Iterations: More Patterns

Counting in a Loop

Code:

```
zork = 0
print('Before', zork)
for thing in (9, 41, 12, 3, 74, 15):
    zork = zork + 1
    print(zork, thing)
print('After', zork)
```

Output:

```
$ python countloop.py
 Before 0
 1 9
 2 41
 3 12
 4 3
 5 74
 6 15
 After 6
```

To count how many times we execute a loop, we introduce a counter variable that starts at 0 and we add one to it each time through the loop.
- The string "After 6" indicates how many times we went through the loop

Adding in a Loop

Code:

```
zork = 0
print('Before', zork)
for thing in (9, 41, 12, 3, 74, 15):
    zork = zork + thing
    print(zork, thing)
print('After', zork)
```

Output:

```
$ python countloop.py
 Before 0
 9 9
 50 41
 62 12
 65 3
 139 74
 154 15
 After 15
```

To add up a value we encounter in a loop, we introduce a sum variable that starts at 0 and we add the value to the sum each time through the loop.

Finding the Average in a Loop

Code:

```
count = 0
sum = 0
print('Before', count, sum)
for value in (9, 41, 12, 3, 74, 15):
    count = count + 1
    sum = sum + value
    print(count, sum, value)
print('After', count, sum, sum / count)
```

Output:

```
$ python averageloop.py
1 9 9
2 50 41
3 62 12
4 65 3
5 139 74
6 154 15
After 6 154 25.666
```

An average just combines the counting and sum patterns and divides when the loop is done.