Lists
Exercise:

You are given a list of 5 numbers. Count how many of them were larger than their average.

Example 1: 6 10 5 13 11

Total = 45
Average = 45/5 = 9.0

Three numbers (10, 11, and 13) are larger than 9.

Example 2: 29 7 2 9 3

Total = 50
Average = 50/5 = 10.0

Only one number (29) is larger than 10.
The general form of a `for` statement is:

```python
for <var> in <some kind of series>:
```

The easiest way to explain this is with an example:

```python
for i in [1, 2, 3]:
    print(i)
```

Produces the output:

1
2
3

- The thing in [ ] is called a *list*
- The number of times you go through the loop = the number of items in the list
- Each time you go through the loop, you assign the value of the next item to the variable in the `for` statement
- Don’t forget the colon
- Indentation is important!
Summary of Common List Operations

- `myList[i]`  
  the $i^{\text{th}}$ element of `myList`

- `myList[i:j]`  
  a sublist of `myList` consisting of the elements from $i$ to $j$ of `myList`

- `list1 + list2`  
  concatenates two lists `list1` and `list2`

- `myList * n`  
  $n$ copies of `myList` are concatenated together

- `n * myList`  
  returns the number of elements in `myList`

- `len(myList)`  
  returns the smallest element in `myList`

- `min(myList)`  
  returns the largest element in `myList`

- `max(myList)`  
  returns the sum of all elements in `myList`

- `sum(myList)`  
  returns the sum of all elements in `myList`

- `<, <=, >, >=, ==, !=`  
  used to compare two lists

- `x in myList`  
  True if $x$ is an element of the list `myList`

- `x not in myList`  
  True if $x$ is not an element of the list `myList`
## List Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>append(item)</td>
<td>append item to the end of the list.</td>
<td>None</td>
</tr>
<tr>
<td>count(item)</td>
<td>returns the number of times item appears in the list.</td>
<td>int</td>
</tr>
<tr>
<td>extend(lst)</td>
<td>appends all items in lst to the end of the list.</td>
<td>None</td>
</tr>
<tr>
<td>index(item)</td>
<td>returns the index of the first occurrence of item in the list.</td>
<td>int</td>
</tr>
<tr>
<td>insert(index, item)</td>
<td>inserts item to the left of the specified index.</td>
<td>None</td>
</tr>
<tr>
<td>pop(i)</td>
<td>removes the element at the given position and returns it. If i is not specified, pop() removes and returns the last element of the list.</td>
<td>an object</td>
</tr>
<tr>
<td>remove(item)</td>
<td>removes the first occurrence of item from the list.</td>
<td>None</td>
</tr>
<tr>
<td>reverse()</td>
<td>reverses the order of the items in the list in place.</td>
<td>None</td>
</tr>
<tr>
<td>sort()</td>
<td>sorts the elements of the list in ascending order.</td>
<td>None</td>
</tr>
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