

Q.1. The apparel company 'FeelGood' has collected a list of the sales values of the N highest selling brands of products during the festive season. Each brand is identified by a unique ID numbered 0 - (N-1) in the list. From this list, the company wishes to determine the Kth largest sales value for a given day.

Write a C++ program by using function to help the company to determine the sales value of the Kth largest selling product.

Sample Input 1

5 3

45 32 67 21 12

Sample Output 1

32

Q.2. A game developing company has developed a math game for kids called "Brain Fun". The game is for smartphone users and the player is given a list of N positive numbers and a random number K. The player needs to divide all the numbers in the list with the number K and then needs to add all the quotients received in each division. The sum of all the quotients is the score of the player.

Write a C++ program to generate the score of the player.

Sample Input 1

5

4

25 26 54 81 48

Sample Output 1

57

Q.3. An online book reading community's grid displays books in a specific format. Only one batch of books is displayed at a time and each batch of books is recognized as a string tagged a-z. Each character of the string denotes the initials of the book's author. The community has decided to change the format of the display grid but before they can do this, they need to know the number of unique author's initials present in the given batch of books. The unique author's initials are the initials that appear only once in the batch of books represented as a string.

Write a C++ program to help the community find the count of unique author's initials present in the given batch of books.

Sample Input 1

asfddagha

Output 1

4

Explanation: There are 4 unique characters (s, g, g, h) present in the string. Hence the output is 4

Q.4. SecretMessage agency provides message encoding and decoding services for secure data transfer. The first step in decoding includes the removal of special characters from the message, as special characters and whitespaces do not hold any meaning.

Write a C++ program to help the agency find the number of special characters in a given message.

Sample Input 1

gasg!g54@#vscsdl\$*

Sample Output 1

4

Q.5. A company is transmitting its data to another server. To secure the data against malicious activity, they plan to reverse the data before transmitting it. 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 a C++ program for the network administrator to help him find the number of data characters that do not change position even after the data stream is reversed.

Note

The input string data stream is case-sensitive and made up of English letters only. Uppercase characters and lowercase characters are counted as different.

Output Explanation

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.

Sample Input 1

alphxxdida

Sample Output 1

4

Q.6. The cosmetic company "BeautifyMe" wishes to know the alphabetic product code from the product barcode. The barcode of the product is a numeric value and the alphabetic product is a string value tagged 'a-j'. The alphabetic range 'a-j' represents the numeric range '0-9'. To produce the alphabetic product code, each digit in the numeric barcode is replaced by the corresponding matching letters.

Write a C++ program to display the alphabetic product code from the numeric barcode.

Output Explanation

Print a string representing the alphabetic product code.

Sample Input 1

12403

Sample Output 1

bcead

Q.7. In a gaming hub, N number of players were playing the same type of game. All players got stuck at the pillar level in the game, each with a different score. The owner of the gaming hub announced that players can pass that level if they can break two pillars. Both pillars have their own health points. The trick is to break one pillar at a time that if the player's current score is multiplied up to a certain point then it should be equal to the pillar's health. The same trick is to be used for the other pillar. If there is no number that can be multiplied with the player's score to make the score equal to the pillar's health, then that player loses. A player can only break one pillar at a time and if the player is not able to break both the pillars then they will not be able to clear the level.

Write a C++ program to find the total number of players who will clear that level of the game.

Sample Input 1

5

15 5 3 7 9

135 90

Sample Output 1

4

Q.8. An oil factory has N number of containers and each has a different capacity. During the renovation, the manager decided to make some changes to the containers. He wishes to make different pairs for the containers in such a way that in the first pair, the container of maximum capacity is paired with the container of minimum capacity, and so on for the rest of the containers, to maintain a balance throughout all the pairs of containers.

Write a C++ program to make different pairs of containers in such a way that the first container in the pair is of maximum capacity and the second container in the pair is of minimum capacity.

Sample Input 1

6

100 560 23 19 53 20

Sample Output 1

560 19

100 20

53 23

Q.9. A company has to tag its products. Each product has an associated product type which is used to tag the products. Product type is a sequence of lower-case letters from the English alphabet. The company wants to have an algorithm for their system which takes the product type and outputs the tag. To generate the tag, pairs of adjacent characters are formed from the start of the product type. From each pair, the lexicographically smallest character will be removed. If a character will be left unpaired then that character will be taken as it is in the tag. Write a C++ program for the company's system to find the tag for the given product.

Sample Input 1

electronics

Sample Output 1

letois

Q.10. A customer buys N number of products from a shop and each product has a different price. During the holiday season the shop owner decides to introduce a special offer. He wishes to distribute gift hampers to customers who purchase products whose total price is a perfect cube. If customers don't meet his requirement, the owner will allow them to buy a few more products in order to make the total price a perfect cube.

Write a C++ program to print "Yes" if the customer will receive a gift hamper, else print an integer representing the price of the product the customer should buy in order to receive a gift hamper.

Sample Input 1

4

3 3 3 0

Sample Output 1

Yes