Code for Teachers

A practical approach to programming

Chapter 4-1:
Functions

Basic Concepts

- Functions are “mini-programs” we can refer to again and again
- Functions take *arguments* (or *parameters*) to inform their operation
- Functions can (and should) *return* information
- Functions should do one thing and one thing only (SRP)

Functions in Math/Functions in Python

f(x) = 2x + 3

f(3) = 2(3) + 3

= 6 + 3

=> 9

Definition

```
def f(x):
```

Implementation

```
return 2 * x + 3
```

Function Call

```
f(3) => 9
```

Why use Functions?

- Functions compartmentalize our code
- Single Responsibility Principle (SRP)
  - Do one thing and do it well
- Makes our code very readable
- When functions return values, we can *compose* them for incredible effects!
- Clean mental model:
  - Arguments → (Function) → Result

Functions are the atoms of programs

- This is a style, not the only one
  - Functions are necessary, but thinking of programs as combinations of functions isn't
- Think of functions as the real building blocks of a program
- Thinking functionally is *not* the same as thinking procedurally
  - Both are important, but are different ways of thinking of solutions

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