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Average Sorting | Problem Code: AVGSORT



Read problem statements in Hindi, Bengali, Mandarin Chinese, Russian, and Vietnamese as well.

You are given a sequence A_1,A_2,\ldots,A_N . You may perform the following operation any number of times: select any two adjacent elements A_i and A_{i+1} and replace one of them with $\frac{A_i + A_{i+1}}{2}$ (a real number, i.e. without rounding). You may also select each pair of adjacent elements and each element to replace in multiple operations, i.e. any number of times.

Is it possible to make the sequence strictly increasing in a finite number of operations?

Input

- $\bullet\,$ The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.
- ullet The first line of each test case contains a single integer N
- ullet The second line contains N space-separated integers A_1,A_2,\ldots,A_{N}

Output

For each test case, print a single line containing the string "Yes" if it is possible to make the sequence strictly increasing or "No" otherwise (without quotes).

You may print each character of each string in uppercase or lowercase (for example, the strings "yEs", "yes", "Yes" and "YES" will all be treated as identical).

Constraints

- $1 \leq T \leq 50,000$
- $2 \leq N \leq 10^5$
- $1 \leq A_i \leq 10^9$ for each valid i
- ullet the sum of N over all test cases does not exceed 10^6

Subtasks

Subtask #1 (100 points): original constraints

Example Input

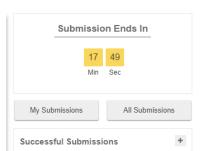
Example Output

Yes No

Explanation

Example case 1: Clearly, after any sequence of operations, $A_1>A_2$ holds, so it is impossible to make the sequence strictly increasing.

Example case 2: Choose A_1 and A_2 and change A_2 to $\frac{1+2}{2}$. The sequence after this operation is [1,1.5,2], which is a strictly increasing sequence.



There may also be other valid sequences of operations that give a strictly increasing sequence. Example case 3: No matter which pair of adjacent elements we choose, we can only change one of them to $\frac{5+5}{2}=5,$ so the sequence always remains [5, 5, 5, 5, 5]. Author: 6★ explodingfrz 21-02-2021 Date Added: Time Limit: 1 secs 50000 Bytes Source Limit: CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY, Languages: PYP3, TEXT, CPP17, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, kotlin, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D, R, CAML, rust, ASM, FORT, FS, LISP clisp, SQL, swift, SCM guile, PERL6, CLPS, WSPC, ERL, ICK, NICE, PRLG, ICON, PIKE, COB, SCM chicken, SCM qobi, ST, NEM, SQLQ

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$\underline{CodeChef} \text{ - A Platform for Aspiring Programmers}$

CodeChef was created as a platform to help programmers make it big in the world of algorithms, computer programming, and programming contests. At CodeChef we work hard to revive the geek in you by hosting a programming contest at the start of the month and two smaller programming challenges at the middle and end of the month. We also aim to have training sessions and discussions related to algorithms, binary search, technicalities like array size and the likes. Apart from providing a platform for programming competitions, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of computer programming.

Practice Section - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in the language of your choice. Our programming contest judge accepts solutions in over 55+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple programming challenges that take place through-out the month on CodeChef.

<u>Compete</u> - Monthly Programming Contests, Cook-off and Lunchtime

Here is where you can show off your computer programming skills. Take part in our 10 days long monthly coding contest and the shorter format Cook-off and Lunchtime coding contests. Put yourself up for recognition and win great prizes. Our programming contests have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools	Practice Problems	Initiatives	Policy
Online IDE	<u>Easy</u>	Go for Gold	Terms of Service
<u>Upcoming Coding Contests</u>	Medium	CodeChef for Schools	Privacy Policy
Contest Hosting	Hard	College Chapters	Refund Policy
Problem Setting	Challenge	CodeChef for Business	Code of Conduct
CodeChef Tutorials	<u>Peer</u>		Bug Bounty Program
CodeChef Wiki	School		
	FAQ's		