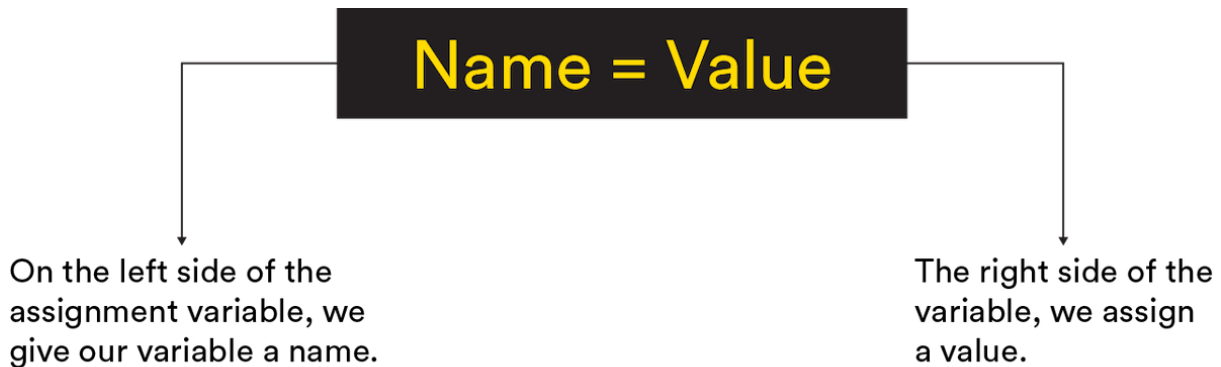


MANIPULATING VARIABLES IN PYTHON

Key Terms and Definitions

Variable: Variables store data types into the memory of your computer, allowing Python to automatically populate them into your code when you reference them later.



Complex Data Types: A data type that can hold more than one object.

- **Lists:** Enclosed by square brackets (`[]`). Mutable (changeable) collections of objects with specific orders. The objects in a list can be any combination of data types and do not have to be unique (elements can be repeated).
- **Tuples:** Enclosed by parentheses (`()`). Immutable versions of lists. Unlike lists, their elements cannot be removed, added to, or changed.
- **Set:** Enclosed by curly braces (`{}`). A collection of unordered, unique elements.
- **Dictionaries:** Also enclosed by curly braces, but elements are pairs joined by a colon (`{:}`). These are sets of key-value pairs. Every element has a key (of any immutable data type), which must be unique, and a value (which can be of any data type and does not need to be unique — multiple keys can have the same value). Dictionaries, like sets, are unordered — their index is the keys, not a list of numbers.

Cool Things to Do with Lists

- `len()` - tells us the length of our list.
- `append()` - adds an item to the end of a list.
- `pop()` - removes an element from a list.
- `index()` - asks python to return the value in a given position. Indexing in Python starts from 0 not 1.

Guiding Questions

1. Why does a dictionary use curly braces like a set? Are they related?
2. Is there any usage difference for programmers between mutable and immutable data types?