Activity 1.3.7e: For Loops

Mastermind

Introduction

As you've learned in the previous activities, computers can calculate and make decisions. A single calculation or decision would be unimpressive. Computers (and brains!) are impressive because they can make billions of calculations and decisions per second. Most programs don't have billions of instructions. A small handful of instructions repeated in a loop can be very powerful. In *Python®*, for and while loops are two of the control structures for iteration.

Iteration is a powerful idea even without computers. In knitting for example, a simple pair of stitches (knit and purl shown above) can be repeated with iteration in various patterns. What is something you enjoy doing that relies on iteration?

Procedure

In MasterMind, one player has a secret code made from a sequence of colored pegs. Another player tries to guess the sequence. The player with the secret reports how many colors in the guess are in the secret and also reports whether the correct colors are in the correct place.

Write a function `report(guess, secret)` that takes two lists and returns a 2-element list [number_right_ place, number_wrong_place].

As an example:
If the secret were red-red-yellow-yellow-black and the guess were red-red-red-green-yellow, then the secret holder would report that the guess identified three correct colors: two of the reds, both in the correct place, and one yellow, not in the correct place.
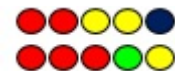
```
In []: guess = ['red', 'red', 'red', 'green', 'yellow']
In []: secret = ['red', 'red', 'yellow', 'yellow', 'black']
In []: report(guess, secret) # 2 in place, 1 out of place
Out[]: [2, 1]
```