

## Problem Wk.5.3.6: Standard deviation

Implement a procedure `stddev` that takes a list of numbers as argument and returns the standard deviation. If the list has fewer than 2 elements, then the standard deviation should be 0.0. (Actually, if we want to be correct, the standard deviation of a list of 0 or 1 elements isn't defined, but returning 0.0 is okay for now.)

The standard deviation of a list of  $n$  numbers is the square root of the following quantity:  $1/(n-1)$  times the sum of  $(x_i - m)^2$ , where  $x_i$  ranges over the elements of the list and  $m$  is the mean of the list. It is a measure of how much variation there is from the mean.

You should try to write the procedure so that it uses list comprehension rather than an explicit loop. You should also use your `mean` procedure from the previous problem. In order to do that, include that code again (together with your new code) in the box below. In general, you can enter more than one procedure definition in the tutor code boxes, and the tutor does not remember code from one problem to the next.

To compute the square root of a number, you can simply raise the number to the power of 0.5 using Python's exponentiation operator `**`. Alternatively, you can use the Python `sqrt` procedure, but you'll need to import it from the `math` package. In order to do that include

```
from math import sqrt
```

as the first line in your code.

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