Circular increasing sequences X32320_en

A sequence $x_1, \ldots, x_n$ is said to be *circular increasing* if it can be obtained by rotating an increasing sequence. For instance, the sequence 5 6 8 2 3 4 4 is circular increasing since it can be obtained by rotating the sequence 2 3 4 4 5 6 8, but the sequence 7 6 8 9 7 is not (if it was, it should be obtained by a rotation of the sequence 6 7 7 8 9, but this is not possible). The sequence 4 7 8 1 3 5 is another example of a non-circular increasing sequence.
A useful characterization of circular increasing sequences is captured by the following two cases:

1. all increasing sequences are circular increasing.
2. If there exists some i such that $x_1, \ldots, x_i$ is increasing, $x_{i+1}, \ldots, x_n$ is increasing, and for all j in $\{i+1, \ldots, n\}$, $x_j \leq x_1$ holds (that is, the elements of the second increasing subsequence are all smaller than or equal to any element of the first increasing subsequence), then $x_1, \ldots, x_n$ is circular increasing.

With the convention that empty (sub)sequences are increasing, the characterization above can be reduced to case (2), by setting $i = n$ when the sequence is increasing. This convention also entails that all sequences of length ≤ 2 are circular increasing.
Write a program that reads a sequence of integers from the standard input channel (`cin`) and tells us if the read sequence is circular increasing or not. Your program must define and use the Boolean function

```
bool is_circular_increasing();
```

that returns `true` if and only the sequence read from `cin` is circular increasing.
Note: A function reading as few elements from the input as possible will be scored better, as it has less execution time.
Note: Recall that at this point of the course using vectors or any other method to store massive data is not allowed.
Exam score: 2.5 **Automatic part:** 100%

Input

A sequence of $n \geq 0$ integers.

Output

The program outputs "yes" if the given sequence is circular increasing, and "no" otherwise.

Sample input 1	Sample output 1
	`yes`

Sample input 2	Sample output 2
`4`	`yes`

Sample input 3

```
2 6
```

Sample output 3

```
yes
```

Sample input 4

```
6 2
```

Sample output 4

```
yes
```

Sample input 5

```
1 2 3 4
```

Sample output 5

```
yes
```

Sample input 6

```
5 6 7 8 9 2 4 4
```

Sample output 6

```
yes
```

Sample input 7

```
4 5 7 8 1 2 6
```

Sample output 7

```
no
```

Sample input 8

```
9 10 12 15 1 3 5 2 4
```

Sample output 8

```
no
```

Problem information

Author : PRO1
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