Exercise: Tuples and Sets

Problems for exercise and homework for the Python Advanced Course @SoftUni. Submit your solutions in the SoftUni judge system at https://judge.softuni.org/Contests/1833.

1. Unique Usernames

Write a program that reads from the console a sequence of **N usernames** and keeps a collection only of the **unique** ones. On the first line, you will receive an integer N. On the next N lines, you will receive a username. Print the collection on the console (the order does **not matter**):

Examples

Input	Output
6	George
George	Peter
George	NiceGuy1234
George	
Peter	
George	
NiceGuy1234	
10	Peter
Peter	Maria
Maria	George
Peter	Steve
George	Alex
Steve	
Maria	
Alex	
Peter	
Steve	
George	

2. Sets of Elements

Write a program that prints a set of elements. On the first line, you will receive two numbers - n and m, separated by a single space - representing the lengths of two separate sets. On the next **n** + **m** lines, you will receive **n** numbers, which are the numbers in the first set, and m numbers, which are in the second set. Find all the unique elements that appear in both and print them on separate lines (the order does not matter).

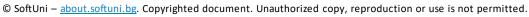
For example:

Set with length n = 4: {1, 3, 5, 7}

Set with length $m = 3: \{3, 4, 5\}$

Set that contains all the elements that repeat in both sets -> {3, 5}



















Examples

Input	Output
4 3	3
1	5
3	
3 5	
7	
3	
4 5	
5	
2 2	1
1	
3	
1	
5	

3. Periodic Table

Write a program that keeps all the unique chemical elements. On the first line, you will be given a number n - the count of input lines that you will receive. On the following n lines, you will be receiving chemical compounds separated by a **single space**. Your task is to print all the **unique ones** on separate lines (the **order does not matter**):

Examples

Input	Output
4	Ce
Ce O	Ee
Mo O Ce	Мо
Ee	0
Мо	
3	Ch
Ge Ch O Ne	Ge
Nb Mo Tc	Мо
O Ne	Nb
	Ne
	0
	Тс

4. Count Symbols

Write a program that reads a text from the console and counts the occurrences of each character in it. Print the results in alphabetical (lexicographical) order.













Examples

Input	Output	Input	Output
SoftUni rocks	: 1 time/s	Why do you like	: 4 time/s
	S: 1 time/s	Python?	?: 1 time/s
	U: 1 time/s		P: 1 time/s
	c: 1 time/s		W: 1 time/s
	f: 1 time/s		d: 1 time/s
	i: 1 time/s		e: 1 time/s
	k: 1 time/s		h: 2 time/s
	n: 1 time/s		i: 1 time/s
	o: 2 time/s		k: 1 time/s
	r: 1 time/s		l: 1 time/s
	s: 1 time/s		n: 1 time/s
	t: 1 time/s		o: 3 time/s
			t: 1 time/s
			u: 1 time/s
			y: 3 time/s

5. Longest Intersection

Write a program that finds the **longest intersection**. You will be given a number **N**. On each of the next **N lines** you will be given **two ranges** in the format: "**{first_start},{first_end}-{second_start},{second_end}"**. You should find the **intersection** of these two ranges. The **start** and **end numbers** in the ranges are **inclusive**.

Finally, you should **find the longest intersection of all N** intersections, print the **numbers** that are included and its length in the format: "Longest intersection is [{longest_intersection_numbers}] with length {length_longest_intersection}"

Note: in each range, there will always be an intersection. If there are two equal intersections, print the first one.

Examples

Input	Output	Comment
3 0,3-1,2	Longest intersection is [6, 7, 8, 9, 10] with length 5	The intersection of [0-3] and [1-2] is [1-2] (length 2)
2,10-3,5		The intersection of [2-10] and [3-5] is [3-5] (length 3)
6,15-3,10		The intersection of [6-15] and [3-10] is [6-10] (length 5) - which is the longest
5 0,10-2,5 3,8-1,7 1,8-2,4 4,7-2,5 1,10-2,11	Longest intersection is [2, 3, 4, 5, 6, 7, 8, 9, 10] with length 9	











6. Battle of Names

You will receive a number N. On the following N lines, you will be receiving names. You should sum the ASCII values of each letter in the name and integer divide it by the number of the current row (starting from 1). Save the result to a set of either odd or even numbers, depending on if the resulting number is odd or even. After that, sum the values of each set.

- If the sums of the two sets are equal, print the union of the values, separated by ", ".
- If the sum of the odd numbers is bigger than the sum of the even numbers, print the different values, separated by ", ".
- If the sum of the even numbers is bigger than the sum of the odd numbers, print the symmetric-different values, separated by ", ".

NOTE: On every operation, the starting set should be the odd set

Examples

Input	Output	Comment
4 Pesho	304, 128, 206, 511	First name: Pesho. The sum of the ASCII values is: $80 + 101 + 115 + 104 + 111 = 511$. Integer divide the sum to the current row (1): $511/1 = 511$.
Stefan Stamat		Second name: Stefan. The sum of the ASCII values is: $83 + 116 + 101 + 102 + 97 + 110 = 609$. Integer divide the sum to the current row (2): $609 / 2 = 304$.
Gosho		Third name: Stamat. The sum of the ASCII values is: $83 + 116 + 97 + 109 + 97 + 116 = 618$. Integer divide the sum to the current row (3): $618 / 3 = 206$.
		Fourth name: Gosho. The sum of the ASCII values is: $71 + 111 + 115 + 104 + 111 = 512$. Integer divide the sum to the current row (4): $512 / 4 = 128$.
		The odd set: 511
		The even set: 304, 206, 128
		The sum of the even numbers is larger, so we print the symmetric-different values .
6	733, 101	
Preslav		
Gosho		
Ivan		
Stamat		
Pesho		
Stefan		















