Python Lecture 1 Notes: Introduction, Variables, and Types

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1 Introduction and learning outcomes from class

Here's a quick summary of what we went over & learned in class!

- Know what a variable is and how to define one
- Explore the different types of variables and why variable specification matters
- Get familiar with the concept of Booleans and conditionality

2 Variables

Variables are ways to store information in Python. The syntax for defining a variable is:

```
variable_name = 10
variable_name2 = 'hello'
variable_name3 = [1,2,3.0]
```

We need a name that doesn't INHERENTLY mean anything to Python on the left side. On the right side, we need some value. This value can be anything at
`https://www.w3schools.com/python/python_datatypes.asp`, plus more from packages (see lecture 4)

Variable names must:

- Start with a letter or an underscore (_)
- Not start with a number
- Only contain alpha-numeric characters and underscores

The most common variable naming conventions are "camel case" and "snake case". thisIsCamelCase and this_is_snake_case. Use whichever one you prefer!

You can add values together using typical math operators: +,-,*,/, etc.

You can print values using 'print(variable)'

you can check the type of variables with 'type(variable)'

We can compare values of variables using comparison operators: (variable1 == variable2), (variable1 != variable2), (variable1 and variable2), not(variable1 == variable2), (variable1 or variable2), (variable1 ¿ variable2), (variable1 ¡= variable2), and all combinations of these.

We can collect values using lists or dictionaries!

lists: variable = [value1, value2, value3]

We access items of lists using brackets: if we use variable[0], we will get back value1, since Python is zero indexed.

dictionaries: variable = ['key1':value1,'key2':value2,'key3':value3]

we access items using brackets AND keys, rather than numbers: if we use variable['key1'], we will get back value1.