Recap:
Git - Python

2018-10-05

Scientific Programming with Python

Basic String Operations

Basic String Operations

- Compare beginning with template:
  ”This is a string”.startswith(“string”) => False
  ”This is a string”.startswith(“This”) => True

- Compare end with template:
  ”This is a string”.endswith(“string”) => True
  ”This is a string”.endswith(“This”) => False

- Manipulate content:
  s = “This is a string”
  s[5:7] = “IS”
  print(s) => “This IS a string”

String Formatting

String Formatting

- Python 3 introduced a convenient syntax for sting creation:
  f”The value of variable1 is: {variable1**}”**

- Formatting the display of floating point values
  $ name = “Hemoglobin”
  $ mass = 64.458

  $ s = f”{protein_name} has a mass of about {mass/1000:.1f} kDa.”
  => Hemoglobin has a mass of about 64.5 kDa

$ s = f”{mass/1000:10.3}”
=> 0.0643 *(10 characters and 3 significant digits)*

Type Conversion

Type Conversion

- Variables can be casted to compatible types
  float(“1.23434”) =>1.23434
  int(“0.932442”) => 0 or **int(round(float(“0.932442”)))** => 1
  list(“abc”) => [“a”, “b”, “c”]
  tuple([1,2,3]) => (1, 2, 3)

- You can check the type of a variable by calling **type(**variable**)**
  type(1.2334) => float
  type([1,2,3]) => list

Numpy

Python's Math Library: Numpy

- Importing and using numpy
  $ import numpy
  $ numpy.sin(10) => -0.5440211108893698 9
- Contains basic mathematical functions: **sin**, **cos**, **sqrt**, **abs**, **exp**, …
- **Numpy arrays:**
  - Similar to arrays but all elements have to have the same type
    A = numpy.array([1, 2, 3])
    B = numpy.array([2, 2, 2])
  - Fast calculation of matrix operations
    A + B => array([3, 4, 5])
    A * B => array([2, 4, 6])
    A ** B => array([1, 4, 9])
    sqrt(A) => array([1. , 1.41421356, 1.73205081])