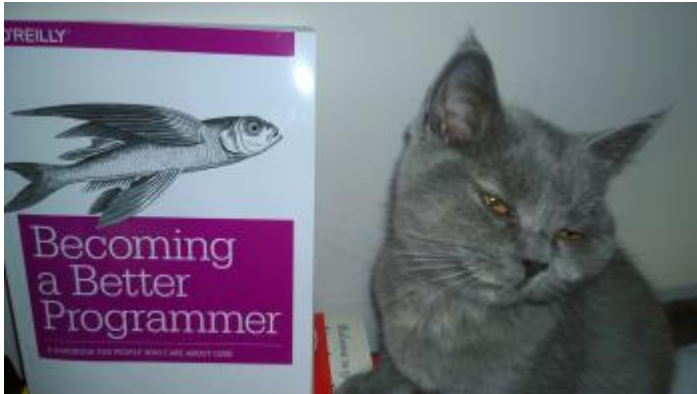


Problem 2 – Increasing Absolute Differences



Sid is a small and smart kitten.

She loves to eat programming books (and read them).

When Sid reads books she remembers some of the terms and then combines them and creates programming tasks.

In this case Sid combined “*Absolute difference*”, “*Sequence of absolute differences*” and “*Increasing sequence*” into a problem called “*Increasing Absolute Difference*”. It is the problem you are reading right now. Solve the problem that this kitten created and disprove her allegation that you are a bad programmer. ☺

Absolute difference between two integer numbers **A** and **B** is the difference of the larger between **A** and **B** minus the smaller between **A** and **B**. Examples:

- Absolute difference between 5 and 1 is 4 ($5 - 1 = 4$).
- Absolute difference between -2 and -2 is 0 ($-2 - -2 = 0$).
- Absolute difference between 1 and 4 is 3 ($4 - 1 = 3$).

If you are given a list of numbers, the **sequence of absolute differences** of the given list is constructed by taking all absolute differences between all two consecutive numbers. Examples:

- In the list “0 1 2 3 5” it’s sequence of absolute differences is “1 1 1 2”
 ■ 0¹1¹2¹3²5
- In the list “-2 -2 -1 0 2 4 1 5” it’s sequence of absolute differences is “0 1 1 2 2 3 4”
 ■ -2⁰-2¹-1¹0²2²4³1⁴5
- In the list “3 2 4 8” it’s sequence of absolute differences is “1 2 4”
 ■ 3¹2²4⁴8

Increasing sequence is a zero-based sequence of numbers (called **seq**) in which the absolute difference between every 2 consecutive numbers is 0 or 1 and for every **i** (from 1 to N-1) **seq[i-1] ≤ seq[i]**. Examples:

- “1 1 2 2” is increasing sequence because $1 \leq 1 \leq 2 \leq 2$ and
 ■ 1⁰1¹2⁰2
- “0 1 1 2 2 3 4” is increasing sequence because $0 \leq 1 \leq 1 \leq 2 \leq 2 \leq 3 \leq 4$ and
 ■ 0¹1⁰1¹2⁰2¹3¹4
- “1 2 1” is NOT increasing sequence because $2 > 1$.
 ■ 1¹2¹1
- “1 2 4” is NOT increasing sequence because the absolute difference between numbers 2 and 4 is 2:
 ■ 1¹2²4

You are given sequences of numbers. For each sequence **find if the sequence of absolute differences in the given sequence is an increasing sequence or not**. See examples below for clarification.

Input

The input data should be read from the console.

On the first line there will be a single integer number **T** – the number of sequences you will be given.

On each of the next **T** lines there will be a sequence of numbers for which you must find if the sequence of absolute differences in the given sequence is an increasing sequence or not.

The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

The output data should be printed on the console.

For each of the given **T** lines (sequences) write “True” or “False” depending on whether the sequence of absolute differences in the given sequence is an increasing sequence or not.

Constraints

- **T** will be an integer between 4 and 10, inclusive.
- For each input sequence there will be between 2 and 20 numbers, inclusive.
- Each number will be between -2 000 000 000 and +2 000 000 000.
- Allowed working time for your program: 0.1 seconds.
- Allowed memory: 16 MB.

Examples

Example input	Example output	Explanation
4 1 2 4 7 10 -1 2 4 1 5 -2 -2 -1 0 2 4 1 5 3 2 4 1 4	True False True True	$1^1 2^2 4^3 7^3 10$ $1 <= 2 <= 3 <= 3$ $-1^3 2^2 4^3 1^4 5$ $3 > 2 \text{ (} 2 <= 3 <= 4 \text{)}$ $-2^0 -2^1 -1^1 0^2 2^2 4^3 1^4 5$ $0 <= 1 <= 1 <= 2 <= 2 <= 3 <= 4$ $3^1 2^2 4^3 1^3 4$ $1 <= 2 <= 3 <= 3$
5 0 1 2 3 5 2 4 7 4 7 4 5 7 4 3 2 4 8	True True True True False	$0^1 1^1 2^1 3^2 5$ $1 <= 1 <= 1 <= 2$ $2^2 4^3 7$ $2 <= 3$ $4^3 7^3 4$ $3 <= 3$ $5^2 7^3 4$ $2 <= 3$ $3^1 2^2 4^4 8$ $1 <= 2 <= 4 \text{ but } 4 - 2 = 2$

Mew.