

Jupyter Notebooks

- notebooks.azure.com

or

- "pip install --user jupyter" (to install locally)
- use the custom command prompt we made
- navigate to folder where your files are
- "jupyter notebook" (to run)

Python Basics

- `print` - basic output command
- `input` - basic input command

Variables

- a memory location that is given a name

to hold a particular bit of data

- names can't begin with #, @, \$, !,
- names can't have spaces
- keep variables names short and concise
- names are in the format: first_name
- letter case is important
- must give the variable a value before you can use it. (e.g. name = "john")

String Concatenation

`variable + variable` : only works if both are strings

`variable , variable` : only works in "print" and adds an extra space

`string.format(variable, variable)` :

"string" is specially formatted string that holds "{}" markers

`string % variable, variable` : old Python 2 method

`f"{variable}{variable}"` : new Python 3 method

`print("text" * 3)` : repeats the "text"

Comments

- '#' starts a comment
- can consist of any normal text
- 'rule of thumb' - a comment every 3-5 lines
 - short comments can go either at the end of a line or on its own line
 - long comments must go on their own line
 - try and keep entire line less than 80 chars

Math (in Python)

`+`, `-`, `*` : addition, subtraction, multiplication

- e.g. `1 + 2`, `3 * 5`, `2 - 1`, `1 * -5`, `-3 - 6`

`/`, `//`, `%` : division

`"/"` : decimal division

`"//"` : integer division (use only with integers)

`"%"` : remainder (modulo division)

`**` : exponents

- e.g. `3 ** 2 = 9`

BEDMAS

B - Brackets

E - Exponents

D - Division

M - Multiplication

A - Addition

S - Subtraction

e.g. $1 + (2 - 3) * 4 + 6 / 7 + (5 * 2) = 7.85?$

$$1 + (2 - 3) * 4 + 6 / 7 + (5 * 2)$$

$$1 + (-1) * 4 + 6 / 7 + (10)$$

$$1 + (-1) * 4 + .857142857 + 10$$

$$1 + (-4) + .857142857 + 10$$

$$7.857142857$$

$$a^2 = b^2 + c^2$$
$$a = \sqrt{b^2 + c^2}$$

```
import math
```

```
b = 3
```

```
c = 4
```

```
a = math.sqrt(b ** 2 + c ** 2)
```

Data Type Conversions

`int()` - converts from string to integer

`float()` - converts from string to decimal

`str()` - converts from a number to a string

Print / String (revisited)

- printing on multiple lines
- using multiple print statements

```
print("Hello")
```

```
print("World")
```

- using a single print statement

```
print("Hello\nWorld")
```

- using multiple print statements on the same line

```
print("Hello", end=") # end has 2 single quotes
```

```
print("World")
```