Programming Patterns - Reference Sheet

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Counting Pattern

```
def count(collection):
  counter = 0
  for item in collection:
    if <item meets condition>:
      counter += 1
  return counter
```

Computing a Sum/Total

```
7  def sum(collection):
8    total = 0
9    for item in collection:
10     total += item
11   return total
```

Finding (single thing) in a Collection

```
12 def find_thing(collection):
13   for thing in collection:
14     if <thing meets condition>:
15       return thing
```

```
16 def find_thing(collection):
17   found = None
18   for thing in collection:
19     if <thing meets condition>:
20       found = thing
21       break
22   return found
```

Finding best in collection

```
23 def find_best(collection):
24   currentbest = ??
25   for thing in collection:
26     if <thing is better than current best>:
27       currentbest = thing
28   return currentbest
```

- If we're searching over a list and we want to return the largest or smaller number: `currentbest = stufflist[0]`
- If we're searching over a list of strings and we want to return the longest string: `currentbest = stufflist[0]` or `currentbest = ""`
- If you know the list contains only non-negative integers:

  `currentbest = -1`

Filtering a collection

```
29 def filter(collection):
30   new_list = []
31
32   for thing in collection:
33     if <thing meets criteria>:
34       newlist.append(thing)
35
36   return new_list
```