Code for Teachers

A practical approach to programming

Chapter 4-3:
Filter Functions

Basic Concepts

- The filter pattern: take an iterable, return an iterable matching our criteria
- Large piece of the work of Computer Science
- Lots of ways to write filters in Python
  - This is one of the most basic, not at all the best

The Iterative Filter Pattern

- The process:
  - Start with an empty result
  - Loop through the provided iterable
  - Add only elements that satisfy a condition
  - Return the now-full result

Even/Odd Filter

- Good opportunity for separation of concerns
  - is_even(): checks a single value for evenness
  - even_filter(): filters a list for only even values
  - odd_filter(): filters a list for only odd values

Function Composition

- Let’s mix our mult and div in here
- Adding a `mult_all()` and `div_all()` to return a list where each element gets multiplied/divided by the given term
- Then let’s filter those results through our even/odd filters

DRY Opportunities

- Isn't it interesting that `mult_all()` and `div_all()` are basically the same, except for the function applied to the list?
- And for that matter, aren't `even_filter()` and `odd_filter()` basically the same, except for a single `not`?
- In both cases, extra arguments to a single function can reduce repetition
  - Default arguments
    - Provide a default value inside function definition, which can be manually overridden in the function call
  - Functions as arguments!
    - You can pass a function by name as an argument to another function

theforeverstudent.com

@mttaggart

mttaggart