^9$

► Input Format For Custom Testing

▼ Sample Case 0

Sample Input For Custom Testing

STDIN FUNCTION

Search

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C hackerrank.com test/gitoftcdjs/questions/94ct11944

YT WP Google All OpenAI API AI CH

- $1 \leq n \leq 10^5$
- $1 \leq \text{server}[i] \leq 10^9$
- It is guaranteed that $\text{server}[i]$ is a power of 2.
- $1 \leq \text{expected_load} \leq 10^9$

▶ Input Format For Custom Testing

▼ Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
10	$\rightarrow \text{expected_load} = 10$
5	$\rightarrow n = 5$
1	$\rightarrow \text{server} = [1, 1, 2, 4, 4]$
1	
2	
4	
4	

Sample Output

3

Explanation

It is optimal to choose the last three servers to serve a total number of requests as $2 + 4 + 4 = 10$.

▶ Sample Case 1

Search       

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C hackerrank.com

YT WP Google All OpenAI API A

Sample Input For Custom Testing

STDIN	FUNCTION
10	→ expected_load = 10
5	→ n = 5
1	→ server = [1, 1, 2, 4, 4]
1	
2	
4	
4	

Sample Output

3

Explanation

It is optimal to choose the last three servers to serve a total number of requests as $2 + 4 + 4 = 10$.

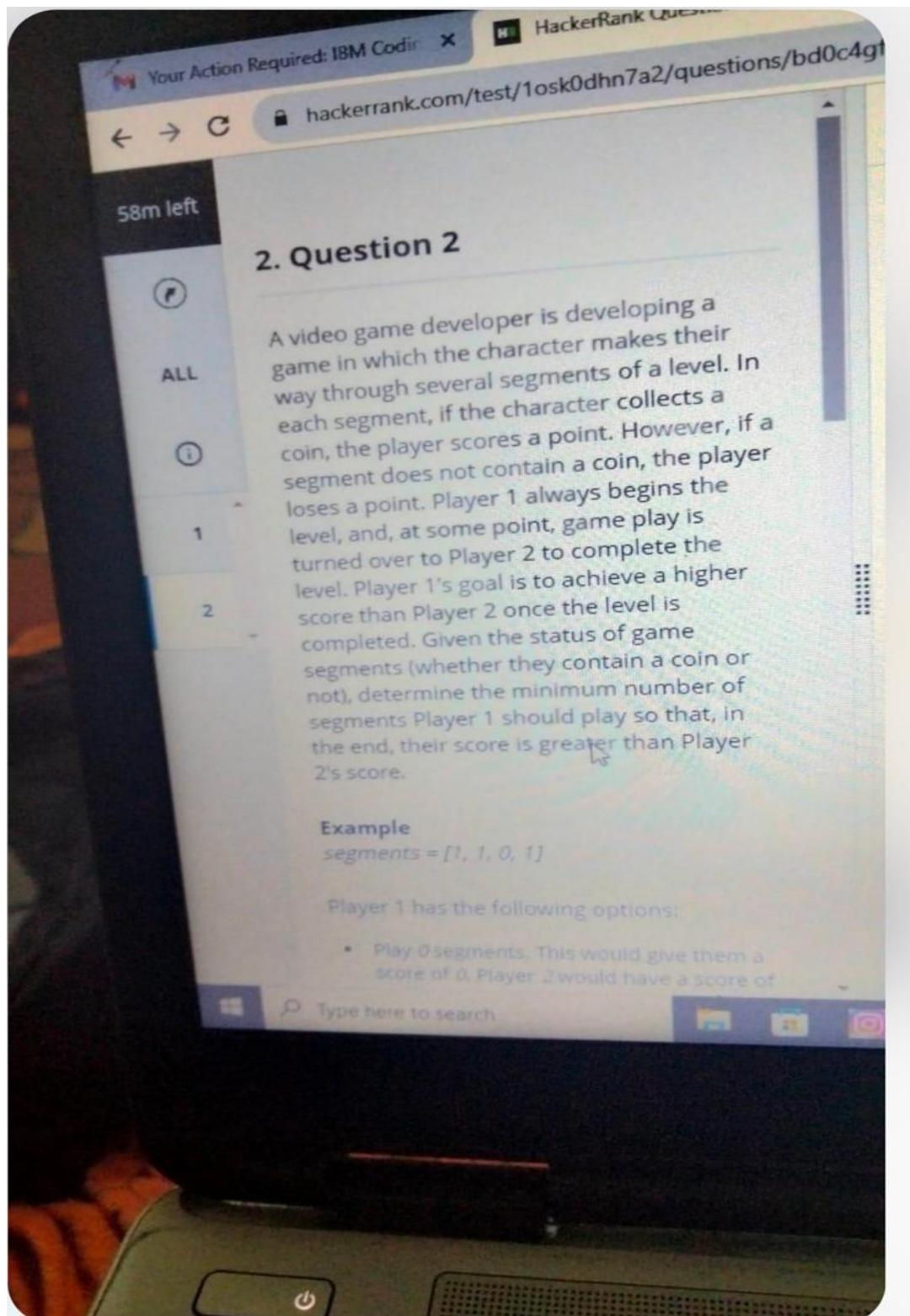
▼ Sample Case 1

Sample Input For Custom Testing

STDIN	FUNCTION
4	→ expected_load = 4
3	→ n = 3
1	→ server = [1, 1, 1]
1	
1	

Sample Output

1



Your Action Required: IBM Codin X HackerRank QUESTIONS

hackerrank.com/test/1osk0dhn7a2/questions/bd0c4gt

58m left

2. Question 2

ALL

1

2

A video game developer is developing a game in which the character makes their way through several segments of a level. In each segment, if the character collects a coin, the player scores a point. However, if a segment does not contain a coin, the player loses a point. Player 1 always begins the level, and, at some point, game play is turned over to Player 2 to complete the level. Player 1's goal is to achieve a higher score than Player 2 once the level is completed. Given the status of game segments (whether they contain a coin or not), determine the minimum number of segments Player 1 should play so that, in the end, their score is greater than Player 2's score.

Example

segments = [1, 1, 0, 1]

Player 1 has the following options:

- Play 0 segments. This would give them a score of 0. Player 2 would have a score of

Type here to search

94.



The screenshot shows a computer monitor displaying a HackerRank question page. The page has a dark header with a progress bar indicating "58m left". Below the header, there are two sections: "Input Format For Custom Testing" and "Sample Case 0".

Sample Input

STDIN	Function
5	→ coins[] size n = 5
1	→ coins = [1, 0, 0, 1,
0]	
1	0
0	0
2	1
	0

Sample Output

```
0
```

Explanation

If Player 1 played 0 segments, then their score would be 0, and Player 2's score would be $2 - 3 = -1$. Therefore, return the answer 0.

Sample Case 1

Type here to search

Test

By – Shrikant sir

Your Action Required: IBM Codin...

HackerRank Question - Question

hackerrank.com/test/1osk0dhn7a2/questions/bd0c4gf2ikf

58m left

Function Description

Complete the function `playSegments` in the editor below.

ALL

playSegments has the following parameter:

`int coins[n]`: denotes whether a video game segment contains a coin(1) or not(0)

>Returns:

`int`: the minimum number of segments Player 1 must play so that their score is greater than Player 2's score.

Constraints

- $1 \leq n \leq 10^5$
- $\text{coins}[i]$ is either 0 or 1

Input Format For Custom Testing

Sample Case 0

Sample Input

STUDIO Function

5
1 0 1 1 0
coins[1].size() = 5
coins[1] = {1, 0, 1, 1, 0}

Type here to search...

Test

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Your Action Required: IBM CodinX

HackerRank Question - Question X

<https://hackerrank.com/test/1osk0dhn7a2/questions/bd0c4gf2ikf>

58m left

Example
 $\text{segments} = [1, 1, 0, 1]$

Player 1 has the following options:

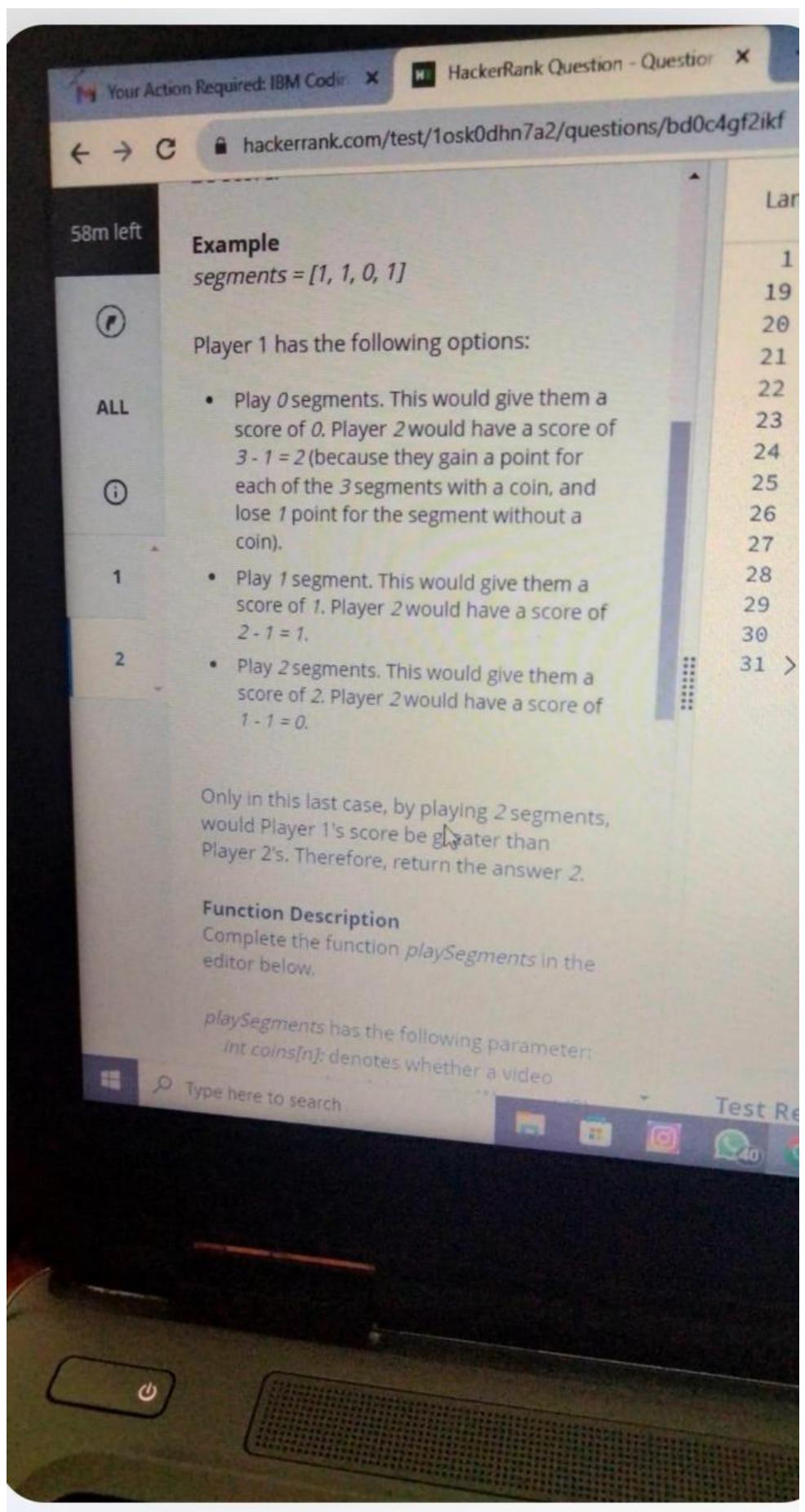
- ALL • Play 0 segments. This would give them a score of 0. Player 2 would have a score of $3 - 1 = 2$ (because they gain a point for each of the 3 segments with a coin, and lose 1 point for the segment without a coin).
- 1 • Play 1 segment. This would give them a score of 1. Player 2 would have a score of $2 - 1 = 1$.
- 2 • Play 2 segments. This would give them a score of 2. Player 2 would have a score of $1 - 1 = 0$.

Only in this last case, by playing 2 segments, would Player 1's score be greater than Player 2's. Therefore, return the answer 2.

Function Description
Complete the function `playSegments` in the editor below.

`playSegments` has the following parameter:
`int coins[n]`: denotes whether a video

Type here to search Test Re



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95.

Question 2/3
"Count a word"

Your solution will be scored against multiple hidden test cases, with a sample case being provided for your reference.

The default code includes a mechanism for reading input strings. You will need to parse these strings into the appropriate variables as needed.

The output data type is not a concern, as long as the characters within the output box match the expected outcome.

Design a method to find the frequency of occurrences of any given word in a sentence. The words are case sensitive. You have to match the exact word in the sentence. (see sample input/output)
Please ignore punctuation.

Input

Input contains two lines.
First line contains one word.
Second line contains the sentence.

1
1
1
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36

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Input

i

Input contains two lines.

1

First line contains one word.

Second line contains the sent

Second line contains the sentence.

Output

1

✓

✓

1

1

Print the given word's frequency of occurrences in the sentence.(see sample input/output)

1

Code evaluation is based on output, please do NOT print anything else.

Sample Input

life

There is only one happiness in this life, t

1

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1. Question 1

ALL

There is an integer array $arr[n]$ and an integer value d . The array is indexed from 1 to n .

Count the number of distinct triplets (i, j, k) such that $0 < i < j < k \leq n$ and the sum $(a[i] + a[j] + a[k])$ is divisible by d .

Example

$a = [3, 3, 4, 7, 8]$
 $d = 5$

The following triplets are divisible by $d = 5$. Following are the triplets whose sum is divisible by d (1-based indexing):

- indices $(1, 2, 3)$, sum = $3+3+4 = 10$
- indices $(1, 3, 5)$, sum = $3+4+8 = 15$
- indices $(2, 3, 4)$, sum = $3+4+8 = 15$

Since there is no other triplet divisible by $d = 5$, return 3.

Function Description
Complete the function `getTripletCount` in the editor below.

`getTripletCount` has the following parameters:

- $int arr[]$: an array of integers
- $int d$: an integer

Returns
`int`: the number of distinct triplets

Constraints

- $3 \leq n \leq 10^3$
- $1 \leq a[i] \leq 10^9$
- $2 \leq d \leq 10^6$

► **Input Format For Custom Testing**

▼ **Sample Case 0**

Sample Input For Custom Testing

STDIN	FUNCTION
4 2 3 1 3	$\rightarrow n = 4$ $\rightarrow a = [2, 3, 1, 6]$ $\rightarrow d = 3$

Sample Output

```
2
```

Explanation

- indices $(1, 2, 3)$, sum = $2+3+1 = 6$
- indices $(1, 3, 4)$, sum = $2+1+6 = 9$

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2. Question 2



ALL



Sort a list of dates in ascending order given the data format shown below:

Each date is in the form *dd mmm yyyy* where:

- *dd* is in the set {0-31}
- *mmm* is in the set {Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec}
- *yyyy* is four digits

Example

```
dates = ['01 Mar 2017', '03 Feb 2017', '15 Jan 1998']
```

The array *dates* sorts to ['15 Jan 1998', '03 Feb 2017', '01 Mar 2017'].

Function Description

Complete the function *sortDates* in the editor below.

sortDates has the following parameter:

string dates[n]: an array of strings, each field separated by a space

Returns:

string arr[n]: The function must return an array of date strings sorted chronologically ascending

Constraints

- $2 \leq \text{length of } \text{dates} \leq 30$

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Sample Case 0

ALL

Sample Input 0

STDIN	Function
10	dates[] size n = 10
20 Oct 2052	dates = ['20 Oct 2052', '06 Jun 1933', '26 May 1960', '20 Sep 1958', '16 Mar 2068', '06 Jun 1933', '25 May 1912', '16 Dec 2018', '26 Dec 2061', '04 Nov 2030', '28 Jul 1963']
26 May 1960	
20 Sep 1958	
16 Mar 2068	
25 May 1912	
16 Dec 2018	
26 Dec 2061	
04 Nov 2030	
28 Jul 1963	

Sample Output 0

```
25 May 1912
06 Jun 1933
20 Sep 1958
26 May 1960
28 Jul 1963
16 Dec 2018
04 Nov 2030
20 Oct 2052
26 Dec 2061
16 Mar 2068
```

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98.

	1. Question 1	
ALL	A new Chemistry teacher is very strict and wants the students to do well in class. To aid this, lectures on each chapter will be repeated periodically through the semester. In each class, the next chapter is presented. When they reach the end of the book, the lectures start over with chapter 0. More formally, if there are <i>numChapters</i> in the book, then on the i^{th} day, the lecture will be on chapter $i \% numChapters$. The first day of class is <i>class[0]</i> , and the first chapter is chapter 0. If there are 3 chapters, daily lectures are on chapters <i>class</i> = [0, 1, 2, 0, 1, 2, ...]. At <i>class[4]</i> , the lecture will be on chapter $4 \% 3 = 1$.	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
✓	One of the students is going to be out of class for a wedding, and the teacher is concerned about missed lectures. Given the first and last days the student will be out, determine the number of chapters for which the student will miss lectures.	
	For example, there are <i>numChapters</i> = 4 chapters in the book. The student is out of class beginning on day <i>b</i> = 3 through ending day <i>e</i> = 5. The series of lectures are on chapters <i>class</i> = [0, 1, 2, 3, 0, 1, 2, 3, ...] starting from day 0. For <i>class[3]</i> through <i>class[5]</i> , lectures are given on chapters 3, 0 and 1. The student will miss lectures on 3 chapters.	

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16m left

Function Description

Complete the function *missedLectures* in the editor below. The function must return an integer.



missedLectures has the following parameters:

ALL

numChapters: an integer
b: an integer
e: an integer



Constraints



- $1 \leq numChapters \leq 10^9$
- $1 \leq b \leq e \leq 10^9$



▼ Input Format For Custom Testing

There are three lines of input, each with a single integer *numChapters*, *b* and *e*, respectively.

▼ Sample Case 0

Sample Input For Custom Testing

5
5
6

Sample Output

2

Explanation

Chapters are taught in the order *class* = [0, 1, 2, 3, 4, 0, 1, 2, 3, 4, 0, ...]. The student will miss chapters 0 and 1 on days 5 and 6 respectively.

▼ Sample Case 1

Sample Input For Custom Testing

5
13
98

Sample Output

5

Explanation

Chapters are taught in the order *class* = [0, 1, 2, 3, 4, 0, 1, 2, 3, 4, 0, ...]. The student will miss each of the 5 chapters at least once in between *class*[13] through *class*[98].

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2. Question 2

ALL

There are n passwords in the form of a string array of $\text{passwords}[n]$. There is also a dictionary $\text{dict_words}[m]$ that contains m weak passwords.

i Classify each of the n passwords as "weak" or "strong".

1 A password is "weak" if any of these conditions are met.

2

- The password is in the dictionary.
- A substring of the password is a word in the dictionary.
- The password is all numerical, i.e., consisting of characters from ('0' to '9').
- All characters are uppercase('A' to 'Z') or all of them are lowercase('a' to 'z').
- The password is shorter than 6 characters.

```

1 > import java
14
15 class Resu
16
17 /*
18 * Comp
19 *
20 * The
21 * The
22 * 1.
23 * 2.
24 */
25
26 public s
27 // Write
28
29 }
30
31 }
32
33 > public class

```

ALL

Implement a prototype password validation service.

i Given a list of n strings, passwords , and m strings, common_words , for each of the passwords, report "strong" or "weak" based on the conditions.

1 **Example**
 Suppose $n = 5, m = 3, \text{passwords} = ["iliketoCoDe", "teamAKEsmehappy", "abracaDabra", "passWord", "blackcoffeeISthebest"], \text{common_words} = ["coffee", "coding", "happy"]$

password	strong/weak	Remarks
iliketoCoDe	strong	
teamAKEsmehappy	weak	Contains "happy"
abracaDabra	strong	
passWord	strong	
blackcoffeeISthebest	weak	Contains "coffee"

```

15 > class
16
17 /*
18 *
19 *
20 *
21 *
22 *
23 *
24 */
25
26 public
27 // /
28
29 }
30
31 }
32
33 > public

```

Test Results



56m left

Function Description
Complete the function `getPasswordStrength`.

ALL

getPasswordStrength has the following parameters:

string passwords[n]: the list of passwords to check

string common_words[m]: the list of dictionary words

Returns:

1 `string[n]:` the strengths of the passwords

2 **Constraints**

- $1 \leq n \leq 10^3$
- $1 \leq m \leq 10^5$
- $1 \leq \text{common_words}[i] \leq 20$
- $1 \leq \text{passwords}[i] \leq 20$
- The passwords consist of lowercase, uppercase, and numeric characters only.

Language Java 15

```
1 > import java
14
15 class Result {
16
17     /*
18     * Complete the function
19     *
20     * The function will be called with
21     * The following arguments:
22     * 1. String[] passwords
23     * 2. String[] commonWords
24     */
25
26 public static String[] getPasswordStrength(String[] passwords, String[] commonWords) {
27
28     // Write your code here
29 }
30
31 }
32
33 > public class Solution {
```

100.

ALL

2. Question 2

The Caesar Cipher involves shifting all characters in a string by a number to produce a new string. For instance, with a shift of 1 right, the string 'abc' becomes 'bcd'. Note that the rotation is circular, so $\rightarrow 1 = a$. This challenge involves a modification in that substrings within the string are shifted instead of the whole string.

Consider a string s , composed of English lowercase letters $ascii[a-z]$. There are two kinds of operations you can perform on s :

1. *Roll Forward (right):* $i \ j \ R$. Every character in the substring $s[i], s[i+1], \dots, s[j-1], s[j]$ will *roll forward* and be replaced with its next sequential alphabetical character (the next character after z is a). For example: $a \rightarrow b, m \rightarrow n, z \rightarrow a$.
2. *Roll Backward (left):* $i \ j \ L$. Every character in the substring $s[i], s[i+1], \dots, s[j-1], s[j]$ will *roll backward* and be replaced with its preceding alphabetical character (the character preceding a is z). For example: $y \rightarrow z, m \rightarrow n, z \rightarrow a$.

Test Results **Custom Input**

No test case passed.

Use print or log statements to debug why different scenarios, including corner cases, are failing.

Test case 0 Your Output
rfkq

Test case 1 Your Output
rfkq

```
22     * 1. STRING s
23     * 2. STRING_ARRAY
24     */
25
26 public static String
27     .return s;
28 }
29
30 }
31
32 > public class Solution {
```

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For example, given the string $s = \text{abc}$ and the following list of sequential operations:

	i	j	ch	s
0	1	L	zac	
1	2	R	zbd	
0	2	R	ace	

The variable ch is the direction of the roll.

Function Description

Complete the function `rollingString` in the editor below. The function must return a string denoting the value of s after all operations have been performed.

`rollingString` has the following parameter(s):

- s : the initial string
- $operations[operations[0], \dots, operations[n-1]]$: an array strings of three space-separated values: the integers i and j , and the character ch .

Constraints

- $1 \leq |s| \leq 150$
- $1 \leq n \leq 100$
- $0 \leq i \leq j < |s|$
- $ch \in \{\text{L}, \text{R}\}$

Test Results

No test case passed.

Use print or log statements to debug why different scenarios, including corner cases, fail.

Test case 0 Your Output: rfkqj Expected Output: qdimq

Test case 1

Test case 2

Expected Output: qdimq

```

22 * 1. STRING s
23 * 2. STRING_ARRAY
24 */
25
26 public static String
27     return s;
28 }
29 }
30 }
31 > public class Solution {
32 }
```

Input Format for Custom Testing

Sample Case 0

Sample Input 0

STDIN	Function Parameters
abc	$\rightarrow s = \text{abc}$
3	$\rightarrow operations[]$ Size = 3
0 0 L	$\rightarrow operations[] = [\text{"0 0 L"}, \text{"2 2 L"}, \text{"0 2 R"}]$
2 2 L	
0 2 R	

Sample Output 0

acc

Explanation 0

After performing operation 0 0 L on "abc", $s = zbc$
 After performing operation 2 2 L on "zbc", $s = zbb$
 After performing operation 0 2 R on "zbb", $s = acc$
 We then return the final value of s , which is "acc".

Test Results

No test case passed.

Use print or log statements to debug why different scenarios, including corner cases, fail.

Test case 0 Your Output: rfkqj Expected Output: qdimq

Test case 1

Test case 2

Expected Output: qdimq

```

26 public static String
27     return s;
28 }
29 }
30 }
31 > public class Solution {
32 }
```



101.

54m left

2. Question 2

ALL

Given a range of integers, determine how many numbers have no repeating digits.

Example
 $n=80$
 $m=120$

The lower and upper bounds are inclusive, so there are $120-79=41$ values in the range. Numbers without repeating characters are normal weight and others are bold.

The two columns to the right are the valid number counts per row (normal weight) and invalid number counts (bold).

2	80	81	82	83	84	85	86	87	88	89	9	1
	90	91	92	93	94	95	96	97	98	99	9	1
	100	101	102	103	104	105	106	107	108	109	8	2
	110	111	112	113	114	115	116	117	118	119	0	10
	120										1	0

There are 27 numbers with no repeating digits, and 14 other numbers in the range.
Print 27.

Lang
Envir
1 >
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25
26
27
28
29 > p

ALL

Function Description

Complete the function `countNumbers` in the editor below.

`countNumbers` has the following parameter(s):
`int arr[q][2]`: integer pairs representing inclusive lower (n) and upper (m) range limits

Print

For each pair `arr[i]`, print the number of integers in the inclusive range that qualify. There is no value to return from the function.

Constraints

- $1 \leq q \leq 10^5$
- $1 \leq n \leq m \leq 10^6$

```
15 class Re
16 /*
17 * C
18 * T
19 */
20 public
21 {
22 }
23 }
24 }
25 }
26 }
27 }
28 }
29 > public c
```

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ALL

▼ Sample Case 0

Sample Input 0

STDIN	Function
2	→ arr[] size q = 2
2	→ arr[i][] size = 2 (always)
1 20	→ arr = [[1, 20], [9, 19]]
9 19	

2

Sample Output 0

```
19
10
```

Explanation 0

Row 0 = [1, 20].
The set of qualifying numbers in the inclusive range between $n[0] = 1$ and $m[0] = 20$ is $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$. This gives us $c[0] = 19$.

Row 1: [9, 19]
The set of qualifying numbers in the inclusive range between $n[1] = 9$ and $m[1] = 19$ is $\{9, 10, 12, 13, 14, 15, 16, 17, 18, 19\}$. This gives us $c[1] = 10$.

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29 >

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58m left

 ALL 

1

When multiple tasks are executed on a single-threaded CPU, the tasks are scheduled based on the principle of pre-emption. When a higher-priority task arrives in the execution queue, then the lower-priority task is pre-empted, i.e. its execution is paused until the higher-priority task is complete.

2

There are n functions to be executed on a single-threaded CPU, with each function having a unique ID between 0 and $n - 1$. Given an integer n , representing the number of functions to be executed, and an execution log as an array of strings, logs , of size m , determine the *exclusive times* of each of the functions. Exclusive time is the sum of execution times for all calls to a function. Any string representing an execution log is of the form $\{\text{function_id}\}: \{\text{"start"}/\text{"end"}\}: \{\text{timestamp}\}$, indicating that the function with ID = function_id , either starts or ends at a time identified by the timestamp value.

Note: While calculating the execution time of a function call, both the starting and ending times of the function call have to be included. The log of the form $\{\text{function_id}\}: \{\text{start}\}: \{\text{timestamp}\}$ means that the running function is preempted at the beginning of timestamp second. The log of the form $\{\text{function_id}\}: \{\text{end}\}: \{\text{timestamp}\}$ means that the function function_id is preempted after completing its execution at timestamp second i.e after timestamp second.

Language C

```

19  /*
20  * Compl
21  *
22  * The fu
23  * The fu
24  * 1. IN
25  * 2. ST
26  */
27 */
28 */
29 */
30 * To ret
31 * / - /
32 * - /
33 *
34 * For exa
35 * int* re
36 *      *re
37 *
38 *      sta
39 *
40 *      ret
41 * }
42 *
43 * int* ret
44 *      *res
45 *
46 *      int
47 *
48 *      for

```

Example

Suppose $n = 3$, $\text{logs} = ["0:start:0", "2:start:4", "2:end:5", "1:start:7", "1:end:10", "0:end:11"]$

Timestamp	Function Running	Remarks
0	0	Function 0 starts
1	0	
2	0	
3	0	
4	2	Function 2 starts and Function 0 is preempted
5	2	Function 2 ends
6	0	Function 0 resumes

ALL	7	1	Function 1 starts and Function 0 is preempted
i	8	1	
1	9	1	
2	10	1	Function 1 ends
	11	0	Function 0 ends

Thus the total number of seconds allocated to functions 0, 1, and 2 are 6, 4, and 2 respectively.
Hence the answer is [6, 4, 2].

Function Description

Complete the function `getTotalExecutionTime` in the editor below.

`getTotalExecutionTime` has the following parameters:

`int n`: the number of functions to be executed

`string logs[m]`: the execution logs of the different calls to the functions

Returns

`int[n]`: the execution time of all functions with IDs from 0 to $n - 1$.

Test

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103.

1. Question 1

411

Given an integer array, reduce the array to a single element.

i

In each operation, pick two indices i and j (where $i \neq j$), and:

1

- append the value of $a[i] + a[j]$ to the array
 - delete $a[i]$ and $a[j]$ from the array

2

The cost of each operation is $a[i] + a[j]$. Find the minimum possible cost to reduce the array.

Example

Consider array [25,10,20].

- Pick 10 and 20, cost = $10+20 = 30$, array' = [25,30]
 - Pick 25 and 30, cost = $25+30 = 55$, array'' = [55]

The cost is $30+55 = 85$. This is the minimum possible cost.

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Function Description

1 Complete the function *minimizeCost* in the editor.

2 *minimizeCost* has the following parameter :

int arr[n]: an array of integers

Returns

int: the minimum cost of reducing the array

Constraints

- $2 \leq n \leq 10^5$
- $1 \leq arr[i] \leq 100$

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40
41
42
43
44
45
46
47

Input Format For Custom Testing

1 The first line contains an integer, *n*, the number of elements in *arr*.

2 Each line *i* of the *n* subsequent lines (where $0 \leq i < n$) contains a single value, *arr[i]*.

Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
3	-> arr[] size n = 3
30	-> arr[] = [30, 10, 20]
10	
20	

Sample Output

90

Explanation

- Pick 10 and 20, cost = $10+20 = 30$, array' = [30,30].
- Pick 30 and 30, cost = $30+30 = 60$, array'' = [60].

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52

Test Result

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49
50
51
52

▼ Sample Case 1

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
2	-> arr[] size n = 2
100	-> arr[] = [100, 1]
1	

Sample Output

```
101
```

Explanation

Only one operation is performed, with 100 and 1, and the cost is $100+1 = 101$.

Test Res

104.

1. Question 1

For an array arr of n positive integers, count the unordered pairs (i, j) ($0 \leq i < j < n$) where $arr[i] \text{ XOR } arr[j] > arr[i] \text{ AND } arr[j]$. XOR denotes the bitwise XOR operation and AND denotes the bitwise AND operation.

Example

Given $n = 4$, $arr = [4, 3, 5, 2]$. All unordered pairs (i, j) are-

1	Indices	XOR	AND	XOR > AND
2	(0,1)	7	0	True
	(0,2)	1	4	False
	(0,3)	6	0	True
	(1,2)	6	1	True
	(1,3)	1	2	False
	(2,3)	7	0	True

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9m left

For the first line:

- $arr[0] = 4, arr[1] = 3$
- $4 \text{ XOR } 3 = 7$
- $4 \text{ AND } 3 = 0$
- $7 > 3$

ALL

(i) There are 4 good pairs where XOR > AND shows True. Return 4.

1 Function Description
Complete the function `dominatingXorPairs` in the editor below.

2 `dominatingXorPairs` has the following parameter:
`int arr[n]`: an array of integers

3 Returns
`long int`: the number of good pairs

La
1
14
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21
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24
25
26
27
28
29
30
31 >

(i) Constraints

1 • $1 \leq n \leq 10^5$
• $1 \leq arr[i] < 2^{30}$

2 ▼ Input Format For Custom Testing

The first line contains an integer, n , denoting the number of elements in arr .

Each line i of the n subsequent lines (where $0 \leq i < n$) contains an integer describing arr_i .

2
3
3

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▼ Sample Case 0**Sample Input For Custom Testing**

STDIN	FUNCTION
4	→ n = 4
1	→ arr = [1, 1, 5, 7]
1	
5	
7	

Sample Output

4

Explanation

Indices	XOR	AND	XOR > AND
(0,1)	0	1	False
(0,2)	4	1	True
(0,3)	6	1	True
(1,2)	4	1	True
(1,3)	6	1	True
(2,3)	2	5	False

(0,1)	0	1	False
(0,2)	4	1	True
(0,3)	6	1	True
(1,2)	4	1	True
(1,3)	6	1	True
(2,3)	2	5	False

▼ Sample Case 1**Sample Input For Custom Testing**

STDIN	FUNCTION
3	→ n = 3
1	→ arr = [1, 7, 2]
7	
2	

Sample Output

3

Explanation

All unordered pairs satisfy the condition.

Test R

105.

ALL

1. Question 1

Given the initial setup of a match between two players, evaluate the match's outcome.

There are two players, and there is a number sequence of size n . Players alternate turns for n rounds. Each round, a player removes the first number from the sequence and adds its value to their score. After that, if the 'removed' number is even, the remaining sequence is reversed.

Determine the difference in scores between the two players after the game.

More precisely, suppose `first_score` and `second_score` are the final scores of the first and second player, respectively. The goal is to calculate the value of `first_score - second_score`.

```

Language Java 15
20 * The function
21 * The function
22 */
23
24 public static int
25     int firstscore =
26     int secondscore =
27
28 for(int i=0;i<numSeq.length;i++)
29 {
30     int num = numSeq[i];
31     if(i%2==0)
32     {
33         firstscore += num;
34     }else{
35         secondscore += num;
36     }
37     if(num%2==0)
38     {
39         revSeq(numSeq);
40     }
41 }
```

ALL

Example

The number of elements is $n = 5$ and `numSeq = [3, 6, 2, 3, 5]`.

- 1st round: The first player picks 3, `first_score = 3`. The remaining sequence: [6, 2, 3, 5].
- 2nd round: The second player picks 6, `second_score = 6`. Since 6 is even, the remaining sequence is reversed: [5, 3, 2].
- 3rd round: The first player picks 5, `first_score = 3 + 5 = 8`. The remaining sequence: [3, 2].
- 4th round: Second player picks 3, `second_score = 6 + 3 = 9`. The remaining sequence: [2].
- 5th round (final): First player picks 2, `second_score = 8 + 2 = 10`. The remaining sequence: [].

The total difference between players' scores is, $\text{first_score} - \text{second_score} = 10 - 9 = 1$.

```

20 * The function
21 * The function
22 */
23
24 public static int
25     int firstscore =
26     int secondscore =
27
28 for(int i=0;i<numSeq.length;i++)
29 {
30     int num = numSeq[i];
31     if(i%2==0)
32     {
33         firstscore += num;
34     }else{
35         secondscore += num;
36     }
37     if(num%2==0)
38     {
39         revSeq(numSeq);
40     }
41 }
42 }
43 }
44 }
45 public static void
46     (
47 }
```

1 Function Description
 Complete the function `getScoreDifference` in the editor.

2

`getScoreDifference` has the following parameter:

numSeq: the given array of integers

Returns

int: $\text{first_score} - \text{second_score}$

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq \text{numSeq}[i] \leq 10^4$ for each $0 \leq i < n$

```

26     int firstscore = 0;
27     int secondscore = 0;
28
29     for(int i=0;i<numSeq.length;i++)
30     {
31         int num = numSeq[i];
32         if(i%2==0)
33         {
34             firstscore += num;
35         }else{
36             secondscore += num;
37         }
38         if(num%2==0)
39         {
39             revSeq(numSeq, i+1);
40         }
41     }
42     return firstscore - secondscore;
43 }
44 }
45 public static void revSeq(int[] arr, int index)
46 {
47 }
```

ALL

Custom Testing

▼ Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
1 4 2 1	\rightarrow numSeq[] size n = 4 \rightarrow numSeq = [2, 1, 4, 3]
3 4	
2	

Sample Output

2

Explanation
 The game proceeds as follows:

- 1st round: First player picks 2, $\text{first_score} = 2$. The remaining sequence is reversed (since 2 is even): [3, 4, 1].
- 2nd round: Second player picks 3, $\text{second_score} = 3$. The remaining sequence: [4, 1].
- 3rd round: First player picks 4, $\text{first_score} = 2 + 4 = 6$. The remaining sequence: [1].
- 4th round (final): Second player picks 1, $\text{second_score} = 3 + 1 = 4$. The remaining sequence: [].

```

20 * The function is expected to compute the difference between the scores of two players.
21 * The function accepts one parameter: an array of integers.
22 */
23
24 public static int getScoreDifference(int[] numSeq)
25 {
26     int firstscore = 0;
27     int secondscore = 0;
28
29     for(int i=0;i<numSeq.size();i++)
30     {
31         int num = numSeq.get(i);
32         if(i%2==0)
33         {
34             firstscore += num;
35         }else{
36             secondscore += num;
37         }
38         if(num%2==0)
39         {
39             revSeq(numSeq, i+1);
40         }
41     }
42     return firstscore - secondscore;
43 }
44 }
45 public static void revSeq(List<Integer> arr, int index)
46 {
47 }
```

Test Results