

City University, City campus



2015 (Fall) Practice Contest For NCPC

You will get 3 hours, 8 problems and 6 pages

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and all the teachers.

Good Luck !

N.B:

- Storage devices and printed materials are allowed.
- Browsing internet is prohibited.
- Unfortunately you cannot print any code to debug.
- You can't talk to any contestant during contest.
- Breaking any rule may penalize you.
- Any decision made by the judging director is final.

A	A simple Dhara	Time:
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2+4+6+8+10+12+..... It's an **arithmetic progression** (AP) or **arithmetic sequence**. You know from your childhood (:p) Here, we can use the following formula to find out the sum of the numbers of this series. n = number of terms, a_1 = 1st term, a_n = n^{th} term .

$$\frac{n(a_1 + a_n)}{2}$$

Input: Each line of input contain 2 integers ($-10^8 \leq A, B \leq 10^8$) and will be terminated by EOF.

Output: Sum = x. Here "x" is the summation all integers from A to B.

Sample:

2 5 1 10	Sum = 14 Sum = 55
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B	Excellent age of Rafi's wife	Time:
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Rafi is going to marry and he is searching for a cute and pious wife. But as a programmer, he has some demands in choosing a perfect wife. He knows you're a good programmer, so of course you can help him in this matter .

He will give you an age-list of a few girls(a_1, a_2, a_3, \dots) and the age when he will marry (N) and you have to find an excellent age considering the following formula:

Sum of all ages of girls - ($\gcd(\min_{ai}, \max_{ai}) * N$).

Input:

Test case ($T < 100$), for a single test case, first input number of girls ($G < 10000000$), then "The age when Rafi will marry" ($N < 100$). And then take ages of all girls($G_i < 45$).

Output:

Exactly like: "Case T: X" without quotes. T is the case number. X is the desired excellent age. See samples for clarification.

**Note: Be careful with TLE verdict :p . Handle duplicate ages carefully.
You've to print the absolute value of X.**

Sample:

2 4 28 16 18 18 26 5 67 18 20 30 40 50	Case 1: 22 Case 2: 24
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C	Kodu and his friends' income	Time:
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Mr. Kodu is a great man. He has a great friend circle. They don't tease girls. They are gentlemen. Be like them :)

Anyway, each of them does some works and earn decent amount of money. You will be given a list of their earnings. You have to print who earns the most and who earns the least.

Input:

First line contains 1 integer ($T < 100$, T is the number of his friends). Then T lines follow. Each line contains a string (name) and an integer (income).

Output:

Print who earns the most and who earns the least. See samples for clarification. It's guaranteed that 2 different friends doesn't earn equal amount of money. Besides, any person's name can be repeated, thus you have to add that too.

Sample:

5 Kodu 85000 Jodu 3000 Modhu 7000 Tisha 300 Bipasha 6520	Kodu earns most. Tisha earns least.
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D	Sometimes a half string may help	Time:
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You will be given a string (S) the name of your **Valentine** (:p). You've to determine whether it's a palindrome or not.

Input:

First an integer T (Test case), then a string (S) for each case.

Output:

Print **Uta o shoman** if it's palindromic , then if it's not palindromic print **Na re shoman na** and if it contains more than 2 vowels, print **Jak kichhu ekta achhe**.

Sample:

2 meem moyna	Uta o shoman Na re shoman na
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E	Shihab and his girlfriend's nice name	Time:
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Possibly you know a little bit about Shihab. He is a very busy man.

Therefore, he doesn't have time for any girl and he doesn't have any girlfriend. But there is a condition, if you can help him fulfilling that, he may get engaged (:p). Help him out. :p

There will be 2 names of two girls for 1 test case. Besides you will be given an integer J.

You've to cut off last J characters of 1st string, then cut off first J characters of last string.

Then concatenate these 2 strings that you just have cut off.

i.e: **3 alia priyanka**

Here J = 3, After the 1st cut from string 1, we get **lia**, after the 2nd cut from string 2 we get **pri**. So after adding these 2 strings we get, lia+pri = **liapri**. This is the new name, that Shihab wants. :)

Now, if the **new name** and anyone of the original strings are **anagram**, print **A girl for Shihab is found** if not print **404 ! girl not found**.

N.B:

12345 and 52314 are anagram, but 12345 and 1234567 are not.

So if 2 numbers have equal number of digits and every digit presents equal time in both numbers, are called Anagram numbers.

Input:

The 1st line of input line contains T (Test case), then T lines follow.

J , name1 and then name2.

Output: Print as stated above.

Sample:

2 3 alia priyanka 2 meem meemee	Case 1: 404 ! girl not found Case 2: A girl for Shihab is found
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Test case 2 explanation: meem ->(cut last 2)= **em** , meemee->(cut 1st 2)= **me**.

So, em+me = **emme** , it's an anagram of **meem** , 2 e, 2 m, right ?

F	Our beloved CUPC	Time:
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You will be given a string, you have to determine whether the word CUPC can be formed after removing any characters from anywhere of that string.

i.e: *AbdsCiiUP12C*.

We can get the form of CUPC, after removing A, b, d, s, i, i, 1, 2.

Input:

Each test case contains a single string without any space. Input will be terminated by EOF.

Output:

Print **YES** if it's possible otherwise **NO**.

Sample:

AbdsCiiUP12C PCdssdCU	YES NO
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G	Nested primes	Time:
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You will be given a range (a, b), first you have to find all the primes from a to b, including a and b. If the sum of last 3 digits of a prime is a prime itself, you need to print that. So simple, right ? Of course you can do it.

Constraints: ($100 \leq a, b \leq 1000000$)

Input:

1st line contains an integer T (Test case) then T lines follow. Each line contains 2 integers, a and b.

Output:

Print the required number as stated above.

Sample:

1 100 130	2 5
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Sample 1: Primes from 100 to 130 are: 101 103 107 109 113 127.

Among them, from 101, we get $1+0+1=2$, it's a prime. Similarly, 113 gives us $1+1+3 = 5$, it's also a prime.

H	Kuchi Kuchi Koira Kaitta Fala	Time:
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Steven and Felix halim wrote in their book, **KISS, keep it short and simple.**

So, from now then I will keep problems short and simple :p.

You'll be given 2 integers M, N.

Just print the number of prime factors of M that are equal to or greater than N.

Input: M and N. Input will be terminated by EOF.

Output: Print as stated above.

Sample:

36 2	2
39 1	2
66 1	3

Happy CODING !!!!

Don't believe everything of these problem set.

Everything is created by media. All are rumors , Gujob.