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 for statement

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 \( \text{myList} \)
- **myList[i:j]**: a sublist of \( \text{myList} \) consisting of the elements from \( i \) to \( j \) of \( \text{myList} \)
- **list1 + list2**: concatenates two lists \( \text{list1} \) and \( \text{list2} \)
- **myList * n**, \( n * \text{myList} \): \( n \) copies of \( \text{myList} \) are concatenated together
- **len(myList)**: returns the number of elements in \( \text{myList} \)
- **min(myList)**: returns the smallest element in \( \text{myList} \)
- **max(myList)**: returns the largest element in \( \text{myList} \)
- **sum(myList)**: returns the sum of all elements in \( \text{myList} \)
- **<, <=, >, >=, ==, !=**: used to compare two lists
- **x in myList**: True if \( x \) is an element of the list \( \text{myList} \)
- **x not in myList**: True if \( x \) is not an element of the list \( \text{myList} \)
### List Methods

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