

Coding Questions

Question 1:

Possible Pairs

Implement the solution to find all possible pairs rom the given list whose sum is same as given sum. The application should Initialize the list and its values, Initialize value of sum, then it should invoke the function to find.

Constraints:

NA

Example:

Sample Input:

5,2,3,4,1,6,7
6

Sample Output:

```
Pairs to which sum is : 6
5 1
2 4
3 3
```

Explanation:

NA

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5,2,3,4,1,6,7 6</div>	<div>Pairs to which sum is : 6 5 1 2 4 3 3</div>

Question 2:

Find the Starting and Ending Position

The data entry operator is assigned to a task of storing employes data where Id's of all the employees should be sorted in non-decreasing order.

Due to the typographical error, the user (data entry operator) entered few id's twice in the List.

You are assigned to a task of find the starting and ending position (indexes) of a given id in the list.

The application should allow the user to enter a value to be searched in the list

If element is not found in the it should display as not found,

Constraints:

NA

Example:

Sample Input:

123, 126, 220, 232, 245, 278, 287, 245, 298, 300, 245

245

Sample Output:

```
Element Occurred at: 4
Element Occurred at: 10
```

Explanation:

NA

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>123, 126, 220, 232, 245, 278, 287, 245, 298, 300, 245</div>	<div>Element Occurred at: 4 Element Occurred at: 10</div>

Question 3:

Split the List

The Employee id's are stored in a list in this order
['A010', 'A011', 'A005', 'A006', 'A007', 'A008']

Implement the code component to split the list at a desired position and append at the end of the list.

For example if user wants to remove the first two elements from the list and to append at end the list

it will be as A005 A006 A007 A008 A010 A011

Constraints:

NA

Example:

Sample Input:

12, 13, 14, 15, 16, 18
3

Sample Output:

15 16 18 12 13 14

Explanation:

12, 13, 14, 15, 16, 18 -----> List as input

3 -----> Position where you want to split

Output:

15 16 18 12 13 14 -----> Updated List

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>12,13,14,15,16,17 3</div>	<div>15 16 17 12 13 14</div>

Question 4:

Finding the Duplicate Element Tuple in a List

Alchem Inc. is an emerging company in Singapore. Recently, the organization has seen a huge growth following which the management has decided to hire 100 employees on various roles.

An applicant can apply for various roles offered by the company based on the individual competency.

In order to organize the details of an ever-rising count of applicants in an efficient manner, the management has asked Shawn, the team member of the IT department, to create an application named ApplicantBook.

This application will store details, such as, Applicant ID, Applicant name, date of birth, city.

In the initial phase of development, Shawn stored all applicant’s id's on daily basis in a tuples of list as follows. Later Shawn identified some applicant’s id's are repeated in few tuples of the list.
He wants to find a particular applicant Id repeated n times in all the tuples of the list.

You need to help Shawn to implement the needed solution of all the records where a particular element occurred in n times and should display that particular tuple object.
This should be implemented using list comprehension

It will also be useful in updating and accessing the personal details of the Applicants quickly.

Here is the list on which you need to implement the code:

List = [('A001', 'A004', 'A001'), ('A004', 'A004', 'A002'), ('A005', 'A004', 'A005')]

Constraints:

NA

Example:

Sample Input:

A005

2

Sample Output:

[('A005', 'A004', 'A005')]

Explanation:

Sample Input:

A005 -----> Element you want to Search

2 -----> Frequency of the element you want to search

Sample Output:

[('A005', 'A004', 'A005')] -----> This is the tuple where A005 is repeated for 2 times

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>A005 2</div>	<div>[('A005', 'A004', 'A005')]</div>

Question 5:

Inserting an Element in a Sorted List

You are assigned to a task to search the insert position of K in a sorted list and to place the element into the appropriate position and should be copied into a new list.

In the given list, there can be N distinct integers and an integer K
The task is to find the index of K, if it’s present in the List.
If the element is not present in the list , find the index where K can be inserted to keep the array sorted and Insert the element in that position(kth Position)

If no element is found to be exceeding K, it should display: All elements are small.

if the element is already present in the list it should display the index position and it should also display: Element already present

Constraints:

NA

Example:

Sample Input:

2,4,6,8,10
9

Sample Output:

4 2 4 6 8 9 10

Explanation:

Input:

First Line is a Sorted List

Second input is the element which you want to insert into the list

Output:

First line is the index position where the element should be inserted

second line is the list after insertion

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>2,4,6,8,10 9</div>	<div>4 2 4 6 8 9 10</div>

Question 6:

Longest Subarray with Sum K

Scenario:

You are working on a project management tool, and you need to find the longest stretch of consecutive workdays where the total work hours sum up to a specific target. This helps in identifying the most productive periods.

Problem Statement:

Given an array of integers workHours representing the hours worked each day, and an integer k, find the length of the longest subarray that sums up to k.

Constraints:

NA

Example:

Sample Input:

5
1 -1 5 -2 3
3

Sample Output:

4

Explanation:

The length of longest sub array (5,-2,-1,1) is 4.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5 1 -1 5 -2 3 3</div>	<div>4</div>

Question 7:

Subarray with Maximum Product

Scenario:

You are working on a performance analysis tool for athletes, and you need to find the most consistent period of their performance. You are given an array where each element represents the performance score on a given day. Find the subarray with the maximum product of its elements.

Problem Statement:

Given an array of integers performance, find the contiguous subarray within an array (containing at least one number) which has the largest product.

Constraints:

NA

Example:

Sample Input:

4
2 3 -2 4

Sample Output:

6

Explanation:

The subarray with the maximum product is [2, 3] , yielding a product of 6 .

Despite the presence of a negative number (-2), the algorithm correctly identifies that the product of 2 and 3 is the largest possible product of any contiguous subarray.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>4 2 3 -2 4</div>	<div>6</div>

Question 8:

Longest Palindromic Substring

Find the longest palindromic substring in a given string.

Constraints:

NA

Example:

Sample Input:

cbbd

Sample Output:

bb

Explanation:

bb is the longest palindromic substring of cbbd

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>cbbd</div>	<div>bb</div>

Question 9:

Count and Say Sequence

The "Count and Say" sequence is a sequence of digit strings defined by the recursive formula:

countAndSay(1) = "1"

countAndSay(n) is generated by reading countAndSay(n-1), counting the number of digits in groups of the same digit.

Constraints:

NA

Example:

Sample Input:

4

Sample Output:

1211

Explanation:

countAndSay(1) = "1"

countAndSay(2) = RLE of "1" = "11"

countAndSay(3) = RLE of "11" = "21"

countAndSay(4) = RLE of "21" = "1211"

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>4</div>	<div>1211</div>

Question 10:

Joseph and Anagrams

Joseph was going through topic of strings. He learnt about anagrams. But due to some circumstances he forget,now he hired you to help him in completing the work.Your task is to tell whether the two given strings are anagrams.

Constraints:

1<|s|<100

Example:

Input Format
The first line of the input is a string N, The second line of the input is a string M

Output Format
Compare the two string input N and M. Print 1 if they are anagram else print 0

Explanation:

This Problem deals with strings.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>cat tac</div>	<div>1</div>
2	<div>hello heloo</div>	<div>0</div>

Question 11:

Harsha and Digits

Harsha has an integer x and he is assigned the task of finding the remainder when the first digit of number x is divided by the last digit, Harsha could not do it because of confusion, he is seeking your help in solving the problem.

Constraints:

1<N<10000

Example:

Input Format
The input consists of an integer n

Output Format
The output is the remainder obtained on dividing the rst digit of the given number by its last digit.

Explanation:

This a Basic problem on control statements

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>2112</div>	<div>1 1 0</div>
2	<div>8769</div>	<div>3 6 8</div>

Question 12:

two strings are complementary

Given two strings S1 and S2, display 'yes' if given two strings are complementary otherwise display 'no'. If we join alphabets of both the strings we should get all 26 capital letters exactly once, then only we can call them as complementary

Constraints:

1 < s1,s2 <100

Example:

Input Format
You are given two strings ‘s1’ and ‘s2’.
Output Format
Print 'yes' if given two strings are complementary, otherwise print 'no'.

Explanation:

.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>ABDCFGIJKLMNOPQVWXYZ EHRST</div>	<div>yes</div>
2	<div>DFGHJ KLO</div>	<div>no</div>

Question 13:

the strike rate of two batsmen in same order of their occurrence.

In a cricket match, the coach wanted to check the performance of batsmen. So he decided to strike rate as criteria. He planned that the two batsmen whose strike rate difference minimum will be sent no. 3 and no.4 in the next match. Now your task is to help the coach in ending the two batsmen

Constraints:

1<n<100

Example:

Input Format

You are given an integer 'n' denoting the size of the array. The next line contains n space-separated integers.

Output Format

Print the strike rate of two batsmen in the same order of their occurrence.

Explanation:

.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5 122 365 245 122 456</div>	<div>122.0 122.0</div>
2	<div>6 138.3 156.5 156.6 160.2 198.3 146.2</div>	<div>156.5 156.6</div>

Question 14:

Print the largest element that can be formed out of the array.

You are given with arrays containing some non negative integers.Your task is to make the largest number out of it.

Constraints:

only integers

Example:

Input Format

First-line contains the size of array 'n'. Second-line contains the n space-separated integers.

Output Format

Print the largest element that can be formed out of the array

Explanation:

.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>7 45 12 6 32 14 75 85</div>	<div>8575645321412</div>
2	<div>6 12 19 546 60</div>	<div>605461912</div>

Question 15:

Digits and Strings

One person hands over the list of digits to Mr. String, But Mr. String understands only strings. Within strings also he understands only vowels. Mr. String needs your help to find the total number of pairs which add up to a certain digit D.

The rules to calculate digit D are as follow

Take all digits and convert them into their textual representation

Next, sum up the number of vowels i.e. {a, e, i, o, u} from all textual representation

This sum is digit D

Now, once digit D is known find out all unordered pairs of numbers in input whose sum is equal to D. Refer example section for better understanding.

Constraints:

Constraints

1 <= N <= 100

1 <= value of each element in second line of input <= 100

Number 100, if and when it appears in input should be converted to textual representation as hundred and not as one hundred. Hence number of vowels in number 100 should be 2 and not 4

Input

First line contains an integer N which represents number of elements to be processed as input

Second line contains N numbers separated by space

Output

Lower case representation of textual representation of number of pairs in input that sum up to digit D

Note: (If the count exceeds 100 print "greater 100")

Example:

Example 1

Input

5

1 2 3 4 5

Output

one

Example 2

Input

3

7 4 2

Output

zero

Explanation:

Explanation - Example 1

- 1 -> one -> o, e
- 2 -> two -> o
- 3 -> three -> e, e
- 4 -> four -> o, u
- 5 -> five -> i, e

Thus, count of vowels in textual representation of numbers in input = {2 + 1 + 2 + 2 + 2} = 9. Number 9 is the digit D referred to in section above.

Now from the given list of numbers {1,2,3,4,5} -> find all pairs that sum up to 9.

Upon processing this we know that only a single unordered pair {4, 5} sum up to 9. Hence the answer is 1. However, output specification requires you to print textual representation of number 1 which is one. Hence output is one.

Note: Pairs {4, 5} or {5, 4} both sum up to 9. But since we are asking to count only unordered pairs, the number of unordered pairs in this combination is only one.

Explanation - Example 2

- 7 -> seven -> e, e
- 4 -> four -> o, u
- 2 -> two -> o

Thus, count of vowels in textual representation of numbers in input = {2 + 2 + 1} = 5. Number 5 is the digit D referred to in section above.

Since no pairs add up to 5, the answer is 0. Textual representation of 0 is zero. Hence output is zero.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>3 7 4 2</div>	<div>zero</div>
2	<div>5 1 2 3 4 5</div>	<div>one</div>

Question 16:
Number to Alphabets

Write a program to transform a number Num by performing the following steps to form a resultant string R

All the zeroes in the number Num should be at the right end of the string R

All the non-zero digits are replaced by equivalent alphabets (in lower case only) in the following way, a is 1, bis 2, c is 3 and so on to form the resultant string R

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

Constraints:

10 <= Num <= 1015

There are no leading zeroes in Num.

Example:

Sample Input:
1020101010
Sample Output:
abaaa00000

Explanation:

The number Num is 1020101010.
After placing zeroes at the end, we get 1211100000.
When 1 is replaced by a, 2 by b, and so on, we get abaaa00000 which is printed as the output.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>1020101010</div>	<div>abaaa00000</div>

Question 17:

Exclude Golden Price Spending

The megastore offers a deal that states any product whose price is a golden price G would be given to them for free. A number G is said to have a golden price if the difference between the highest digit and the sum of its digits equals the highest digit of G.

Examples include 352 ((3+5+2)-5=5), 3003, and 32812 ((3+2+8+1+2)-8=8).

Narendra visits the megastore and purchases k items between price range of X and Y (where X and Y are included) One product from each price value in the range of X and Y makes up the number k products. He now wants to know his total spending, eliminating the cost of the Golden Price item/items he chose from for calculating the total bill amount.

Help Narendra with a program that identifies his total spending, eliminating the cost of the Golden Price item he chose from the list within the price ranges of X and Y

Read the input from STDIN and write the output to STDOUT. You should not write arbitrary strings while reading the input and while printing as these contribute tothe standard output.

Constraints:

1<X Y<100000

Example:

Sample Input :
10

15
Sample Output :
64

Explanation:

Here, the given the price range, Le, X and Y is 10 and 15.After checking the golden prices for the items prices from 10 to 15, we got 11 as the golden price. So, after adding all the prices and eliminating the Golden Price, we have:10+11+12+13+14-15-11=64.
Since, the total amount Narendra has spent is 64.So, it will print 64 as an output.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>10 15</div>	<div>64</div>

Question 18:

Square and Sum Program

Given a list A of N integers, write a program to square all the numbers in the list and print their sum

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

Constraints:

1 <= N <= 10000

0 <= A <= 106, where 1=0,1,.....,N-1

Example:

Sample Input :

3

1 2 3

Sample output :

14

Explanation:

1^2+2^2+3^2 =1+4+9=14

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>3 1 2 3</div>	<div>14</div>

Question 19:

Bit Comparison Program

Write a program to accept two message strings, out of which one is the 'Sent Message string S. whereas the other is the "Received Message string R, exchanged over form of bits. This communication over a network causes some date modifications which can be seen when the sent string and received string do not match

- To probe further, they have to be checked according to two parameters:
- 1) The number of bits that have shuffled from their original position.
 - 2) Print 0 if the number of zeros present in the sent message is equal to the number of zeros present in the received message else print 1

illustrate the same by reading the input from STDIN and writing the output to STDOUT. You should not write arbitrary strings while reading the rout and whole pro to the standard output.

Constraints:

S and R have to be in binary format.

II) 1 <Lengths of S and R <= 10000

Example:

Sample Input :

10101010

11101110

Sample Output :

2

1

Explanation:

The second and sixth bit is 0 in the sent message, while they are changed to 1 in the received message. Thus the first line of output has 2 printed. Also, the number of zeros present in the sent message is 4 whereas in the received message it is 2 and they are not equal so 1 is printed

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>11110000 11110001</div>	<div>1 1</div>

Question 20:
RGB Color Inversion Program

Write a program that accept RGB values of a color as an input and prints their color inversion. Each color can have values ranging from 0 to 255. The value 255 represents the maximum intensity and 0 means no color intensity.
Read the input from STDIN and print the output to STDOUT. Do not write arbitrary strings anywhere in the program, as these contribute to the standard output and test cases will fail.

Constraints:

RGB color will have values ranging from 0 to 255.

Example:

Sample Input
78 55 187
Sample Output
177 200 68

Explanation:

The given RGB values are 78, 55 and 187.
So, the color inversion of given values will be 255 - 78, 255 - 55 & 255 - 187 resulting in 177, 200 and 68 respectively, which are printed as an output.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>78 55 187</div>	<div>177 200 68</div>

Question 21:
Sort and Identify Words

Write a program that takes a list of words L as input and sorts the list of words in ascending alphabetical order. From the sorted list, identify the words that starts with a given character C and print the original words along with their positions in the sorted list if they start with the specified character.
Read the input from STDIN and write the output to STDOUT. You should not write arbitrary strings while reading the input and while printing as these contribute to the standard output.

Constraints:

- i) All the letters of the list must be lowercase.
- ii) If none of the words of the sorted list are starting with a given character then print 0.

Example:

Sample Input
this is for testing it
t

Sample Output
testing 4
this 5

Explanation:
NA

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>this is for testing it t</div>	<div>testing 4 this 5</div>

Question 22:
Pyramid Pattern using Hash

Given a number N, print a pyramid pattern of height N using hash (#) symbols.

Constraints:
NA

Example:

Sample Input:

5

Sample Output:

```
#
###
#####
#####
#####
```

Explanation:
NA

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5</div>	<div># ### ##### ##### #####</div>

Question 23:
Hollow Square Pattern using At Symbol

Given a number N, print a hollow square pattern of size N x N using at symbol (@).

Note: check the whitespaces properly.

Constraints:
NA

Example:

Sample Input:

5

Sample Output:

```
@ @ @ @ @
@           @
@           @
@           @
@           @
@ @ @ @ @
```

Explanation:

Hint: Use only one for loop.

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5</div>	<div>@ @ @ @ @ @ @ @ @ @ @ @ @ @</div>

Question 24:

Spiral Pattern wirh Number from Start

Create a spiral pattern with numbers starting from 1.

Constraints:

NA

Example:

Sample input:

5

Sample Output:

```
1  2  3  4  5
16 17 18 19  6
15 24 25 20  7
14 23 22 21  8
13 12 11 10  9
```

Explanation:

NA

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>5</div>	<div><div>12345</div><div>161718196</div><div>152425207</div><div>142322218</div><div>131211109</div></div>

Question 25:

Kth Smallest Element in an n - element array

The input format has two value, size of an array(n) followed by values of that array. You should return the Kth smallest elemen(k)t of that array.

Constraints:

3<n<size of int

1<k<size of int

Example:

4

16 20 89 2

16

Explanation:

Input line 1: 4 (size of an array. Here 4 i.e. 4 values)

Input line 2: 16 20 89 2 (Values of the array. Should be space seperated)

Input line 3: 2 (Value of k i.e. 2nd smallest value is required)

Output : 16 (2nd smallest value of array in 16)

Public Test Cases:

#	INPUT	EXPECTED OUTPUT
1	<div>4 16 17 2 4 2</div>	<div>4</div>
2	<div>3 15 -1 6 3</div>	<div>15</div>