

## 8263 Smooth Sequences

A sequence of  $n$  integers is called *smooth*, if the absolute values of the differences between successive numbers are at most  $d$ . We call a non-smooth sequence *semi-smooth*, if we can change exactly one number in the sequence to make it smooth. For example, let  $n = 4$  and  $d = 5$ . The sequence 21, 20, 18, 20 is smooth, since each pair of adjacent numbers has a gap smaller than 5. The sequence 21, -8, 20, 20 is semi-smooth, since we can replace -8 with 20 to make it smooth.

Write a program to test if a sequence of integers is smooth or semi-smooth.

### Technical Specification

1. All integers in the sequence have absolute values bounded by  $2^{20}$ .
2.  $1 \leq n, d \leq 1000$ .

### Input

An instance of the problem consists of the size  $n$  of the sequence, and the gap  $d$  in a line. They are positive integers in the range  $[1, 1000]$ . Then  $n$  integers, separated with space(s), follow in the next line.

Note that the test data file may contain more than one instance. The last instance is followed by a line containing a single '0'.

### Output

For each instance, output 'Y', if the sequence is smooth or semi-smooth in a separate line. Otherwise, output 'N'.

### Sample Input

```
3 2
2 4 6
3 1
3 5 7
0
```

### Sample Output

```
Y
N
```