

CS 42—Python quicksheet

This page contains some useful, basic Python values, operations, and language features.

Primitive values

Name	Type	Example(s)
integer	int	1, 10000
floating point	float	3.14, 1.
boolean	bool	True, False
string	str	'hi', "hello", '''hola''', """"howdy""""
list *	list	[], [0], [1, 1, 2, 3, 5, 8, 13]
tuple	tuple	(), (0,), ('Ben', 'Olin', 1279)
dictionary *	dict	{}, {'a':1}, {'a':1, 'b':2}
set *	set	set(), {0}, {2, 3, 5, 7, 11}
None	None	None
function	(varies)	print, len, type, help, dir

* mutable — watch out!

Generally, we use lists to store a mutable sequence of items that have the same type.

Generally, we use tuples to store an immutable sequence of items with possibly different type.

Primitive operations

Python name	Meaning
+	addition
-	subtraction
*	multiplication
/	division
//	integer division
%	remainder after integer division
==	equality
len	The length of a sequence (e.g., of a string, list, or tuple)

The essence of Python

Everything is an object.

but some objects (e.g., numeric and boolean literals) are “special”.

Every object has

a **value**.

a **type**.

an **identity**.

a **namespace**.

Language features

Variables and assignments

```
>>> x = 21      # binds the name x to the value 21 in the current namespace
>>> x
21
>>> x = x * 2   # could also write x *= 2
>>> x
42
```

Conditionals

```
>>> if (x < 42):
...     print('too small')
... elif (x > 42):
...     print('too big')
... else:
...     print('just right')
...
just right
```

Indentation matters: the body of every block must be indented by the same amount. It's good programming practice: use spaces (not tabs) to indent. It is an error to use tabs *and* spaces in a single file.

Functions

```
>>> def double(n):
...     '''Multiplies a number by 2'''
...     return n * 2
...
>>> double(21)
42
```

A **docstring** is a string that appears as the first line of a function body. It should provide documentation for your function. Good programming practice is for every function to have a well-written docstring.