K: What Goes Up, Must Come Down

In this program, you will be testing each series of integers for evidence of upward and downward runs., which we call *Up sequences* and *Down sequences*. Within a series, an Up sequence continues as long as each data value is not less than the previous data value. An Up sequence terminates when a data value received is less than the previous data value received.

A Down sequence continues as long as each data value in a series is not greater than the previous data value. A Down sequence terminates when a data value is greater than the previous data value. An Up sequence can be initiated by the termination of a Down sequence, and vice versa. (Sequences initiated in this manner have length = 1 at the initiation point.)

All the initial data values in a series are part of an Up sequence, and contribute to its length, if the first deviation of the data values is upward. Conversely, all the initial data values are part of a Down sequence, and contribute to its length, if the first deviation of the data values is downward. If the data values in a series cannot be classified as either an Up sequence or a Down sequence, the data should be considered to have neither sequence. An Up series cannot overlap with a down series, so 12221 would contain one Up series length 3, and one Down series length 1.

Your task is to calculate the average lengths of both the Up and Down sequences for each input series. Display these averages as each input line is processed.

Input

Each of the input series to be examined is contained in a single line of input. Each series consists of at least 1 and no more than 30 unsigned, nonzero integers. Each value in the series is between 1 and 9999, inclusive. The integers are separated from each other by a single blank character. Each series is terminated by a single zero (0) digit, which is not part of the series.

Output

For each input series, print a line on the output that begins with the message "Nr values = N: ", where N is the number of values in the series. Next, display 2 spaces. Next, display the average Up sequence run length, then a single space, and finally, display the average Down sequence length. The averages must be rounded to two digits after the decimal point.

Sample Input	Sample Output
1 2 3 0	Nr values = 3: 2.00 0.00
3 2 1 0	Nr values = 3: 0.00 2.00
1 2 3 2 1 0	Nr values = 5: 2.00 2.00
2 2 2 2 3 0	Nr values = 5: 4.00 0.00
4 4 4 4 3 0	Nr values = 5: 0.00 4.00
4 4 4 3 3 3 3 0	Nr values = 7: 0.00 6.00
4 4 4 3 3 3 4 0	Nr values = 7: 1.00 5.00
5 5 5 5 0	Nr values = 4: 0.00 0.00
1 2 3 2 3 4 5 0	Nr values = 7: 2.50 1.00
0	