INFO5002: Intro to Python for Info Sys

Types & Variables

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Types & Variables

I. Types

II. Variables

Basic Data Types

PCC: 19-28

All is data and each have a type

- **Everything** around you can be represented as a piece of **data** and that piece of data can be described with a type.
- It is important to understand type, as computers store type differently.
  - Computers have only 1's and 0's and thus must *encode* different data type differently.

Integers

- Whole numbers that are positive or negative.
- 0
- 1
- 343
- -7542

Floating-points

- All numbers that are not whole.
- These are represented inaccurately. See IEEE 754.
- 12.3
- 1 / 3
- 0.876572

Characters

- Single symbol representation.
- Two popular encodings: ASCII and Unicode.
- A
- {
- 9

Strings

- Sequence of characters.
- Hello World.
- Welcome to INFO 5002.
- 99

Booleans

- True or False values (answers *yes* or *no*).
- Represented as a single bit: 1 (True), 0 (False).

Variables

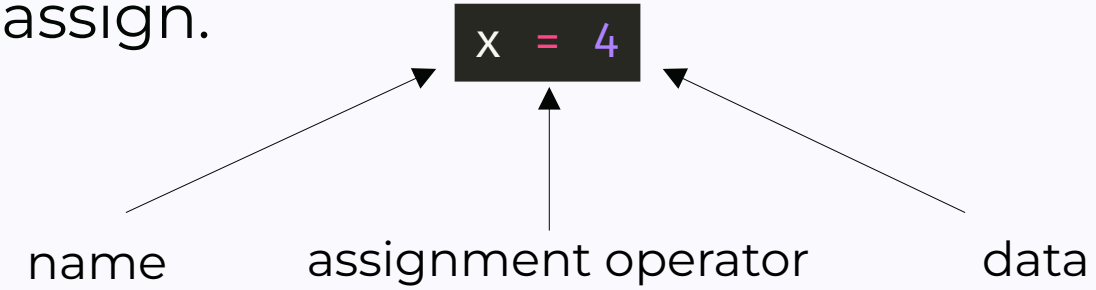
PCC: 15-19

We want to save data

- We may want to reference a piece of data later in our code; for this, we need variables.
- Variables can be thought of as a label you give to some data.
- You can give any data a label and when asking for the variable you get the data assigned to the label.

Creating variables in Python

- Variable defined by typing a label followed by = and then the data to assign.



- You can change the data of a variable at any time.

```
x = 4
x = 2.3
```

- You can multi-assign.

```
x, y, z = 1, 2, 3
```

Python keywords [1]

False	break	except	is	return
None	case	finally	lambda	try
True	class	for	match	type
and	continue	from	nonlocal	while
as	def	global	not	with
assert	del	if	or	yield
async	elif	import	pass	
await	else	in	raise	

Don’t name your variables any of these

Choose good variable names

- Only letters, numbers, and underscores.
- Can start with a letter or underscore.
- Spaces not allowed—underscores can separate words.
- Keep it descriptive.
- Avoid l, I, and O which look like 1 and 0 in some fonts.
- Avoid spelling mistakes.

Name Styles

- alllowercase: packages and modules
- lowerCamelCase: not used
- UpperCamelCase: classes
- snake_case: variables and functions
- SCREAMING_SNAKE_CASE: constants

See Python PEP 8 for more info [2]

Basic Data Types

- Integers: written as is `12` or `1_000_000_000`
- Floats: written as is `13.33`
- Characters: does not exist in Python `'hello world'` `"hello world"`
- Strings: everything inside double or single quotes
- Booleans `True` or `False`

Citations

[1] https://docs.python.org/3/reference/lexical_analysis.html#keywords

[2] https://peps.python.org/pep-0008/