

Python Coding Questions

S.No	Description
1.	<p>Given a string <code>s</code>, return the longest Palindromic substring in <code>s</code>.</p> <p>Example 1: Input: <code>s = "babad"</code> Output: <code>"bab"</code> Explanation: <code>"aba"</code> is also a valid answer.</p> <p>Example 2: Input: <code>s = "cbbd"</code> Output: <code>"bb"</code></p> <p>Constraints: <code>1 <= s.length <= 1000</code> <code>s</code> consist of only digits and English letters.</p>
2.	<p>Given an array of integers <code>nums</code> and an integer <code>target</code>, return indices of the two numbers such that they add up to <code>target</code>.</p> <p>You may assume that each input would have exactly one solution, and you may not use the same element twice.</p> <p>You can return the answer in any order.</p> <p>Example 1: Input: <code>nums = [2,7,11,15]</code>, <code>target = 9</code> Output: <code>[0,1]</code> Explanation: Because <code>nums[0] + nums[1] == 9</code>, we return <code>[0, 1]</code>.</p> <p>Example 2: Input: <code>nums = [3,2,4]</code>, <code>target = 6</code> Output: <code>[1,2]</code></p> <p>Example 3: Input: <code>nums = [3,3]</code>, <code>target = 6</code> Output: <code>[0,1]</code></p> <p>Constraints: <code>2 <= nums.length <= 10^4</code> <code>-10^9 <= nums[i] <= 10^9</code> <code>-10^9 <= target <= 10^9</code> Only one valid answer exists.</p>
3.	<p>You are given the heads of two sorted linked lists <code>list1</code> and <code>list2</code>.</p>

	<p>Merge the two lists into one sorted list. The list should be made by splicing together the nodes of the first two lists.</p> <p>Return the head of the merged linked list.</p> <p>Example 1: Input: list1 = [1,2,4], list2 = [1,3,4] Output: [1,1,2,3,4,4]</p> <p>Example 2: Input: list1 = [], list2 = [] Output: []</p> <p>Example 3: Input: list1 = [], list2 = [0] Output: [0]</p> <p>Constraints: The number of nodes in both lists is in the range [0, 50]. -100 ≤ Node.val ≤ 100 Both list1 and list2 are sorted in non-decreasing order.</p>
4.	<p>Given an integer array nums sorted in non-decreasing order, remove the duplicates in-place such that each unique element appears only once. The relative order of the elements should be kept the same. Then return the number of unique elements in nums.</p> <p>Consider the number of unique elements of nums to be k, to get accepted, you need to do the following things:</p> <p>Change the array nums such that the first k elements of nums contain the unique elements in the order they were present in nums initially. The remaining elements of nums are not important as well as the size of nums. Return k.</p> <p>Example 1: Input: nums = [1,1,2] Output: 2, nums = [1,2,_] Explanation: Your function should return k = 2, with the first two elements of nums being 1 and 2 respectively. It does not matter what you leave beyond the returned k (hence they are underscores).</p>

	<p>Example 2: Input: nums = [0,0,1,1,1,2,2,3,3,4] Output: 5, nums = [0,1,2,3,4,_,_,_,_,_] Explanation: Your function should return k = 5, with the first five elements of nums being 0, 1, 2, 3, and 4 respectively. It does not matter what you leave beyond the returned k (hence they are underscores).</p> <p>Constraints: $1 \leq \text{nums.length} \leq 3 * 10^4$ $-100 \leq \text{nums}[i] \leq 100$ nums is sorted in non-decreasing order.</p>																
5.	<p>Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.</p> <table border="1"> <thead> <tr> <th>Symbol</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1</td> </tr> <tr> <td>V</td> <td>5</td> </tr> <tr> <td>X</td> <td>10</td> </tr> <tr> <td>L</td> <td>50</td> </tr> <tr> <td>C</td> <td>100</td> </tr> <tr> <td>D</td> <td>500</td> </tr> <tr> <td>M</td> <td>1000</td> </tr> </tbody> </table> <p>For example, 2 is written as II in Roman numeral, just two ones added together. 12 is written as XII, which is simply X + II. The number 27 is written as XXVII, which is XX + V + II.</p> <p>Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not IIII. Instead, the number four is written as IV. Because the one is before the five we subtract it making four. The same principle applies to the number nine, which is written as IX. There are six instances where subtraction is used:</p> <ul style="list-style-type: none"> I can be placed before V (5) and X (10) to make 4 and 9. X can be placed before L (50) and C (100) to make 40 and 90. C can be placed before D (500) and M (1000) to make 400 and 900. <p>Given a roman numeral, convert it to an integer.</p> <p>Example 1: Input: s = "III" Output: 3 Explanation: III = 3.</p> <p>Example 2: Input: s = "LVIII" Output: 58 Explanation: L = 50, V = 5, III = 3.</p> <p>Example 3:</p>	Symbol	Value	I	1	V	5	X	10	L	50	C	100	D	500	M	1000
Symbol	Value																
I	1																
V	5																
X	10																
L	50																
C	100																
D	500																
M	1000																

	<p>Input: s = "MCMXCIV"</p> <p>Output: 1994</p> <p>Explanation: M = 1000, CM = 900, XC = 90 and IV = 4.</p> <p>Constraints:</p> <p>1 <= s.length <= 15</p> <p>s contains only the characters ('I', 'V', 'X', 'L', 'C', 'D', 'M').</p> <p>It is guaranteed that s is a valid roman numeral in the range [1, 3999].</p>
6.	<p>Given an integer x, return true if x is a palindrome, and false otherwise.</p> <p>Example 1:</p> <p>Input: x = 121</p> <p>Output: true</p> <p>Explanation: 121 reads as 121 from left to right and from right to left.</p> <p>Example 2:</p> <p>Input: x = -121</p> <p>Output: false</p> <p>Explanation: From left to right, it reads -121. From right to left, it becomes 121-. Therefore it is not a palindrome.</p> <p>Example 3:</p> <p>Input: x = 10</p> <p>Output: false</p> <p>Explanation: Reads 01 from right to left. Therefore it is not a palindrome.</p> <p>Constraints:</p> <p>$-2^{31} \leq x \leq 2^{31} - 1$</p>
7.	<p>Given a string s consisting of words and spaces, return the length of the last word in the string.</p> <p>A word is a maximal substring consisting of non-space characters only.</p> <p>Example 1:</p> <p>Input: s = "Hello World"</p> <p>Output: 5</p> <p>Explanation: The last word is "World" with length 5.</p> <p>Example 2:</p> <p>Input: s = " fly me to the moon "</p> <p>Output: 4</p> <p>Explanation: The last word is "moon" with length 4.</p> <p>Example 3:</p> <p>Input: s = "luffy is still joyboy"</p> <p>Output: 6</p> <p>Explanation: The last word is "joyboy" with length 6.</p> <p>Constraints:</p>

	$1 \leq s.length \leq 10^4$ s consists of only English letters and spaces ' '. There will be at least one word in s.
8.	<p>A phrase is a palindrome if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers.</p> <p>Given a string s, return true if it is a palindrome, or false otherwise.</p> <p>Example 1: Input: s = "A man, a plan, a canal: Panama" Output: true Explanation: "amanaplanacanalpanama" is a palindrome.</p> <p>Example 2: Input: s = "race a car" Output: false Explanation: "raceacar" is not a palindrome.</p> <p>Example 3: Input: s = " " Output: true Explanation: s is an empty string "" after removing non-alphanumeric characters. Since an empty string reads the same forward and backward, it is a palindrome.</p> <p>Constraints: $1 \leq s.length \leq 2 * 10^5$ s consists only of printable ASCII characters.</p>
9.	<p>Given an integer numRows, return the first numRows of Pascal's triangle.</p> <p>Example 1: Input: numRows = 5 Output: [[1],[1,1],[1,2,1],[1,3,3,1],[1,4,6,4,1]]</p> <p>Example 2: Input: numRows = 1 Output: [[1]]</p> <p>Constraints: $1 \leq numRows \leq 30$</p>
10.	<p>Given an integer rowIndex, return the rowIndexth (0-indexed) row of the Pascal's triangle.</p> <p>Example 1: Input: rowIndex = 3 Output: [1,3,3,1]</p>

	<p>Example 2: Input: rowIndex = 0 Output: [1]</p> <p>Example 3: Input: rowIndex = 1 Output: [1,1]</p> <p>Constraints: $0 \leq \text{rowIndex} \leq 33$</p>
11.	<p>Given a non-empty array of integers nums, every element appears twice except for one. Find that single one. You must implement a solution with a linear runtime complexity and use only constant extra space.</p> <p>Example 1: Input: nums = [2,2,1] Output: 1</p> <p>Example 2: Input: nums = [4,1,2,1,2] Output: 4</p> <p>Example 3: Input: nums = [1] Output: 1</p> <p>Constraints: $1 \leq \text{nums.length} \leq 3 * 10^4$ $-3 * 10^4 \leq \text{nums}[i] \leq 3 * 10^4$ Each element in the array appears twice except for one element which appears only once.</p>
12.	<p>Given two strings needle and haystack, return the index of the first occurrence of needle in haystack, or -1 if needle is not part of haystack.</p> <p>Example 1: Input: haystack = "sadbutsad", needle = "sad" Output: 0 Explanation: "sad" occurs at index 0 and 6. The first occurrence is at index 0, so we return 0.</p> <p>Example 2: Input: haystack = "PythonCode", needle = "Pythoc" Output: -1 Explanation: "Pythoc" did not occur in "PythonCode", so we return -1.</p> <p>Constraints: $1 \leq \text{haystack.length}, \text{needle.length} \leq 10^4$ haystack and needle consist of only lowercase English characters.</p>

13.	<p>Given a sorted array of distinct integers and a target value, return the index if the target is found. If not, return the index where it would be if it were inserted in order.</p> <p>You must write an algorithm with $O(\log n)$ runtime complexity.</p> <p>Example 1: Input: nums = [1,3,5,6], target = 5 Output: 2</p> <p>Example 2: Input: nums = [1,3,5,6], target = 2 Output: 1</p> <p>Example 3: Input: nums = [1,3,5,6], target = 7 Output: 4</p> <p>Constraints: $1 \leq \text{nums.length} \leq 10^4$ $-10^4 \leq \text{nums}[i] \leq 10^4$ nums contains distinct values sorted in ascending order. $-10^4 \leq \text{target} \leq 10^4$</p>
14.	<p>Write a function to find the longest common prefix string amongst an array of strings.</p> <p>If there is no common prefix, return an empty string "".</p> <p>Example 1: Input: strs = ["flower", "flow", "flight"] Output: "fl"</p> <p>Example 2: Input: strs = ["dog", "racecar", "car"] Output: "" Explanation: There is no common prefix among the input strings.</p> <p>Constraints: $1 \leq \text{strs.length} \leq 200$ $0 \leq \text{strs}[i].\text{length} \leq 200$ strs[i] consists of only lowercase English letters.</p>
15.	<p>Given an integer n, return true if it is a power of two. Otherwise, return false.</p> <p>An integer n is a power of two, if there exists an integer x such that $n == 2^x$.</p> <p>Example 1: Input: n = 1 Output: true Explanation: $2^0 = 1$</p>

	<p>Example 2: Input: n = 16 Output: true Explanation: $2^4 = 16$</p> <p>Example 3: Input: n = 3 Output: false</p> <p>Constraints: $-2^{31} \leq n \leq 2^{31} - 1$</p>
16.	<p>Given two strings s and t, return true if t is an anagram of s, and false otherwise.</p> <p>An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.</p> <p>Example 1: Input: s = "anagram", t = "nagaram" Output: true</p> <p>Example 2: Input: s = "rat", t = "car" Output: false</p> <p>Constraints: $1 \leq s.length, t.length \leq 5 * 10^4$ s and t consist of lowercase English letters.</p>
17.	<p>Given an integer array nums, return the third distinct maximum number in this array. If the third maximum does not exist, return the maximum number.</p> <p>Example 1: Input: nums = [3,2,1] Output: 1 Explanation: The first distinct maximum is 3. The second distinct maximum is 2. The third distinct maximum is 1.</p> <p>Example 2: Input: nums = [1,2] Output: 2 Explanation: The first distinct maximum is 2. The second distinct maximum is 1. The third distinct maximum does not exist, so the maximum (2) is returned</p>

	<p>instead.</p> <p>Example 3: Input: nums = [2,2,3,1] Output: 1 Explanation: The first distinct maximum is 3. The second distinct maximum is 2 (both 2's are counted together since they have the same value). The third distinct maximum is 1.</p> <p>Constraints: $1 \leq \text{nums.length} \leq 10^4$ $-2^{31} \leq \text{nums}[i] \leq 2^{31} - 1$</p>
18.	<p>Given two non-negative integers, num1 and num2 represented as string, return the sum of num1 and num2 as a string.</p> <p>You must solve the problem without using any built-in library for handling large integers (such as BigInteger). You must also not convert the inputs to integers directly.</p> <p>Example 1: Input: num1 = "11", num2 = "123" Output: "134"</p> <p>Example 2: Input: num1 = "456", num2 = "77" Output: "533"</p> <p>Example 3: Input: num1 = "0", num2 = "0" Output: "0"</p> <p>Constraints: $1 \leq \text{num1.length}, \text{num2.length} \leq 10^4$ num1 and num2 consist of only digits. num1 and num2 don't have any leading zeros except for the zero itself.</p>
19.	<p>Given a string s containing just the characters '(', ')', '{', '}', '[' and ']', determine if the input string is valid.</p> <p>An input string is valid if:</p> <ul style="list-style-type: none"> Open brackets must be closed by the same type of brackets. Open brackets must be closed in the correct order. Every close bracket has a corresponding open bracket of the same type. <p>Example 1: Input: s = "() Output: true</p>

	<p>Example 2: Input: s = "()[]{}" Output: true</p> <p>Example 3: Input: s = "[]" Output: false</p> <p>Constraints: 1 <= s.length <= 10⁴ s consists of parentheses only '()[]{}'.</p>
20.	<p>Given a string s, check if it can be constructed by taking a substring of it and appending multiple copies of the substring together.</p> <p>Example 1: Input: s = "abab" Output: true Explanation: It is the substring "ab" twice.</p> <p>Example 2: Input: s = "aba" Output: false</p> <p>Example 3: Input: s = "abcabcabcabc" Output: true Explanation: It is the substring "abc" four times or the substring "abcabc" twice.</p> <p>Constraints: 1 <= s.length <= 10⁴ s consists of lowercase English letters.</p>
21.	<p>Given a list of numbers, you have to sort them in non decreasing order.</p> <p>Input Format The first line contains a single integer N, denoting the number of integers in the list. The next N lines contain a single integer each, denoting the elements of the list.</p> <p>Output Format Output N lines, containing one integer each, in non-decreasing order.</p> <p>Constraints 1 ≤ N ≤ 10⁶ 0 ≤ elements of the list ≤ 10⁶ ≤ 10⁶</p> <p>Input :5 5 3 6 7 1 Output :1 3 5 6 7</p>
22.	<p>Recently, Ravi visited his doctor. The doctor advised Chef to drink at least 2000 ml of water each day.</p>

	<p>Ravi drank X ml of water today. Determine if Ravi followed the doctor's advice or not.</p> <p>Input Format</p> <p>The first line contains a single integer T — the number of test cases. Then the test cases follow.</p> <p>The first and only line of each test case contains one integer X — the amount of water Ravi drank today.</p> <p>Output Format</p> <p>For each test case, output YES if Ravi followed the doctor's advice of drinking at least 2000 ml of water. Otherwise, output NO.</p> <p>You may print each character of the string in uppercase or lowercase (for example, the strings YES, yEs, yes, and yeS will all be treated as identical).</p> <p>Constraints</p> <p>$1 \leq T \leq 2000$</p> <p>$1 \leq X \leq 4000$</p> <table> <tr> <td>Input :</td><td>Output:</td></tr> <tr> <td>3</td><td>YES</td></tr> <tr> <td>2999</td><td>NO</td></tr> <tr> <td>1450</td><td>YES</td></tr> <tr> <td>2000</td><td></td></tr> </table>	Input :	Output:	3	YES	2999	NO	1450	YES	2000	
Input :	Output:										
3	YES										
2999	NO										
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2000											
23.	<p>Sita and Geetha are playing with dice. In one turn, both of them roll their dice at once.</p> <p>They consider a turn to be good if the sum of the numbers on their dice is greater than 6.</p> <p>Given that in a particular turn Sita and Geetha got X and Y on their respective dice, find whether the turn was good.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case contains two space-separated integers X and Y — the numbers Sita and Geetha got on their respective dice.</p> <p>Output Format</p> <p>For each test case, output on a new line, YES, if the turn was good and NO otherwise.</p> <p>Each character of the output may be printed in either uppercase or lowercase. That is, the strings NO, no, nO, and No will be treated as equivalent.</p> <p>Constraints</p> <p>$1 \leq T \leq 100$</p> <p>$1 \leq X, Y \leq 6$</p> <table> <tr> <td>Input : 4</td><td>Output:</td></tr> <tr> <td>1 4</td><td>NO</td></tr> <tr> <td>3 4</td><td>YES</td></tr> <tr> <td>4 2</td><td>NO</td></tr> <tr> <td>2 6</td><td>YES</td></tr> </table>	Input : 4	Output:	1 4	NO	3 4	YES	4 2	NO	2 6	YES
Input : 4	Output:										
1 4	NO										
3 4	YES										
4 2	NO										
2 6	YES										

24.	<p>Harsh was recently gifted a book consisting of N pages. Each page contains exactly M words printed on it. As he was bored, he decided to count the number of words in the book.</p> <p>Help Harsh find the total number of words in the book.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of two space-separated integers on a single line, N and M — the number of pages and the number of words on each page, respectively.</p> <p>Output Format</p> <p>For each test case, output on a new line, the total number of words in the book.</p> <p>Constraints</p> <p>$1 \leq T \leq 100$ $1 \leq N \leq 100$ $1 \leq M \leq 100$</p> <table> <tr> <td>Input :</td><td>Output:</td></tr> <tr> <td>4 1</td><td>1</td></tr> <tr> <td>4 2</td><td>8</td></tr> <tr> <td>2 4</td><td>8</td></tr> <tr> <td>95 42</td><td>3990</td></tr> </table>	Input :	Output:	4 1	1	4 2	8	2 4	8	95 42	3990
Input :	Output:										
4 1	1										
4 2	8										
2 4	8										
95 42	3990										
25.	<p>Chef is fond of burgers and decided to make as many burgers as possible. Chef has A patties and B buns. To make 1 burger, Chef needs 1 patty and 1 bun.</p> <p>Find the maximum number of burgers that Chef can make.</p> <p>Input Format</p> <p>The first line of input will contain an integer T — the number of test cases. The description of T test cases follows.</p> <p>The first and only line of each test case contains two space-separated integers A and B, the number of patties and buns respectively.</p> <p>Output Format</p> <p>For each test case, output the maximum number of burgers that Chef can make.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$ $1 \leq A, B \leq 105$</p> <table> <tr> <td>Input:</td><td>Output:</td></tr> <tr> <td>2 2</td><td>2</td></tr> <tr> <td>2 3</td><td>2</td></tr> <tr> <td>3 2</td><td>2</td></tr> <tr> <td>23 17</td><td>17</td></tr> </table>	Input:	Output:	2 2	2	2 3	2	3 2	2	23 17	17
Input:	Output:										
2 2	2										
2 3	2										
3 2	2										
23 17	17										
26.	<p>Sunil aims to be the richest person in Iceland by his new restaurant franchise. Currently, his assets are worth A billion dollars and have no</p>										

	<p>liabilities. He aims to increase his assets by X billion dollars per year. Also, all the richest people in Iceland are not planning to grow and maintain their current worth.</p> <p>To be the richest person in Iceland, he needs to be worth at least B billion dollars. How many years will it take Sunil to reach his goal if his value increases by X billion dollars each year?</p> <p>Input The first line contains an integer T, the number of test cases. Then the test cases follow. Each test case contains a single line of input, three integers A, B, X.</p> <p>Output For each test case, output in a single line the answer to the problem.</p> <p>Constraints $1 \leq T \leq 21\,000$ $100 \leq A < B \leq 200$ $1 \leq X \leq 50$ X divides B-A</p> <table> <tr> <td>Input : 3</td><td>Output:</td></tr> <tr> <td>100 200 10</td><td>10</td></tr> <tr> <td>111 199 11</td><td>8</td></tr> <tr> <td>190 200 10</td><td>1</td></tr> </table>	Input : 3	Output:	100 200 10	10	111 199 11	8	190 200 10	1		
Input : 3	Output:										
100 200 10	10										
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190 200 10	1										
27.	<p>Chef will have N guests in his house today. He wants to serve at least one dish to each of the N guests. Chef can make two types of dishes. He needs one fruit and one vegetable to make the first type of dish and one vegetable and one fish to make the second type of dish. Now Chef has A fruits, B vegetables, and C fishes in his house. Can he prepare at least N dishes in total?</p> <p>Input Format First line will contain T, number of testcases. Then the testcases follow. Each testcase contains of a single line of input, four integers N,A,B,C.</p> <p>Output Format For each test case, print "YES" if Chef can prepare at least N dishes, otherwise print "NO". Print the output without quotes.</p> <p>Constraints $1 \leq T \leq 100$ $1 \leq N, A, B, C \leq 100$</p> <table> <tr> <td>Input : 4</td><td>Output:</td></tr> <tr> <td>2 1 2 1</td><td>YES</td></tr> <tr> <td>3 2 2 2</td><td>NO</td></tr> <tr> <td>4 2 6 3</td><td>YES</td></tr> <tr> <td>3 1 3 1</td><td>NO</td></tr> </table>	Input : 4	Output:	2 1 2 1	YES	3 2 2 2	NO	4 2 6 3	YES	3 1 3 1	NO
Input : 4	Output:										
2 1 2 1	YES										
3 2 2 2	NO										
4 2 6 3	YES										
3 1 3 1	NO										
28.	You are given two integers N and K. You may perform the following										

	<p>operation any number of times (including zero): change N to $N-K$, i.e. subtract K from N. Find the smallest non-negative integer value of N you can obtain this way.</p> <p>Input</p> <p>The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.</p> <p>The first and only line of each test case contains two space-separated integers N and K.</p> <p>Output</p> <p>For each test case, print a single line containing one integer — the smallest value you can get.</p> <p>Constraints</p> <p>$1 \leq T \leq 10^5$ $1 \leq N \leq 10^9$ $0 \leq K \leq 10^9$</p> <table> <tr> <td>Input :</td><td>Output:</td></tr> <tr> <td>3</td><td></td></tr> <tr> <td>5 2</td><td>1</td></tr> <tr> <td>4 4</td><td>0</td></tr> <tr> <td>2 5</td><td>2</td></tr> </table>	Input :	Output:	3		5 2	1	4 4	0	2 5	2
Input :	Output:										
3											
5 2	1										
4 4	0										
2 5	2										
29.	<p>Alice and Bob are playing a game of Blobby Volley. In this game, in each turn, one player is the server and the other player is the receiver. Initially, Alice is the server, and Bob is the receiver.</p> <p>If the server wins the point in this turn, their score increases by 1, and they remain as the server for the next turn.</p> <p>But if the receiver wins the point in this turn, their score does not increase. But they become the server in the next turn.</p> <p>In other words, your score increases only when you win a point when you are the server.</p> <p>Please see the Sample Inputs and Explanation for more detailed explanation.</p> <p>They start with a score of 00 each, and play N turns. The winner of each of those hands is given to you as a string consisting of 'A's and 'B's. 'A' denoting that Alice won that point, and 'B' denoting that Bob won that point. Your job is the find the score of both of them after the N turns.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of two lines of input.</p> <p>The first line of each test case contains one integer N — the number of turns.</p> <p>The line contains a string S of length N.</p> <p>If the ith character of this string is 'A', then Alice won that point.</p>										

	<p>If the ith character of this string is 'B', then Bob won that point.</p> <p>Output Format</p> <p>For each test case, output on a new line, two space-separated integers - Alice's final score, and Bob's final score.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$1 \leq N \leq 1000$</p> <p>Length of $S = N$</p> <p>S consists only of the characters 'A' and 'B'.</p> <table> <tr> <td>Input: 4</td><td>Output:</td></tr> <tr> <td>3</td><td>3 0</td></tr> <tr> <td>AAA</td><td>0 3</td></tr> <tr> <td>4</td><td>1 1</td></tr> <tr> <td>BBBB</td><td>0 0</td></tr> <tr> <td>5</td><td></td></tr> <tr> <td>ABABB</td><td></td></tr> <tr> <td>5</td><td></td></tr> <tr> <td>BABAB</td><td></td></tr> </table>	Input: 4	Output:	3	3 0	AAA	0 3	4	1 1	BBBB	0 0	5		ABABB		5		BABAB	
Input: 4	Output:																		
3	3 0																		
AAA	0 3																		
4	1 1																		
BBBB	0 0																		
5																			
ABABB																			
5																			
BABAB																			
30.	<p>John has a string S with him. John is happy if the string contains a contiguous substring of length strictly greater than 22 in which all its characters are vowels.</p> <p>Determine whether John is happy or not.</p> <p>Note that, in english alphabet, vowels are a, e, i, o, and u.</p> <p>Input Format</p> <p>First line will contain T, number of test cases. Then the test cases follow.</p> <p>Each test case contains of a single line of input, a string S.</p> <p>Output Format</p> <p>For each test case, if John is happy, print HAPPY else print SAD.</p> <p>You may print each character of the string in uppercase or lowercase (for example, the strings hAppY, Happy, haPpY, and HAPPY will all be treated as identical).</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$3 \leq S \leq 1000$, where S is the length of S.</p> <p>S will only contain lowercase English letters.</p> <table> <tr> <td>Input: 4</td><td>Output:</td></tr> <tr> <td>Aeiou</td><td>Happy</td></tr> <tr> <td>Abxy</td><td>Sad</td></tr> <tr> <td>Aebcdefghij</td><td>Sad</td></tr> <tr> <td>Abcdeefg</td><td>Happy</td></tr> </table>	Input: 4	Output:	Aeiou	Happy	Abxy	Sad	Aebcdefghij	Sad	Abcdeefg	Happy								
Input: 4	Output:																		
Aeiou	Happy																		
Abxy	Sad																		
Aebcdefghij	Sad																		
Abcdeefg	Happy																		
31.	<p>You are given a positive integer . Print a numerical triangle of height like the one below:</p> <pre> 1 22 </pre>																		

	<p>333 4444 55555</p> <p>Can you do it using only arithmetic operations, a single for loop and print statement?</p> <p>Use no more than two lines. The first line (the for statement) is already written for you. You have to complete the print statement.</p> <p>Note: Using anything related to strings will give a score of .</p> <p>Input Format A single line containing integer, .</p> <p>Constraints $1 \leq N \leq 9$</p> <p>Output Format Print lines as explained above.</p> <p>Sample Input 5</p> <p>Sample Output 1 22 333 4444</p>
32.	<p>You are given a positive integer .</p> <p>Your task is to print a palindromic triangle of size .</p> <p>For example, a palindromic triangle of size is:</p> <p>1 121 12321 1234321 123454321</p> <p>You can't take more than two lines. The first line (a for-statement) is already written for you.</p> <p>You have to complete the code using exactly one print statement.</p> <p>Note: Using anything related to strings will give a score of .</p> <p>Using more than one for-statement will give a score of .</p> <p>Input Format A single line of input containing the integer .</p> <p>Constraints $0 < N < 10$</p> <p>Output Format Print the palindromic triangle of size as explained above.</p> <p>Sample Input 5</p> <p>Sample Output</p>

	1 121 12321 1234321 123454321
33.	<p>The provided code stub will read in a dictionary containing key/value pairs of name:[marks] for a list of students. Print the average of the marks array for the student name provided, showing 2 places after the decimal.</p> <p>Input Format</p> <p>The first line contains the integer , N the number of students' records. The next lines contain the names and marks obtained by a student, each value separated by a space. The final line contains query_name, the name of a student to query.</p> <p>Constraints</p> <p>2<=n<=10 0<=marks[i]<=100 Length of marks arrays=3</p> <p>Output Format</p> <p>Print one line: The average of the marks obtained by the particular student correct to 2 decimal places.</p> <p>Sample Input 0</p> <pre>3 Krishna 67 68 69 Arjun 70 98 63 Malika 52 56 60 Malika</pre> <p>Sample Output 0</p> <pre>56.00</pre> <p>Sample Input 1</p> <pre>2 Harsh 25 26.5 28 Anurag 26 28 30 Harsh</pre> <p>Sample Output 1</p> <pre>26.50</pre>
34.	<p>There is an array of integers. There are also 2 disjoint sets, A and , B each containing integers. You like all the integers in set A and dislike all the integers in set B . Your initial happiness is 0. For each integer in the array, if i belongs to A, you add i to your happiness. If i belongs to B you add -1 to your happiness. Otherwise, your happiness does not change. Output your final happiness at the end.</p> <p>Note: Since A and B are sets, they have no repeated elements. However, the array might contain duplicate elements.</p>

	<p>Constraints $1 \leq n \leq 10^5$ $1 \leq m \leq 10^5$ $1 \leq \text{Any integer in the input} \leq 10^9$</p> <p>Input Format The first line contains integers n and m separated by a space. The second line contains n integers, the elements of the array. The third and fourth lines contain m integers, A and B, respectively.</p> <p>Output Format Output a single integer, your total happiness.</p> <p>Sample Input 3 2 1 5 3 3 1 5 7</p> <p>Sample Output 1</p>
35.	<p>You are given a string and your task is to swap cases. In other words, convert all lowercase letters to uppercase letters and vice versa.</p> <p>Function Description Complete the <code>swap_case</code> function in the editor below. <code>swap_case</code> has the following parameters: string s: the string to modify</p> <p>Returns string: the modified string</p> <p>Input Format A single line containing a string s.</p> <p>Constraints $0 < \text{len}(s) \leq 1000$</p> <p>Sample Input 0 NriiT PresEnts CodinG ClaSses</p> <p>Sample Output 0 nRIIt pRESeNTS cODINg cLASSES</p>
36.	<p>Consider the following: A string, s, of length n where $s = C_0C_1 \dots C_{n-1}$. An integer, k, where k is a factor of n. We can split s into n/k substrings where each substring, t_i, consists of a contiguous block of characters in s. Then, use each t_i to create string u_i such that: The characters in u_i are a subsequence of the characters in t_i. Any repeat occurrence of a character is removed from the string such that each character in u_i occurs exactly once. In other words, if the character at some index j in t_i occurs at a previous index $< j$ in t_i, then do not include the character in string u_i. Given s and k, print n/k lines where each line denotes string u_i.</p> <p>Example</p>

	<p><code>s='AAABCADDE'</code> <code>K=3</code></p> <p>There are three substrings of length 3 to consider: 'AAA', 'BCA' and 'DDE'. The first substring is all 'A' characters, so <code>u1='A'</code>. The second substring has all distinct characters, so <code>u2='BCA'</code>. The third substring has different characters, so <code>u3='DE'</code>. Note that a subsequence maintains the original order of characters encountered. The order of characters in each subsequence shown is important.</p> <p>Function Description Complete the <code>merge_the_tools</code> function in the editor below. <code>merge_the_tools</code> has the following parameters: string <code>s</code>: the string to analyze int <code>k</code>: the size of substrings to analyze</p> <p>Prints Print each subsequence on a new line. There will be n/k of them. No return value is expected.</p> <p>Input Format The first line contains a single string, <code>s</code>. The second line contains an integer, <code>k</code>, the length of each substring.</p> <p>Constraints $1 \leq n \leq 10^4$, where <code>n</code> is the length of <code>s</code> $1 \leq k \leq n$ It is guaranteed that <code>n</code> is a multiple of <code>k</code>.</p> <p>Sample Input STDIN Function ----- AABCAAADA <code>s = 'AABCAAADA'</code> 3 <code>k = 3</code></p> <p>Sample Output AB CA AD</p>
37.	<p>You are given a string <code>S</code> and width <code>w</code>. Your task is to wrap the string into a paragraph of width <code>w</code>.</p> <p>Input Format The first line contains a string, <code>S</code>. The second line contains the width, <code>w</code>.</p> <p>Constraints $0 < \text{len}(S) < 1000$ $0 < w < \text{len}(S)$</p> <p>Output Format Print the text wrapped paragraph.</p> <p>Sample Input 0 ABCDEFGHIJKLMNOQRSTUVWXYZ</p>

	<p>4</p> <p>Sample Output 0</p> <p>ABCD EFGH IJKL IMNO QRST UVWX YZ</p>
38.	<p>You are given a complex z. Your task is to convert it to polar coordinates.</p> <p>Input Format</p> <p>A single line containing the complex number z. Note: complex() function can be used in python to convert the input as a complex number.</p> <p>Constraints</p> <p>Given number is a valid complex number.</p> <p>Output Format</p> <p>Output two lines: The first line should contain the value of r. The second line should contain the value of q.</p> <p>Sample Input</p> <p>1+2j</p> <p>Sample Output</p> <p>2.23606797749979 1.1071487177940904</p>
39.	<p>Mr. Vincent works in a door mat manufacturing company. One day, he designed a new door mat with the following specifications: Mat size must be N X M. (N is an odd natural number, and M is 3 times N.) The design should have 'WELCOME' written in the center. The design pattern should only use , . and – characters.</p> <p>Sample Designs</p> <p>Size: 7 x 21</p> <pre> ----- .----- -----.----- ---.--- -----WELCOME----- ---.--- -----.----- ----- .----- </pre> <p>Size: 11 x 33</p> <pre> ----- .----- -----.----- -----.----- -----.----- </pre>

	<p>Output the space separated tuples of the cartesian product.</p> <p>Sample Input</p> <pre>1 2 3 4</pre> <p>Sample Output</p> <pre>(1, 3) (1, 4) (2, 3) (2, 4)</pre>
41.	<p>Raghu is a shoe shop owner. His shop has X number of shoes. He has a list containing the size of each shoe he has in his shop. There are N number of customers who are willing to pay xi amount of money only if they get the shoe of their desired size. Your task is to compute how much money Raghu earned.</p> <p>Input Format</p> <p>The first line contains X, the number of shoes. The second line contains the space separated list of all the shoe sizes in the shop. The third line contains N, the number of customers. The next N lines contain the space separated values of the shoe size desired by the customer and xi, the price of the shoe.</p> <p>Constraints</p> <pre>0 < X < 10^3 0 < N <= 10^3 20 < xi < 100 2 < shoe size < 20</pre> <p>Output Format</p> <p>Print the amount of money earned by Raghu.</p> <p>Sample Input</p> <pre>10 2 3 4 5 6 8 7 6 5 18 6 6 55 6 45 6 55 4 40 18 60 10 50</pre> <p>Sample Output</p> <pre>200</pre>
42.	<p>There is a horizontal row of n cubes. The length of each cube is given. You need to create a new vertical pile of cubes. The new pile should follow these directions: if cube[i] is on top of cube[j] then sideLength[j] => sideLength[i].</p> <p>When stacking the cubes, you can only pick up either the leftmost or the rightmost cube each time. Print Yes if it is possible to stack the cubes. Otherwise, print No.</p>

	<p>Example blocks = [1, 2, 3, 8, 7] Result: No</p> <p>After choosing the rightmost element, 7, choose the leftmost element, 1. After than, the choices are 2 and 8. These are both larger than the top block of size 1. blocks = [1, 2, 3, 7, 8] Result: Yes</p> <p>Choose blocks from right to left in order to successfully stack the blocks.</p> <p>Input Format The first line contains a single integer T, the number of test cases. For each test case, there are 2 lines. The first line of each test case contains n, the number of cubes. The second line contains n space separated integers, denoting the sideLengths of each cube in that order.</p> <p>Constraints $1 \leq T \leq 5$ $1 \leq n \leq 10^5$ $1 \leq \text{sideLength} < 2^{31}$</p> <p>Output Format For each test case, output a single line containing either Yes or No.</p> <p>Sample Input</p> <table> <tr> <th>STDIN</th><th>Function</th></tr> <tr> <td>-----</td><td>-----</td></tr> <tr> <td>2</td><td>T = 2</td></tr> <tr> <td>6</td><td>blocks[] size n = 6</td></tr> <tr> <td>4 3 2 1 3 4</td><td>blocks = [4, 3, 2, 1, 3, 4]</td></tr> <tr> <td>3</td><td>blocks[] size n = 3</td></tr> <tr> <td>1 3 2</td><td>blocks = [1, 3, 2]</td></tr> </table> <p>Sample Output Yes No</p>	STDIN	Function	-----	-----	2	T = 2	6	blocks[] size n = 6	4 3 2 1 3 4	blocks = [4, 3, 2, 1, 3, 4]	3	blocks[] size n = 3	1 3 2	blocks = [1, 3, 2]
STDIN	Function														
-----	-----														
2	T = 2														
6	blocks[] size n = 6														
4 3 2 1 3 4	blocks = [4, 3, 2, 1, 3, 4]														
3	blocks[] size n = 3														
1 3 2	blocks = [1, 3, 2]														
43.	<p>You are given a function $f(X) = X^2$. You are also given K lists. The ith list consists of N_i elements.</p> <p>You have to pick one element from each list so that the value from the equation below is maximized: $S = (f(X_1) + f(X_2) + \dots + f(X_k)) \% M$</p> <p>$X_i$ denotes the element picked from the ith list . Find the maximized value S_{max} obtained. % denotes the modulo operator.</p>														

	<p>Note that you need to take exactly one element from each list, not necessarily the largest element. You add the squares of the chosen elements and perform the modulo operation. The maximum value that you can obtain, will be the answer to the problem.</p> <p>Input Format The first line contains 2 space separated integers K and M. The next K lines each contains an integer N_i, denoting the number of elements in the ith list, followed by N_i space separated integers denoting the elements in the list.</p> <p>Constraints $1 \leq K \leq 7$ $1 \leq M \leq 1000$ $1 \leq N_i \leq 7$ Magnitude of elements in list ≤ 109</p> <p>Output Format Output a single integer denoting the value S_{max}.</p> <p>Sample Input 3 1000 2 5 4 3 7 8 9 5 5 7 8 9 10</p> <p>Sample Output 206</p>
44.	<p>Mr. Anant Asankhya is the manager at the INFINITE hotel. The hotel has an infinite amount of rooms.</p> <p>One fine day, a finite number of tourists come to stay at the hotel. The tourists consist of: → A Captain. → An unknown group of families consisting of K members per group where $K \neq 1$.</p> <p>The Captain was given a separate room, and the rest were given one room per group.</p> <p>Mr. Anant has an unordered list of randomly arranged room entries. The list consists of the room numbers for all of the tourists. The room numbers will appear K times per group except for the Captain's room.</p> <p>Mr. Anant needs you to help him find the Captain's room number. The total number of tourists or the total number of groups of families is not</p>

	<p>known to you.</p> <p>You only know the value of K and the room number list.</p> <p>Input Format The first line consists of an integer, K, the size of each group. The second line contains the unordered elements of the room number list.</p> <p>Constraints $1 < K < 1000$</p> <p>Output Format Output the Captain's room number.</p> <p>Sample Input 5 1 2 3 6 5 4 4 2 5 3 6 1 6 5 3 2 4 1 2 5 1 4 3 6 8 4 3 1 5 6 2</p> <p>Sample Output 8</p>
45.	<p>You are given a set A and n other sets. Your job is to find whether set A is a strict superset of each of the N sets. Print True, if A is a strict superset of each of the N sets. Otherwise, print False.</p> <p>A strict superset has at least one element that does not exist in its subset.</p> <p>Example Set ([1, 3, 4]) is a strict superset of set ([1, 3]). Set ([1, 3, 4]) is not a strict superset of set ([1, 3, 4]). Set ([1, 3, 4]) is not a strict superset of set ([1, 3, 5]).</p> <p>Input Format The first line contains the space separated elements of set A. The second line contains integer n, the number of other sets. The next n lines contains the space separated elements of the other sets.</p> <p>Constraints $0 < \text{len}(\text{set}(A)) < 50^1$ $0 < N < 2^1$ $0 < \text{len}(\text{otherSets}) < 10^1$</p> <p>Output Format Print True if set A is a strict superset of all other N sets. Otherwise, print False.</p>

	<p>Sample Input 0</p> <pre>1 2 3 4 5 6 7 8 9 10 11 12 23 45 84 78 2 1 2 3 4 5 100 11 12</pre> <p>Sample Output 0</p> <pre>False</pre>
46.	<p>You are given a spreadsheet that contains a list of N athletes and their details (such as age, height, weight and so on). You are required to sort the data based on the Kth attribute and print the final resulting table. Follow the example given below for better understanding.</p> <p>Note that K is indexed from 0 to M – 1, where M is the number of attributes.</p> <p>Note: If two attributes are the same for different rows, for example, if two athletes are of the same age, print the row that appeared first in the input.</p> <p>Input Format</p> <p>The first line contains N and M separated by a space.</p> <p>The next N lines each contain M elements.</p> <p>The last line contains K.</p> <p>Constraints</p> <pre>1 <= N, M <= 1000 0 <= K < M Each element <= 1000</pre> <p>Output Format</p> <p>Print the N lines of the sorted table. Each line should contain the space separated elements. Check the sample below for clarity.</p> <p>Sample Input 0</p> <pre>5 3 10 2 5 7 1 0 9 9 9 1 23 12 6 5 9 1</pre> <p>Sample Output 0</p> <pre>7 1 0 10 2 5 6 5 9 9 9 9 1 23 12</pre>

47.	<p>You are given a string N. Your task is to verify that N is a floating point number. In this task, a valid float number must satisfy all of the following requirements: ->Number can start with +, - or . symbol.</p> <p>For example: ✓+4.50 ✓-1.0 ✓.5 ✓-.7 ✓+.4 ✗ -+4.5 ->Number must contain at least 1 decimal value.</p> <p>For example: ✗ 12. ✓12.0 ->Number must have exactly one . symbol. ->Number must not give any exceptions when converted using float(N).</p> <p>Input Format The first line contains an integer T, the number of test cases. The next T line(s) contains a string N.</p> <p>Constraints $0 < T < 10$</p> <p>Output Format Output True or False for each test case.</p> <p>Sample Input 0 4 4.000 -1.00 +4.54 SomeRandomStuff</p> <p>Sample Output 0 False True True False</p>
48.	<p>The National University conducts an examination of N students in X subjects. Your task is to compute the average scores of each student. Average Score = Sum of Scores obtained in all subjects by a student / Total</p>

	<p>number of students</p> <p>The format for the general mark sheet is:</p> <p>Student ID → <u> 1 </u><u> 2 </u><u> 3 </u><u> 4 </u><u> 5 </u></p> <p>Subject 1 89 90 78 93 80</p> <p>Subject 2 90 91 85 88 86</p> <p>Subject 3 91 92 83 89 90.5</p> <p> _____</p> <p>Average 90 91 82 90 85.5</p> <p>Input Format</p> <p>The first line contains N and X separated by a space.</p> <p>The next X lines contains the space separated marks obtained by students in a particular subject.</p> <p>Output Format</p> <p>Print the averages of all students on separate lines.</p> <p>The averages must be correct up to 1 decimal place.</p> <p>Sample Input</p> <p>5 3</p> <p>89 90 78 93 80</p> <p>90 91 85 88 86</p> <p>91 92 83 89 90.5</p> <p>Sample Output</p> <p>90.0</p> <p>91.0</p> <p>82.0</p> <p>90.0</p> <p>85.5</p>
49.	<p>You are given a string S.</p> <p>S contains alphanumeric characters only.</p> <p>Your task is to sort the string in the following manner:</p> <p>All sorted lowercase letters are ahead of uppercase letters.</p> <p>All sorted uppercase letters are ahead of digits.</p> <p>All sorted odd digits are ahead of sorted even digits.</p> <p>Input Format</p> <p>A single line of input contains the string S.</p> <p>Constraints</p> <p>0 < len(S) < 1000</p> <p>Output Format</p> <p>Output the sorted string S.</p>

	<p>Sample Input Sorting1234</p> <p>Sample Output ginortS1324</p>
50.	<p>Rupal has a huge collection of country stamps. She decided to count the total number of distinct country stamps in her collection. She asked for your help. You pick the stamps one by one from a stack of N country stamps. Find the total number of distinct country stamps.</p> <p>Input Format The first line contains an integer N, the total number of country stamps. The next N lines contains the name of the country where the stamp is from.</p> <p>Constraints $0 < N < 1000$</p> <p>Output Format Output the total number of distinct country stamps on a single line.</p> <p>Sample Input 7 UK China USA France New Zealand UK France</p> <p>Sample Output 5</p>
51.	<p>A newly opened multinational brand has decided to base their company logo on the three most common characters in the company name. They are now trying out various combinations of company names and logos based on this condition. Given a string s , which is the company name in lowercase letters, your task is to find the top three most common characters in the string. Print the three most common characters along with their occurrence count. Sort in descending order of occurrence count. If the occurrence count is the same, sort the characters in alphabetical order.</p> <p>For example, according to the conditions described above, GOOGLE would have it's logo with the letters G,O,E .</p> <p>Input Format A single line of input containing the string S.</p> <p>Constraints ->$3 < \text{len}(S) \leq 10^4$ ->S has at least distinct characters</p>

	<p>Output Format Print the three most common characters along with their occurrence count each on a separate line. Sort output in descending order of occurrence count. If the occurrence count is the same, sort the characters in alphabetical order.</p> <p>Sample Input 0 Aabbbccde</p> <p>Sample Output 0 b 3 a 2 c 2</p>
52.	<p>You are given a string S. Suppose a character 'c' occurs consecutively X times in the string. Replace these consecutive occurrences of the character 'c' with (X,c) in the string. For a better understanding of the problem, check the explanation.</p> <p>Input Format A single line of input consisting of the string S.</p> <p>Output Format A single line of output consisting of the modified string.</p> <p>Constraints All the characters of S denote integers between 0 and 9. $1 \leq S \leq 10^4$</p> <p>Sample Input 1222311</p> <p>Sample Output (1, 1) (3, 2) (1, 3) (2, 1)</p> <p>Explanation First, the character 1 occurs only once. It is replaced by (1,1). Then the character 2 occurs three times, and it is replaced by (3,2) and so on.</p>
53.	<p>You and Fredrick are good friends. Yesterday, Fredrick received N credit cards from ABCD Bank. He wants to verify whether his credit card numbers are valid or not. You happen to be great at regex so he is asking for your help!</p> <p>A valid credit card from ABCD Bank has the following characteristics:</p> <ul style="list-style-type: none"> ▶ It must start with a 4,5 or 6 . ▶ It must contain exactly 16 digits. ▶ It must only consist of digits (0-9). ▶ It may have digits in groups of 4, separated by one hyphen "-". ▶ It must NOT use any other separator like ' ', '_', etc. ▶ It must NOT have 4 or more consecutive repeated digits.

	<p>Examples:</p> <p>Valid Credit Card Numbers 4253625879615786 4424424424442444 5122-2368-7954-3214</p> <p>Invalid Credit Card Numbers 42536258796157867 #17 digits in card number → Invalid 4424444424442444 #Consecutive digits are repeating 4 or more times → Invalid 5122-2368-7954 - 3214 #Separators other than '-' are used → Invalid 44244x4424442444 #Contains non digit characters → Invalid 0525362587961578 #Doesn't start with 4, 5 or 6 → Invalid</p> <p>Input Format The first line of input contains an integer . The next lines contain credit card numbers.</p> <p>Constraints $0 < N < 100$</p> <p>Output Format Print 'Valid' if the credit card number is valid. Otherwise, print 'Invalid'. Do not print the quotes.</p> <p>Sample Input 6 4123456789123456 5123-4567-8912-3456 61234-567-8912-3456 4123356789123456 5133-3367-8912-3456 5123 - 3567 - 8912 - 3456</p> <p>Sample Output Valid Valid Invalid Valid Invalid Invalid</p>
54.	<p>You are the manager of a supermarket. You have a list of items together with their prices that consumers bought on a particular day. Your task is to print each item_name and net_price in order of its first occurrence.</p>

	<p>item_name = Name of the item. net_price = Quantity of the item sold multiplied by the price of each item.</p> <p>Input Format The first line contains the number of items, . The next lines contains the item's name and price, separated by a space.</p> <p>Constraints $0 < N \leq 100$</p> <p>Output Format Print the item_name and net_price in order of its first occurrence.</p> <p>Sample Input 9 BANANA FRIES 12 POTATO CHIPS 30 APPLE JUICE 10 CANDY 5 APPLE JUICE 10 CANDY 5 CANDY 5 CANDY 5 POTATO CHIPS 30</p> <p>Sample Output BANANA FRIES 12 POTATO CHIPS 60 APPLE JUICE 20 CANDY 20</p>
55.	<p>you are given two complex numbers, and you have to print the result of their addition, subtraction, multiplication, division and modulus operations. The real and imaginary precision part should be correct up to two decimal places.</p> <p>Input Format One line of input: The real and imaginary part of a number separated by a space.</p> <p>Output Format For two complex numbers C and D, the output should be in the following sequence on separate lines: -> C+D ->C-D ->C*D ->C/D ->mod(C) ->mod(D)</p>

	<p>For complex numbers with non-zero real (A) and (B) complex part, the output should be in the following format: A+Bi</p> <p>Replace the plus symbol (+) with a minus symbol (-) when B<0.</p> <p>For complex numbers with a zero complex part i.e. real numbers, the output should be: A+0.00i</p> <p>For complex numbers where the real part is zero and the complex part is non-zero, the output should be: 0.00+Bi</p> <p>Sample Input 2 1 5 6</p> <p>Sample Output 7.00+7.00i -3.00-5.00i 4.00+17.00i 0.26-0.11i 2.24+0.00i 7.81+0.00i</p>
56.	<p>You are given a string, and you have to validate whether it's a valid Roman numeral. If it is valid, print True. Otherwise, print False. Try to create a regular expression for a valid Roman numeral.</p> <p>Input Format A single line of input containing a string of Roman characters.</p> <p>Output Format Output a single line containing True or False according to the instructions above.</p> <p>Constraints The number will be between 1 and 3999 (both included).</p> <p>Sample Input CDXXI</p> <p>Sample Output True</p>
57.	<p>You are given some input, and you are required to check whether they are valid mobile numbers.</p> <p>A valid mobile number is a ten digit number starting with a 7,8 or 9.</p> <p>Input Format The first line contains an integer N , the number of inputs. N lines follow, each containing some string.</p> <p>Constraints 1<= N <=10 2<=len(Number)<=15</p> <p>Output Format</p>

	<p>For every string listed, print "YES" if it is a valid mobile number and "NO" if it is not on separate lines. Do not print the quotes.</p> <p>Sample Input</p> <p>2</p> <p>9587456281</p> <p>1252478965</p> <p>Sample Output</p> <p>YES</p> <p>NO</p>
58.	<p>You are given two sets, A and B.</p> <p>Your job is to find whether set A is a subset of set B .</p> <p>If set A is subset of set B , print True.</p> <p>If set A is not a subset of set B , print False.</p> <p>Input Format</p> <p>The first line will contain the number of test cases, T .</p> <p>The first line of each test case contains the number of elements in set A.</p> <p>The second line of each test case contains the space separated elements of set A.</p> <p>The third line of each test case contains the number of elements in set B.</p> <p>The fourth line of each test case contains the space separated elements of set B.</p> <p>Constraints</p> <p>$0 < T < 21$</p> <p>$0 < \text{Number of elements in each set} < 1001$</p> <p>Output Format</p> <p>Output True or False for each test case on separate lines.</p> <p>Sample Input</p> <p>3</p> <p>5</p> <p>1 2 3 5 6</p> <p>9</p> <p>9 8 5 6 3 2 1 4 7</p> <p>1</p> <p>2</p> <p>5</p> <p>3 6 5 4 1</p> <p>7</p> <p>1 2 3 5 6 8 9</p> <p>3</p> <p>9 8 2</p> <p>Sample Output</p> <p>True</p> <p>False</p>

	False
59.	<p>You are given a list of N lowercase English letters. For a given integer K, you can select any K indices (assume 1-based indexing) with a uniform probability from the list.</p> <p>Find the probability that at least one of the K indices selected will contain the letter: 'a'.</p> <p>Input Format</p> <p>The input consists of three lines. The first line contains the integer N , denoting the length of the list. The next line consists of N space-separated lowercase English letters, denoting the elements of the list.</p> <p>The third and the last line of input contains the integer K, denoting the number of indices to be selected.</p> <p>Output Format</p> <p>Output a single line consisting of the probability that at least one of the K indices selected contains the letter:'a'.</p> <p>Note: The answer must be correct up to 3 decimal places.</p> <p>Constraints</p> <p>$1 \leq N \leq 10$</p> <p>$1 \leq K \leq N$</p> <p>All the letters in the list are lowercase English letters.</p> <p>Sample Input</p> <pre>4 a a c d 2</pre> <p>Sample Output</p> <pre>0.8333</pre>
60.	<p>ABCXYZ company has up to 100 employees.</p> <p>The company decides to create a unique identification number (UID) for each of its employees.</p> <p>The company has assigned you the task of validating all the randomly generated UIDs.</p> <p>A valid UID must follow the rules below:</p> <ul style="list-style-type: none"> It must contain at least 2 uppercase English alphabet characters. It must contain at least 3 digits (0 - 9). It should only contain alphanumeric characters (a-z ,A -Z & 0 -9). No character should repeat. There must be exactly 10 characters in a valid UID. <p>Input Format</p> <p>The first line contains an integer , the number of test cases.</p> <p>The next lines contains an employee's UID.</p> <p>Output Format</p> <p>For each test case, print 'Valid' if the UID is valid. Otherwise, print 'Invalid', on separate lines. Do not print the quotation marks.</p>

	<p>Sample Input</p> <p>2 B1CD102354 B1CDEF2354</p> <p>Sample Output</p> <p>Invalid Valid</p>
61.	<p>Ravi belongs to a very rich family which owns many gold mines. Today, he brought N gold coins and decided to form a triangle using these coins. Isn't it strange?</p> <p>Ravi has a unusual way of forming a triangle using gold coins, which is described as follows:</p> <p>He puts 1 coin in the 1st row. then puts 2 coins in the 2nd row. then puts 3 coins in the 3rd row. and so on as shown in the given figure.</p> <div data-bbox="373 887 1056 1285" data-label="Diagram"> </div> <p>A Traingle with height = 3 requires 6 coins</p> <p>Ravi is interested in forming a triangle with maximum possible height using at most N coins. Can you tell him the maximum possible height of the triangle?</p> <p>Input</p> <p>The first line of input contains a single integer T denoting the number of test cases.</p> <p>The first and the only line of each test case contains an integer N denoting the number of gold coins Chef has.</p> <p>Output</p> <p>For each test case, output a single line containing an integer corresponding to the maximum possible height of the triangle that Chef can get.</p> <p>Constraints</p> <p>$1 \leq T \leq 100$ $1 \leq N \leq 10^9$</p> <div> <p>Sample Input :</p> <p>3 3 5</p> </div> <div> <p>Sample Output:</p> <p>2 2 3</p> </div>

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62.	<p>You have a binary string S of length N. In one operation you can select a substring of S and reverse it. For example, on reversing the substring $S[2,4]$ for $S=11000$, we change $11000 \rightarrow 10010$. Find the minimum number of operations required to sort this binary string. It can be proven that the string can always be sorted using the above operation finite number of times.</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases. Each test case consists of 22 lines of input. The first line of each test case contains a single integer N — the length of the binary string. The second line of each test case contains a binary string S of length N.</p> <p>Output Format For each test case, output on a new line — the minimum number of operations required to sort the binary string.</p> <p>Constraints $1 \leq T \leq 2 \cdot 10^5$ $1 \leq N \leq 2 \cdot 10^5$ Sum of N over all test cases does not exceed 106106. String S consists of only '00's and '11's.</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>0</td></tr> <tr> <td>3</td><td>1</td></tr> <tr> <td>000</td><td>2</td></tr> <tr> <td>4</td><td>2</td></tr> <tr> <td>1001</td><td></td></tr> <tr> <td>4</td><td></td></tr> <tr> <td>1010</td><td></td></tr> <tr> <td>6</td><td></td></tr> <tr> <td>010101</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	0	3	1	000	2	4	2	1001		4		1010		6		010101	
Sample Input:	Sample Output:																				
4	0																				
3	1																				
000	2																				
4	2																				
1001																					
4																					
1010																					
6																					
010101																					
63.	<p>A binary string is called alternating if no two adjacent characters of the string are equal. Formally, a binary string T of length M is called alternating if $T_i \neq T_{i+1}$ for each $1 \leq i < M$. For example, 0, 1, 01, 10, 101, 010, 1010 are alternating strings while 11, 001, 1110 are not.</p> <p>You are given a binary string S of length N. You would like to rearrange the characters of S such that the length of the longest alternating substring of S is maximum. Find this maximum value.</p> <p>A binary string is a string that consists of characters 0 and 1. A string a is a substring of a string b if a can be obtained from b by deletion of several (possibly, zero or all) characters from the beginning and several (possibly, zero or all) characters from the end.</p> <p>Input Format</p>																				

	<p>The first line of input contains an integer T, denoting the number of test cases. The T test cases then follow: The first line of each test case contains an integer N. The second line of each test case contains the binary string S.</p> <p>Output Format For each test case, output the maximum possible length of the longest alternating substring of S after rearrangement.</p> <p>Constraints $1 \leq T \leq 10^4$ $1 \leq N \leq 10^5$ S contains only the characters 0 and 1. Sum of N over all test cases does not exceed $2 \cdot 10^5$.</p> <table> <tr> <td>Sample Input :</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>3</td></tr> <tr> <td>3</td><td>4</td></tr> <tr> <td>110</td><td>1</td></tr> <tr> <td>4</td><td>5</td></tr> <tr> <td>1010</td><td></td></tr> <tr> <td>4</td><td></td></tr> <tr> <td>0000</td><td></td></tr> <tr> <td>7</td><td></td></tr> <tr> <td>1101101</td><td></td></tr> </table>	Sample Input :	Sample Output:	4	3	3	4	110	1	4	5	1010		4		0000		7		1101101	
Sample Input :	Sample Output:																				
4	3																				
3	4																				
110	1																				
4	5																				
1010																					
4																					
0000																					
7																					
1101101																					
64.	<p>There are 33 hidden numbers A,B,C. You somehow found out the values of $\min(A,B)$, $\min(B,C)$, and $\min(C,A)$. Determine whether there exists any tuple (A,B,C) that satisfies the given values of $\min(A,B)$, $\min(B,C)$, $\min(C,A)$.</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases. The first and only line of each test case contains 33 space-separated integers denoting the values of $\min(A,B)$, $\min(B,C)$, and $\min(C,A)$.</p> <p>Output Format For each test case, output YES if there exists any valid tuple (A,B,C), and NO otherwise. You can print each letter of the output in any case. For example YES, yes, yEs will all be considered equivalent.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq \min(A,B), \min(B,C), \min(C,A) \leq 10$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>YES</td></tr> <tr> <td>5 5 5</td><td>NO</td></tr> <tr> <td>2 3 4</td><td>YES</td></tr> </table>	Sample Input:	Sample Output:	3	YES	5 5 5	NO	2 3 4	YES												
Sample Input:	Sample Output:																				
3	YES																				
5 5 5	NO																				
2 3 4	YES																				

	2 2 4										
65.	<p>Initially, John is at coordinate 00 on X-axis. For each $i=1,2,\dots,N$ in order, John does the following: If John is at a non-negative coordinate, he moves i steps backward (i.e, his position's coordinate decreases by i), otherwise he moves i steps forward (i.e, his position's coordinate increases by i). You are given the integer N. Find the final position of Chef on the X-axis after N operations.</p> <p>Input Format The first line of input contains an integer T, denoting the number of test cases. The T test cases then follow: The first and only line of each test case contains an integer N.</p> <p>Output Format For each test case, output in a single line the final position of Chef on the X-axis after N operations.</p> <p>Constraints $1 \leq T \leq 10^5$ $1 \leq N \leq 10^9$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>-1</td></tr> <tr> <td>1</td><td>1</td></tr> <tr> <td>2</td><td>-2</td></tr> <tr> <td>3</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	-1	1	1	2	-2	3	
Sample Input:	Sample Output:										
3	-1										
1	1										
2	-2										
3											
66.	<p>Ram wants to buy a new laptop. However, he is confused about which laptop to buy out of 10 different laptops. He asks his N friends for their recommendation. The ith friend recommends the Chef to buy the A_i th laptop ($1 \leq A_i \leq 10$). Ram will buy the laptop which is recommended by maximum number of friends. Determine which laptop Chef buys. Print CONFUSED if there are multiple laptops having maximum number of recommendations.</p> <p>Input Format The first line contains a single integer T - the number of test cases. Then the test cases follow. The first line of each test case contains an integer N - the number of Chef's friends. The second line of each test case contains N space-separated integers A_1, A_2, \dots, A_N where A_i denotes the recommendation of the ith friend.</p> <p>Output Format For each test case, output in a single line, the laptop which has the maximum number of recommendations. Print CONFUSED if there are multiple laptops having maximum number of recommendations. You may print each character of CONFUSED in uppercase or lowercase (for example, Confused, coNFused, CONFused will be considered identical).</p> <p>Constraints</p>										

	$1 \leq T \leq 200$ $1 \leq N \leq 1000$ $1 \leq A_i \leq 10$ <div> <div>Sample Input:</div> <div> 4 5 4 4 4 2 1 7 1 2 3 4 5 6 6 6 2 2 3 3 10 8 4 7 7 8 8 </div> </div> <div> <div>Sample Output:</div> <div> 4 6 CONFUSED CONFUSED </div> </div>
67.	<p>Hari wants to store some important numerical data on his personal computer. He is using a new data type that can store values only from 00 till N both inclusive. If this data type receives a value greater than N then it is cyclically converted to fit into the range 00 to N. For Example:</p> <p>Value N+1 will be stored as 00. Value N+2 will be stored as 11. and so on...</p> <p>Given X, the value chef wants to store in this new data type. Determine what will be the actual value in memory after storing X.</p> <p>Input Format</p> <p>First line will contain T, number of testcases. Then the testcases follow. Each testcase contains a single line of input, two space separated integers N,X - the maximum value a data type can store and the value Chef wants to store in the data type respectively.</p> <p>Output Format</p> <p>For each testcase, output in a single line the value which will be actually stored in memory.</p> <p>Constraints</p> <p>$1 \leq T \leq 3000$ $1 \leq N \leq 50$ $0 \leq X \leq 50$</p> <div> <div>Sample Input:</div> <div> 5 15 0 15 10 11 12 27 37 50 49 </div> </div> <div> <div>Sample Output:</div> <div> 0 10 0 9 49 </div> </div>
68.	<p>It is Anu's birthday. You know that Anu's favourite number is X. You also know that Anu loves averages. Therefore you decide it's best to gift</p>

	<p>Chef has 3 integers A_1, A_2, A_3, such that: The mean of A_1, A_2 and A_3 is X. $1 \leq A_1, A_2, A_3 \leq 1000$. A_1, A_2 and A_3 are distinct. Output any suitable A_1, A_2 and A_3 which you could gift to Anu. As a reminder, the mean of three numbers P, Q, R is defined as: $\text{mean}(P, Q, R) = \frac{P+Q+R}{3}$. For example, $\text{mean}(2, 3, 5) = \frac{2+3+5}{3} = \frac{10}{3} = 3.333\bar{3}$, $\text{mean}(2, 2, 5) = \frac{2+2+5}{3} = \frac{9}{3} = 3$.</p> <p>Input Format The first line of input contains a single integer T, denoting the number of test cases. The description of T test cases follows. The first and only line of each test case contains one integer X — Anu's favourite number.</p> <p>Output Format For each test case, one line containing 3 space-separated integers — A_1, A_2, and A_3, which satisfy the given conditions. If there are multiple possible answers you may output any of them. It can be shown that an answer always exists, under the given constraints.</p> <p>Constraints $1 \leq T \leq 100$ $2 \leq X \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>1 3 5</td></tr> <tr> <td>3</td><td>1 6 8</td></tr> <tr> <td>5</td><td>3 5 7</td></tr> <tr> <td>5</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	1 3 5	3	1 6 8	5	3 5 7	5	
Sample Input:	Sample Output:										
3	1 3 5										
3	1 6 8										
5	3 5 7										
5											
69.	<p>There are N piles where the ith pile consists of A_i stones. Zack and Ryan are playing a game taking alternate turns with Zack starting first. In his/her turn, a player can choose any non-empty pile and remove exactly 1 stone from it. The game ends when exactly 1 pile becomes empty. The player who made the last move wins. Determine the winner if both players play optimally.</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases. Each test case consists of multiple lines of input. The first line of each test case contains a single integer N denoting the number of piles. Next line contains N space-separated integers A_1, A_2, \dots, A_N - denoting the number of stones in each pile.</p> <p>Output Format For each test case, output Zack if Zack wins the game, otherwise output Ryan.</p>										

	<p>Note that the output is case-insensitive i.e. ZACK, Zack, ZaCk, and zack are all considered the same.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq N \leq 10^5$ $1 \leq A_i \leq 10^9$ Sum of N over all test cases does not exceed $2 \cdot 10^5$.</p> <p>Sample Input: 3 2 2 2 1 10 3 1 5 6</p> <p>Sample Output: Ryan Ryan Zack</p>
70.	<p>You are given a binary string S of length N. You can perform the following operation on S: Pick any set of indices such that no two picked indices are adjacent. Flip the values at the picked indices (i.e. change 00 to 11 and 11 to 00). For example, consider the string S=1101101. If we pick the indices {1,3,6}, then after flipping the values at picked indices, we will get 1101101-->0111111. Note that we cannot pick the set {2,3,5} since 2 and 3 are adjacent indices. Find the minimum number of operations required to convert all the characters of S to 00.</p> <p>Input Format The first line contains a single integer T - the number of test cases. Then the test cases follow. The first line of each test case contains an integer N - the length of the binary string S. The second line of each test case contains a binary string S of length N.</p> <p>Output Format For each test case, output the minimum number of operations required to convert all the characters of S to 00.</p> <p>Constraints $1 \leq T \leq 100$ $1 \leq N \leq 100$</p> <p>Sample Input: 3 6 101001 5 00000 3</p> <p>Sample Output: 1 0 2</p>

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71.	<p>Swathi is fan of pairs and he likes all things that come in pairs. He even has a doll collection in which the dolls come in pairs. One day while going through his collection he found that there are odd number of dolls. Someone had stolen a doll!!!</p> <p>Help Swathi find which type of doll is missing..</p> <p>Input</p> <p>The first line contains an integer T, the number of test cases.</p> <p>The first line of each test case contains an integer N, the number of dolls.</p> <p>The next N lines are the types of dolls that are left.</p> <p>Output</p> <p>For each test case, display the type of doll that doesn't have a pair, in a new line.</p> <p>Constraints</p> <p>$1 \leq T \leq 10$</p> <p>$1 \leq N \leq 100000 (10^5)$</p> <p>$0 \leq \text{type} \leq 100000$</p> <div> <div> <p>Sample Input:</p> <p>1</p> <p>3</p> <p>1</p> <p>2</p> <p>1</p> </div> <div> <p>Sample Output:</p> <p>2</p> </div> </div>
72.	<p>You are given an array A of size N. In one operation, you can do the following:</p> <p>Select indices i and j ($i \neq j$) and set $A_i = A_j$.</p> <p>Find the minimum number of operations required to make all elements of the array equal.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of multiple lines of input.</p> <p>The first line of each test case contains an integer N — the size of the array.</p> <p>The next line contains N space-separated integers, denoting the array A.</p> <p>Output Format</p> <p>For each test case, output on a new line, the minimum number of operations required to make all elements of the array equal.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$1 \leq N \leq 2 \cdot 10^5$</p> <p>$1 \leq A_i \leq N$</p> <p>The sum of N over all test cases won't exceed $2 \cdot 10^5$.</p> <div> <div> <p>Sample Input:</p> </div> <div> <p>Sample Output:</p> </div> </div>

	<div> <div>3</div> <div>3</div> <div>1 2 3</div> <div>4</div> <div>2 2 3 1</div> <div>4</div> <div>3 1 2 4</div> </div> <div> <div>2</div> <div>2</div> <div>3</div> </div>
73.	<p>There are N different types of colours numbered from 1 to N. Chef has A_i balls having colour i, ($1 \leq i \leq N$).</p> <p>Chef will arrange some boxes and put each ball in exactly one of those boxes.</p> <p>Find the minimum number of boxes Chef needs so that no box contains two balls of same colour.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases. The description of the test cases follows.</p> <p>The first line of each test case contains a single integer N, denoting the number of colors.</p> <p>The second line of each test case contains N space-separated integers A_1, A_2, \dots, A_N — denoting the number of balls having colour i.</p> <p>Output Format</p> <p>For each test case, output the minimum number of boxes required so that no box contains two balls of same colour.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$2 \leq N \leq 100$</p> <p>$1 \leq A_i \leq 10^5$</p> <div> <div> <p>Sample Input :</p> <div> <div>3</div> <div>2</div> <div>8 5</div> <div>3</div> <div>5 10 15</div> <div>4</div> <div>4 4 4 4</div> </div> </div> <div> <p>Sample Output:</p> <div> <div>8</div> <div>15</div> <div>4</div> </div> </div> </div>
74.	<p>Devu has n weird friends. Its his birthday today, so they thought that this is the best occasion for testing their friendship with him. They put up conditions before Devu that they will break the friendship unless he gives them a grand party on their chosen day. Formally, ith friend will break his friendship if he does not receive a grand party on dith day.</p> <p>Devu despite being as rich as Gatsby, is quite frugal and can give at most one grand party daily. Also, he wants to invite only one person in a party. So he just wonders what is the maximum number of friendships he can save. Please help Devu in this tough task !!</p>

	<p>Input</p> <p>The first line of the input contains an integer T denoting the number of test cases. The description of T test cases follows. First line will contain a single integer denoting n.</p> <p>Second line will contain n space separated integers where ith integer corresponds to the day dith as given in the problem.</p> <p>Output</p> <p>Print a single line corresponding to the answer of the problem.</p> <p>Constraints</p> <p>$1 \leq T \leq 10^4$ $1 \leq n \leq 50$ $1 \leq d_i \leq 100$</p> <p>Sample Input:</p> <pre>2 2 3 2 2 1 1</pre> <p>Sample Output:</p> <pre>2 1</pre>
75.	<p>You are given an array A of length N. An element X is said to be dominant if the frequency of X in A is strictly greater than the frequency of any other element in the A. For example, if A=[2,1,4,4,4] then 4 is a dominant element since its frequency is higher than the frequency of any other element in A. Find if there exists any dominant element in A.</p> <p>Input Format</p> <p>The first line of input contains a single integer T — the number of test cases. Then the test cases follow. The first line of each test case contains an integer N — the size of the array A. The second line of each test case contains N space-separated integers A1, A2, ..., AN denoting the array A.</p> <p>Output Format</p> <p>For each test case, output YES if there exists any dominant element in A. Otherwise, output NO. You may print each character of YES and NO in uppercase or lowercase (for example, yes, yEs, Yes will be considered identical).</p> <p>Constraints</p> <p>$1 \leq T \leq 500$ $1 \leq N \leq 1000$ $1 \leq A_i \leq N$</p> <p>Sample Input:</p> <pre>4 5</pre> <p>Sample Output:</p> <pre>YES NO</pre>

	2 2 2 2 2 4 1 2 3 4 4 3 3 2 1 6 1 1 2 2 3 4	YES NO												
76.	<p>Siva wants to become fit for which he decided to walk to the office and return home by walking. It is known that Siva's office is X km away from his home.</p> <p>If his office is open on 5 days in a week, find the number of kilometers Siva travels through office trips in a week.</p> <p>Input Format First line will contain T, number of test cases. Then the test cases follow. Each test case contains of a single line consisting of single integer X.</p> <p>Output Format For each test case, output the number of kilometers Siva travels through office trips in a week.</p> <p>Constraints $1 \leq T \leq 10$ $1 \leq X \leq 10$</p> <table><tr><td>Sample Input:</td><td>Sample Output:</td></tr><tr><td>4</td><td>10</td></tr><tr><td>1</td><td>30</td></tr><tr><td>3</td><td>70</td></tr><tr><td>7</td><td>100</td></tr><tr><td>10</td><td></td></tr></table>		Sample Input:	Sample Output:	4	10	1	30	3	70	7	100	10	
Sample Input:	Sample Output:													
4	10													
1	30													
3	70													
7	100													
10														
77.	<p>Alex has X 5 rupee coins and Y 10 rupee coins. Alex goes to a shop to buy chocolates for Chefina where each chocolate costs Z rupees. Find the maximum number of chocolates that Alex can buy for Chefina.</p> <p>Input Format The first line contains a single integer T — the number of test cases. Then the test cases follow. The first and only line of each test case contains three integers X, Y and Z — the number of 5 rupee coins, the number of 10 rupee coins and the cost of each chocolate.</p> <p>Output Format For each test case, output the maximum number of chocolates that Alex can buy for Chefina.</p> <p>Constraints $1 \leq T \leq 100$ $1 \leq X, Y, Z \leq 1000$</p> <table><tr><td>Sample Input:</td><td>Sample Output:</td></tr><tr><td>4</td><td>15</td></tr><tr><td>10 10 10</td><td>3</td></tr></table>		Sample Input:	Sample Output:	4	15	10 10 10	3						
Sample Input:	Sample Output:													
4	15													
10 10 10	3													

	$1 \leq T \leq 100$ $1 \leq A \leq 1000$																				
	<table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>8</td><td>Charlie</td></tr> <tr> <td>7</td><td>Alice</td></tr> <tr> <td>14</td><td>Charlie</td></tr> <tr> <td>21</td><td>Charlie</td></tr> <tr> <td>18</td><td>Bob</td></tr> <tr> <td>27</td><td>Bob</td></tr> <tr> <td>63</td><td>Alice</td></tr> <tr> <td>126</td><td>Charlie</td></tr> <tr> <td>8</td><td></td></tr> </table>	Sample Input:	Sample Output:	8	Charlie	7	Alice	14	Charlie	21	Charlie	18	Bob	27	Bob	63	Alice	126	Charlie	8	
Sample Input:	Sample Output:																				
8	Charlie																				
7	Alice																				
14	Charlie																				
21	Charlie																				
18	Bob																				
27	Bob																				
63	Alice																				
126	Charlie																				
8																					
80.	<p>In Chefland, a valid phone number consists of 5 digits with no leading zeros. For example, 98765, 10000, and 71023 are valid phone numbers while 04123, 9231, and 872310 are not.</p> <p>Chef went to a store and purchased N items, where the cost of each item is X.</p> <p>Find whether the total bill is equivalent to a valid phone number.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of two space-separated integers N and X — the number of items Chef bought and the cost per item.</p> <p>Output Format</p> <p>For each test case, output on a new line, YES, if the total bill is equivalent to a valid phone number and NO otherwise.</p> <p>Each character of the output may be printed in either uppercase or lowercase. That is, the strings NO, no, nO, and No will be treated as equivalent.</p> <p>Constraints</p> <p>$1 \leq T \leq 100$ $1 \leq N, X \leq 1000$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>YES</td></tr> <tr> <td>25 785</td><td>NO</td></tr> <tr> <td>402 11</td><td>YES</td></tr> <tr> <td>100 100</td><td>NO</td></tr> <tr> <td>333 333</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	YES	25 785	NO	402 11	YES	100 100	NO	333 333									
Sample Input:	Sample Output:																				
4	YES																				
25 785	NO																				
402 11	YES																				
100 100	NO																				
333 333																					
81.	<p>Kiran's phone has a total storage of S MB. Also, Chef has 2 apps already installed on his phone which occupy X MB and Y MB respectively.</p> <p>He wants to install another app on his phone whose memory requirement is Z MB. For this, he might have to delete the apps already installed on his phone. Determine the minimum number of apps he has to delete from his phone so that he has enough memory to install the third app.</p>																				

	<p>Input Format</p> <p>The first line contains a single integer T — the number of test cases. Then the test cases follow.</p> <p>The first and only line of each test case contains four integers S, X, Y and Z — the total memory of Kiran's phone, the memory occupied by the two already installed apps and the memory required by the third app.</p> <p>Output Format</p> <p>For each test case, output the minimum number of apps Chef has to delete from his phone so that he can install the third app.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$ $1 \leq S \leq 500$ $1 \leq X \leq Y \leq S$ $X + Y \leq S$ $Z \leq S$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>0</td></tr> <tr> <td>10 1 2 3</td><td>1</td></tr> <tr> <td>9 4 5 1</td><td>2</td></tr> <tr> <td>15 5 10 15</td><td>1</td></tr> <tr> <td>100 20 30 75</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	0	10 1 2 3	1	9 4 5 1	2	15 5 10 15	1	100 20 30 75	
Sample Input:	Sample Output:												
4	0												
10 1 2 3	1												
9 4 5 1	2												
15 5 10 15	1												
100 20 30 75													
82.	<p>It is the World Cup Finals. Surya only finds a match interesting if the skill difference of the competing teams is less than or equal to D.</p> <p>Given that the skills of the teams competing in the final are X and Y respectively, determine whether Surya will find the game interesting or not.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of testcases. The description of T testcases follows.</p> <p>Each testcase consists of a single line of input containing three space-separated integers X, Y, and D — the skill levels of the teams and the maximum skill difference.</p> <p>Output Format</p> <p>For each testcase, output "YES" if Chef will find the game interesting, else output "NO" (without the quotes). The checker is case-insensitive, so "YeS" and "nO" etc. are also acceptable.</p> <p>Constraints</p> <p>$1 \leq T \leq 2000$ $1 \leq X, Y \leq 100$ $0 \leq D \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>YES</td></tr> <tr> <td>5 3 4</td><td>NO</td></tr> <tr> <td>5 3 1</td><td>YES</td></tr> </table>	Sample Input:	Sample Output:	3	YES	5 3 4	NO	5 3 1	YES				
Sample Input:	Sample Output:												
3	YES												
5 3 4	NO												
5 3 1	YES												

	5 5 0																
83.	<p>After the phenomenal success of the 36th Chamber of Shaolin, San Te has decided to start 37th Chamber of Shaolin. The aim this time is to equip women with shaolin self-defence techniques.</p> <p>The only condition for a woman to be eligible for the special training is that she must be between 1010 and 6060 years of age, inclusive of both 1010 and 6060.</p> <p>Given the ages of N women in his village, please help San Te find out how many of them are eligible for the special training.</p> <p>Input Format The first line of input contains a single integer T, denoting the number of test cases. The description of T test cases follows. The first line of each test case contains a single integer N, the number of women. The second line of each test case contains N space-separated integers A1 ,A2 ,...,AN , the ages of the women.</p> <p>Output Format For each test case, output in a single line the number of women eligible for self-defence training.</p> <p>Constraints $1 \leq T \leq 20$ $1 \leq N \leq 100$ $1 \leq A_i \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>2</td></tr> <tr> <td>3</td><td>2</td></tr> <tr> <td>15 23 65</td><td>1</td></tr> <tr> <td>3</td><td></td></tr> <tr> <td>15 62 16</td><td></td></tr> <tr> <td>2</td><td></td></tr> <tr> <td>35 9</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	2	3	2	15 23 65	1	3		15 62 16		2		35 9	
Sample Input:	Sample Output:																
3	2																
3	2																
15 23 65	1																
3																	
15 62 16																	
2																	
35 9																	
84.	<p>There are two problems in a contest. Problem A is worth 500 points at the start of the contest. Problem B is worth 1000 points at the start of the contest.</p> <p>Once the contest starts, after each minute: Maximum points of Problem A reduce by 2 points . Maximum points of Problem B reduce by 4 points.</p> <p>It is known that Ajay requires X minutes to solve Problem A correctly and Y minutes to solve Problem B correctly.</p> <p>Find the maximum number of points Ajay can score if he optimally decides the order of attempting both the problems.</p>																

	<p>Input Format First line will contain T, number of test cases. Then the test cases follow. Each test case contains of a single line of input, two integers X and Y - the time required to solve problems A and B in minutes respectively.</p> <p>Output Format For each test case, output in a single line, the maximum number of points Chef can score if he optimally decides the order of attempting both the problems.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq X, Y \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>1360</td></tr> <tr> <td>10 20</td><td>1292</td></tr> <tr> <td>8 40</td><td>1380</td></tr> <tr> <td>15 15</td><td>1400</td></tr> <tr> <td>20 10</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	1360	10 20	1292	8 40	1380	15 15	1400	20 10	
Sample Input:	Sample Output:												
4	1360												
10 20	1292												
8 40	1380												
15 15	1400												
20 10													
85.	<p>JK is struggling to pass a certain college course. The test has a total of N questions, each question carries 3 marks for a correct answer and -1 for an incorrect answer. JK is a risk-averse person so he decided to attempt all the questions. It is known that JK got X questions correct and the rest of them incorrect. For JK to pass the course he must score at least P marks. Will JK be able to pass the exam or not?</p> <p>Input Format First line will contain T, number of testcases. Then the testcases follow. Each testcase contains of a single line of input, three integers N,X,P.</p> <p>Output Format For each test case output "PASS" if Chef passes the exam and "FAIL" if JK fails the exam. You may print each character of the string in uppercase or lowercase (for example, the strings "pASs", "pass", "Pass" and "PASS" will all be treated as identical).</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq N \leq 100$ $0 \leq X \leq N$ $0 \leq P \leq 3 \cdot N$</p> <table> <tr> <td>Sample Input:</td><td>Sample Ouput:</td></tr> <tr> <td>3</td><td>PASS</td></tr> <tr> <td>5 2 3</td><td>FAIL</td></tr> <tr> <td>5 2 4</td><td>FAIL</td></tr> </table>	Sample Input:	Sample Ouput:	3	PASS	5 2 3	FAIL	5 2 4	FAIL				
Sample Input:	Sample Ouput:												
3	PASS												
5 2 3	FAIL												
5 2 4	FAIL												

	4 0 0										
86.	<p>You are given the sizes of angles of a simple quadrilateral (in degrees) A, B, C and D, in some order along its perimeter. Determine whether the quadrilateral is cyclic.</p> <p>Note: A quadrilateral is cyclic if and only if the sum of opposite angles is 180°.</p> <p>Input The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows. The first and only line of each test case contains four space-separated integers A, B, C and D.</p> <p>Output Print a single line containing the string "YES" if the given quadrilateral is cyclic or "NO" if it is not (without quotes). You may print each character of the string in uppercase or lowercase (for example, the strings "yEs", "yes", "Yes" and "YES" will all be treated as identical).</p> <p>Constraints $1 \leq T \leq 10^4$ $1 \leq A, B, C, D \leq 357$ $A + B + C + D = 360$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>NO</td></tr> <tr> <td>10 20 30 300</td><td>YES</td></tr> <tr> <td>10 20 170 160</td><td>NO</td></tr> <tr> <td>179 1 179 1</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	NO	10 20 30 300	YES	10 20 170 160	NO	179 1 179 1	
Sample Input:	Sample Output:										
3	NO										
10 20 30 300	YES										
10 20 170 160	NO										
179 1 179 1											
87.	<p>RK bought N items from a shop. Although it is hard to carry all these items in hand, so Chef has to buy some polybags to store these items. 1 polybag can contain at most 10 items. What is the minimum number of polybags needed by RK?</p> <p>Input Format The first line will contain an integer T - number of test cases. Then the test cases follow. The first and only line of each test case contains an integer N - the number of items bought by RK.</p> <p>Output Format For each test case, output the minimum number of polybags required.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq N \leq 1000$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>2</td></tr> <tr> <td>20</td><td>3</td></tr> <tr> <td>24</td><td>10</td></tr> </table>	Sample Input:	Sample Output:	3	2	20	3	24	10		
Sample Input:	Sample Output:										
3	2										
20	3										
24	10										

	99
88.	<p>Given n (n is even), determine the number of black cells in an $n \times n$ chessboard.</p> <p>Input Format The only line of the input contains a single integer n.</p> <p>Output Format Output the number of black cells in an $n \times n$ chessboard.</p> <p>Constraints $2 \leq n \leq 100$ n is even</p> <p>Sample Input: 8</p> <p>Sample Output: 32</p>
89.	<p>Ram has fallen in love with Sita, and wants to buy N gifts for her. On reaching the gift shop, Ram got to know the following two things: The cost of each gift is 1 coin. On the purchase of every 4th gift, Ram gets the 5th gift free of cost. What is the minimum number of coins that Ram will require in order to come out of the shop carrying N gifts?</p> <p>Input Format The first line of input will contain an integer T — the number of test cases. The description of T test cases follows. The first and only line of each test case contains an integer N, the number of gifts in the shop.</p> <p>Output Format For each test case, output on a new line the minimum number of coins that Chef will require to obtain all N gifts.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq N \leq 10^9$</p> <p>Sample Input: 2 5 4</p> <p>Sample Output: 4 4</p>
90.	<p>In Chefland, denominations less than rupees 10 have stopped and now rupees 10 is the smallest denomination. Suppose KK goes to buy some item with cost not a multiple of 10, then, he will be charged the cost that is the nearest multiple of 10. If the cost is equally distant from two nearest multiples of 10, then the cost is rounded up. For example, 35,38,40,44 are all rounded to 40. KK purchased an item having cost X ($X \leq 100$) and gave a bill of rupees 100. How much amount will he get back?</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases.</p>

	<p>Each test case consists of a single integer X, the cost of the item.</p> <p>Output Format For each test case, output the amount returned to Chef.</p> <p>Constraints $1 \leq T \leq 100$ $1 \leq X \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>60</td></tr> <tr> <td>35</td><td>50</td></tr> <tr> <td>54</td><td>20</td></tr> <tr> <td>80</td><td>90</td></tr> <tr> <td>12</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	60	35	50	54	20	80	90	12	
Sample Input:	Sample Output:												
4	60												
35	50												
54	20												
80	90												
12													
91.	<p>Chef has 3 numbers A, B and C. Chef wonders if it is possible to choose exactly two numbers out of the three numbers such that their sum is odd.</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases. Each test case consists of three integers A, B, C.</p> <p>Output Format For each test case, output YES if you can choose exactly two numbers with odd sum, NO otherwise. The output is case-insensitive. Thus, the strings YES, yes, yeS, and Yes are all considered the same.</p> <p>Constraints $1 \leq T \leq 100$ $1 \leq A, B, C \leq 10$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>YES</td></tr> <tr> <td>1 2 3</td><td>NO</td></tr> <tr> <td>8 4 6</td><td>NO</td></tr> <tr> <td>3 3 9</td><td>YES</td></tr> <tr> <td>7 8 6</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	YES	1 2 3	NO	8 4 6	NO	3 3 9	YES	7 8 6	
Sample Input:	Sample Output:												
4	YES												
1 2 3	NO												
8 4 6	NO												
3 3 9	YES												
7 8 6													
92.	<p>James has a square-shaped chart paper with the side length equal to N. He wants to cut out $K \times K$ squares from this chart paper. Find the maximum number of $K \times K$ squares he can cut from the entire chart paper. Note that, some part of the chart paper might not be included in any $K \times K$ cutout square.</p> <p>Input Format The first line contains a single integer T — the number of test cases. Then the test cases follow. The first and only line of each test case contains two space-separated integers N and K — the side length of the entire chart paper and the side length of the cutout squares.</p>												

	<p>Output Format</p> <p>For each test case, output on a new line the maximum number of $K \times K$ squares James can cut from the entire chart paper.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$1 \leq K \leq N \leq 1000$</p> <p>Sample Input:</p> <p>3</p> <p>5 1</p> <p>2 2</p> <p>5 2</p> <p>Sample Output:</p> <p>25</p> <p>1</p> <p>4</p>
93.	<p>Roy is confused whether to go out and eat at the restaurant or order food online.</p> <p>The online order costs N rupees while the cost of eating at the restaurant is M rupees.</p> <p>However, Roy has a discount coupon with which he can avail flat 10% off on his online order.</p> <p>Find the cheaper option for Roy to eat, i.e., whether to order food online or eat at the restaurant.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of two space-separated integers N and M, the cost of ordering online and eating at the restaurant respectively.</p> <p>Output Format</p> <p>For each test case, output on a new line:</p> <p>ONLINE, if Roy gets a better deal in online ordering,</p> <p>DINING if Roy gets a better deal in eating at the restaurant,</p> <p>EITHER if both deals cost the same.</p> <p>You may print each character in uppercase or lowercase, For example, the strings Online, online, ONLINE, and onLiNe are all considered identical.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$</p> <p>$1 \leq N, M \leq 1000$</p> <p>Sample Input:</p> <p>4</p> <p>500 500</p> <p>500 400</p> <p>25 22</p> <p>100 90</p> <p>Sample Output:</p> <p>ONLINE</p> <p>DINING</p> <p>DINING</p> <p>EITHER</p>
94.	<p>There are 2 stores in Chefland and both sell the same product. The first store sells the product for 100 rupees whereas the second store sells it for 200 rupees.</p> <p>It is the holiday season and both stores have announced a special discount. The first store is providing a discount of A percent on its product and the</p>

	<p>second store is providing a discount of B percent on its product. Tony is wondering which store is selling the product at a cheaper price after the discount has been applied. Can you help him identify the better deal?</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of a single line of input containing two space-separated integers A and B denoting the discount provided by the first and second store respectively.</p> <p>Output Format</p> <p>For each test case, output FIRST if the first store is cheaper, SECOND if the second store is cheaper, and BOTH if both the stores are selling the product for the same price after discount.</p> <p>The checker is case-insensitive so answers like FiRsT, first, and FIRST would be considered the same.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$ $1 \leq A, B \leq 100$</p> <table> <tr> <td>Sample Input:</td><td>Sample output:</td></tr> <tr> <td>4</td><td>FIRST</td></tr> <tr> <td>5 20</td><td>SECOND</td></tr> <tr> <td>10 60</td><td>FIRST</td></tr> <tr> <td>7 7</td><td>BOTH</td></tr> <tr> <td>10 55</td><td></td></tr> </table>	Sample Input:	Sample output:	4	FIRST	5 20	SECOND	10 60	FIRST	7 7	BOTH	10 55	
Sample Input:	Sample output:												
4	FIRST												
5 20	SECOND												
10 60	FIRST												
7 7	BOTH												
10 55													
95.	<p>Hackerman wants to know who is the better player between Bob and Alice with the help of a game.</p> <p>The game proceeds as follows:</p> <p>First, Alice throws a die and gets the number A</p> <p>Then, Bob throws a die and gets the number B</p> <p>Alice wins the game if the sum on the dice is a prime number; and Bob wins otherwise.</p> <p>Given A and B, determine who wins the game.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>The first and only line of each test case contains two space-separated integers A and B.</p> <p>Output Format</p> <p>For each test case, output on a new line the winner of the game: Alice or Bob.</p> <p>Each letter of the output may be printed in either uppercase or lowercase, i.e, Alice, ALICE, Allce and aLIcE will all be considered equivalent.</p> <p>Constraints</p> <p>$1 \leq T \leq 36$</p>												

	$1 \leq A \leq 6$ $1 \leq B \leq 6$ <div> <div> Sample Input: 3 2 1 1 1 2 2 </div> <div> Sample Output: Alice Alice Bob </div> </div>
96.	<p>Arun has two variables X and Y. He wants to find out whether the variables satisfy the equation: $X^2 + 4 \cdot Y^2 = 4 \cdot X^2 \cdot Y$</p> <p>Input Format The first line of input will contain a single integer T, denoting the number of test cases. Each test case consists of two integers X and Y, as mentioned in statement.</p> <p>Output Format For each test case, output YES if the variables X and Y satisfy the given equation, NO otherwise. You may print each character in uppercase or lowercase. For example, Yes, YES, yes, and YeS are all considered the same.</p> <p>Constraints $1 \leq T \leq 1000$ $1 \leq X \leq 10^9$ $1 \leq Y \leq 10^{18}$</p> <div> <div> Sample Input: 5 2 2 4 4 3 6 8 32 200000000 200000000000000000 </div> <div> Sample Output: YES NO NO YES YES </div> </div>
97.	<p>Rushitote went to a programming contest to distribute apples and oranges to the contestants. He has N apples and M oranges, which need to be divided equally amongst the contestants. Find the maximum possible number of contestants such that:</p> <p>Every contestant gets an equal number of apples; and Every contestant gets an equal number of oranges.</p> <p>Note that every fruit with Rushitote must be distributed, there cannot be any left over.</p> <p>For example, 2 apples and 4 oranges can be distributed equally to two contestants, where each one receives 1 apple and 2 oranges. However, 2 apples and 5 oranges can only be distributed equally to one contestant.</p> <p>Input Format</p>

	<p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>The first and only line of each test case contains two space-separated integers N and M — the number of apples and oranges, respectively.</p> <p>Output Format</p> <p>For each test case, output on a new line the answer: the maximum number of contestants such that everyone receives an equal number of apples and an equal number of oranges.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$ $1 \leq N, M \leq 10^9$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>1</td></tr> <tr> <td>1 5</td><td>2</td></tr> <tr> <td>2 4</td><td>2</td></tr> <tr> <td>4 6</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	1	1 5	2	2 4	2	4 6			
Sample Input:	Sample Output:												
3	1												
1 5	2												
2 4	2												
4 6													
98.	<p>Luigi has an array A of N positive integers. He wants to make all elements of the array equal.</p> <p>In one move, he can:</p> <p>Choose an index i ($1 \leq i \leq N$) and divide the element A_i by any one of its divisors.</p> <p>In other words, he can choose a positive integer X such that $X \mid A_i$ and set $A_i := XA_i$.</p> <p>Find the minimum number of moves required to make all the elements of the array equal.</p> <p>Input Format</p> <p>The first line of input will contain a single integer T, denoting the number of test cases.</p> <p>Each test case consists of two lines of input.</p> <p>The first line of each test case contains N, the size of array A.</p> <p>The second line of each test case contains N space-separated integers, the elements of array A.</p> <p>Output Format</p> <p>For each test case, output on a new line, the minimum number of moves required to make all elements of the array equal.</p> <p>Constraints</p> <p>$1 \leq T \leq 1000$ $1 \leq N \leq 3000$ $1 \leq A_i \leq 10^9$</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>4</td><td>1</td></tr> <tr> <td>2</td><td>0</td></tr> <tr> <td>11 22</td><td>2</td></tr> <tr> <td>5</td><td>4</td></tr> <tr> <td>38 38 38 38 38</td><td></td></tr> </table>	Sample Input:	Sample Output:	4	1	2	0	11 22	2	5	4	38 38 38 38 38	
Sample Input:	Sample Output:												
4	1												
2	0												
11 22	2												
5	4												
38 38 38 38 38													

	4 4 4 16 8 4 11 13 17 19																
99.	<p>Raghu has an array A of length N. An index i is called strong if we can change the gcd of the whole array just by changing the value of A_i . Determine the number of strong indices in the array.</p> <p>Input Format First line will contain T, number of test cases. Then the test cases follow. First line of each test case contains an integer N denoting the size of the array A. Second line contains N space separated integers A_1, A_2, \dots, A_N - denoting the array A.</p> <p>Output Format For each test case, output the number of strong indices in the array.</p> <p>Constraints $1 \leq T \leq 5 \cdot 10^4$ $2 \leq N \leq 3 \cdot 10^5$ $1 \leq A_i \leq 10^9$ Sum of N over all test cases do not exceed $3 \cdot 10^5$.</p> <table> <tr> <td>Sample Input:</td><td>Sample Output:</td></tr> <tr> <td>3</td><td>3</td></tr> <tr> <td>3</td><td>0</td></tr> <tr> <td>5 10 20</td><td>4</td></tr> <tr> <td>4</td><td></td></tr> <tr> <td>3 5 7 11</td><td></td></tr> <tr> <td>4</td><td></td></tr> <tr> <td>2 2 2 2</td><td></td></tr> </table>	Sample Input:	Sample Output:	3	3	3	0	5 10 20	4	4		3 5 7 11		4		2 2 2 2	
Sample Input:	Sample Output:																
3	3																
3	0																
5 10 20	4																
4																	
3 5 7 11																	
4																	
2 2 2 2																	
100.	<p>Given an integer N, help Chef in finding an N-digit odd positive integer X such that X is divisible by 3 but not by 9.</p> <p>Note: There should not be any leading zeroes in X. In other words, 003 is not a valid 3-digit odd positive integer.</p> <p>Input Format The first line of input contains a single integer T, denoting the number of testcases. The description of the T testcases follows. The first and only line of each test case contains a single integer N, denoting the number of digits in X.</p> <p>Output Format For each testcase, output a single line containing an N-digit odd positive integer X in decimal number system, such that X is divisible by 3 but not by 9.</p> <p>Constraints $1 \leq T \leq 500$ $1 \leq N \leq 10^4$</p>																

	The sum of N over all test cases does not exceed 105	
	Sample Input:	Sample Output:
	3	3
	1	15
	2	123
	3	