Mawlana Bhashani Science and Technology University

MBSTU Practice Contest 3

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Arranged By:
MBSTU_Accepted Hunter

Problem: A
Counting!!!
Time Limit: 3 sec

Suppose you three are special judge-team in ICPC and your job is to count the number of submissions of each team. Each team will be identified by an integer. The chief-judge (Number one) Mr. Shakib khan will give you N number of submission of teams by team number and an integer Q. You have to find the teams that submit problem Q times. Can you do your job???

Input

Input starts with the number of test cases (T<=100). Each test case consists of four (4) lines. Each test case starts with a blank line. Next line contains N (N<=500) means number of data. Next line contains n integer numbers separated by two spaces. The last line contains an integer Q which means you have to find all data present Q times in the dataset.

Output

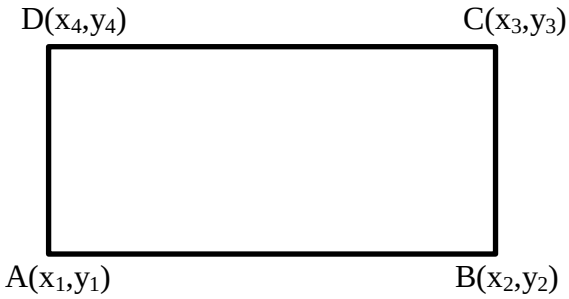
Output starts with a line contains "Test#T:", where T is number of test cases starting with 1. Next line contains all integers which are present Q times in the dataset separated by a space. The integers are to appear in the order in which they are contained in the input file. If such type of number are not present in the dataset, print "Not Found!!!" without the quotes. Print a blank line between two consecutive test cases.

Sample Input	***Sample output for sample input***
1 10 1 1 2 2 1 2 3 4 3 3 3	Test#1: 1 2 3

Problem Setter: Mahedy Hasan Sabuz

Problem B
What kinds of Quadric??
Time Limit: 3 sec

We know many kinds of quadric such as square, rhombus, parallelogram, rectangular etc. In these problem you are given four points and you have to detect is it square, rectangular, rhombus, parallelogram or quadrilateral??



The characteristics of them are given below:-

- Square: All hands are equal and all angles are right angle. Their opposite hands are also parallel.
- Rhombus: All hands are equal and all angles are not right angle. Their opposite hands are also parallel.
- Rectangular: The opposite hands are equal and parallel. All angles are right angle.
- Parallelogram: The opposite hands are equal and parallel. All angles are not right angle.
- Quadrilateral: Else of these characteristics it will be a Quadrilateral.

Input

The input will start with an integer T (T<=20) denotes test case. Each of Next T lines contain 8 integers $-10^3 <= x_1,y_1,x_2,y_2,x_3,y_3,x_4,y_4 <= 10^3$ where each pair denotes a quadric point.

Output

For each line of input firstly you have print case number and what kind of quadrangle is that in the sample input & output format.

Sample Input

2
0 0 10 0 10 10 0 10
2 2 10 2 12 4 4 4

Sample Output

Case 1: Square
Case 2: Parallelogram

Problem Setter: Bajlur Rashid Sourav

Problem C
Result sheet
Time limit 3 sec

Mr. Kabir Khan is a teacher of ESRM department of MBSTU. He is given to create the result sheet of 3rd year 1st semester (having 6 courses) final exam. But he does not have any software to make result sheet in standard format. You should think that, he has always six courses in the exam.

So he need a software that takes the information of all the students and give a result sheet in standard format. As a good programmer you have to create such kind of software.

The standard result sheet has following criteria:

- Every student has 4 information (ID, Name, Cgpa, Number of Backlog).
- Information are sorted as priority of cgpa, number of backlog and ID where ID & number of backlog in ascending order and cgpa in descending order.
- Each line contains 1 student's information.

Cgpa is calculated by following table:

Marks	Gpa
80-100	4.00
75-79	3.75
70-74	3.50
65-69	3.25
60-64	3.00
55-59	2.75
50-54	2.50
45-49	2.25
40-44	2.00
0-39	0.00

Input

Input starts with the number of test cases (T<=50). The first line of each test case contains an integer 'N'(<=55) the number of student. Then you are given information of N's students. The first line of each student's information contains three data P,Q,S (S<=6) separated by space (P=ID like "IT-10007", Q=Name like "sourav" and S=number of course he participated in the exam. Where P contains uppercase letter, hyphen, and numeric digit, and Q contains only lowercase letter). Next you are given marks of S courses one per line that has three parts tm,cm,ca(tm=number of final exam<=70,cm=class test marks<=20,ca=class attendance mark<=10);

Output

Output contains a result sheet according to standard format for each test case showing the student's information. Every student has 4 information in the result sheet these are ID, Name,

cgpa and number of backlog sequentially separated by space. for cgpa print two digit after decimal point. Print a blank line after each test case. To understand exact format of output see sample I/O.

Sample Input	***Sample Output***
1 2 IT-10029 sobuz 6 50 15 8 50 15 8 50 15 8 50 15 8 50 15 8 0 15 8 IT-10034 sourav 6 50 20 9 50 20 8 50 20 8 50 20 8 50 20 8 50 20 8	IT-10034 sourav 3.75 0 IT-10029 sobuz 3.50 1

For first test case, sobuz participated six courses in the exam. In first course his total marks=50+15+8=73, so gpa=3.50, second course total marks=50+15+8=73, gpa=3.50 and so on. In six course, his total marks=0+15+8=23 that is less than 40. So, he gets a backlog. So, he passed five courses. Total gpa=3.50+3.50+3.50+3.50+3.50=17.5, Total courses he passed in the exam=5. So, cgpa=17.5/5=3.50.

sourav participated six courses in the exam. In first course his total marks=50+20+9=79, so gpa=3.75, second course total marks=50+20+9=79, gpa=3.75 and so on. He passed six courses. Total gpa=3.75+3.75+3.75+3.75+3.75+3.75=22.5, Total courses he passed in the exam=6. So, cgpa=22.5/6=3.75. His all courses mark greater than 40. So, he doesn't get any backlog.

Problem Setter: Md. Kamal Uddin

Problem: D
Calculator
Time Limit: 0.5 sec

Sohel is the students of ICT dept. at first year second semester. Besides other courses, he has a project course on C programming language. He chooses make a calculator as his project. Imagine, you are sohel. So, you have to create a calculator. The calculator has following commands:

- A: Add two numbers.
- S: Subtract second number from first number.
- M: Multiply two numbers.
- D: Divide first number by second number.
- R: Calculate remainder first number by second number.
- Q: Quit the calculator.

So, your task is to create a calculator that performs above commands.

Input

Each case contains only one command. The keywords 'A', 'S', 'M', 'D', 'R' are all in uppercase letter. The end of case is indicated by 'Q' command and it should not be processed. If the command is invalid, print "MATH ERROR!!" without the quotes.

Output

For each test case, print the case number first "Case T:", which starting with 1. For each command print the desired result. The result always will be integer.

Sample Input	***Sample Output***
A 1 2 S 2 1 M 1 2 D 4 2 R 4 3 Q	Case 1: 3 Case 2: 1 Case 3: 2 Case 4: 2 Case 5: 1

Problem Setter: Mahedy Hasan Sabuz

Problem E
We know prime!
Time limit 3 sec

Semi-prime is an positive integer number that is not a prime number but it's number of prime divisors is a prime number. Your task is to find the total number of semi-primes in a given range.

Input

The input will consist of a series of pairs of integers *i* and *j*, one pair of integers per line. All integers will be less than or equal 10,000,000 and greater than 0.You should process all pairs of integers. Input will be terminated by EOF.

Output

For each pair of input integers i and j you should process one line that contains total number of semi-prime in this range.

Sample Input

1 10
1 20
1000 2000

Sample Output

2
7
803

Problem Setter: Md. Kamal Uddin

Problem: F
Searching words!!!
Time Limit: 3 sec

All of you might use dictionary regularly or occasionally (before exam.). This is a normal dictionary problem. You are given N number of word and then a letter K (a-z or A-Z). You have to find the words from the given words that start with K(you have to ignore case sensibility).

Input

Input starts with the number of test cases (T<=99). Each test case starts with a number N (N<=777) which represents how many words in the dictionary. Each of the next N lines contains a word. Each word contains only alphabetic letter. Next Line contains a character K which represents the first character of the word.

Output

Output starts with a line contains "Case#T:", where T is number of test cases starting with 1. Then print all words of the dictionary separated by new line which first character is K. The words are to appear in the order in which they are contained in the input file. All letters of the words will be lowercase letter. If such a word is not found print "Not Found" without the quotes. Print a blank line after each test case.

Sample Input	***Sample Output***
1 7 Codeblocks LightOJ MBSTU Accepted Barcelona Villa Varsity V	Case#1: villa varsity

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Problem Setter: Mahedy Hasan Sabuz

Problem G
Ponds
Time limit: 3 sec

Mawlana Bhashani Science and Technology University is a government financed public university of Bangladesh. It is named after the charismatic, legendary political leader of the country Mawlana Bhashani. This University is famous for various historical sights. The legendary political leader Mawlana Bhashani lies here. There are many historical things like Castles, Temples, educational institutions, Mosque founded by the Landlords. Especially there are many ponds which are carrying the evidence of that Landlords age.

Recently The Vice Chancellor of MBSTU, Mr. Nurul Islam has decided to survey the number of ponds in MBSTU campus. He gives this task to a team made by students of CSE Faculty. But these guys have found that it is very lengthy process to count exact number of ponds by visiting all sides of the campus. Fortunately the team leader knows that a survey about the number of trees belonging to the brinks of the ponds was taken recently. As he is so intelligent, he decided to use this survey to find the number of ponds. Your task is as same as the team leader. You are given the information of all trees in brinks of ponds. You have to find the total number of ponds in MBSTU campus.

Input

Input starts with the number of test cases (T<=50). The first line of each test case contains two integers N and M (4<=N<=100 and 4<=M<=200) denote the number of trees around all the ponds and the number of relations among the trees. Next M lines, each contains 2 integers p,q (1<=p,q<=n) that means these trees are in brinks of a same pond. Each tree in brinks of a pond are interconnected via directly or other trees. Trees are numbered from 1 to n.

Output

For each test case you should print one line of output that denotes the number of ponds in MBSTU campus.

Sample Input	***Sample Output***
1 6 7 1 3 6 4 4 2 5 1 6 5 2 6 4 3	2

Problem Setter: Md. Kamal Uddin

Problem H
We can use sieve!
Time limit 4 sec

Two integers *a* and *b* are said to be **coprime** (also spelled **co-prime**) or **relatively prime** if the only positive integer that evenly divides both of them is 1. So 10 has 4 relative prime less than 10 these are 1,3,7,9. You have to find a number 'n' that has maximum number of relative primes less than 'n' in a given range and it's number of relative primes 'k' less than 'n'.

Input

The input will consist of a series of pairs of integers *i* and *j*, one pair of integers per line. All integers will be less than or equal 1000000 and greater than 0.You should process all pairs of integers. Input will be terminated by EOF.

Output

For each pair of input integers i and j you should process one line that contains two integers n and k. If two or more numbers have maximum relative primes than print the maximum number among them.

Sample Input

14 16
1 1000000

Sample Output

16 8
999983 999982

Problem Setter: Md. Kamal Uddin