Numpy, Dictionaries, Git

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Scientific Programming with Python

Numpy Arrays

Numpy Arrays Initialisation

- From a list with elements that all have the same data type
  A_list = [1, 2, 3]
  A_array = numpy.array(A_list)

- Initialise with identical values for all elements:
  numpy.ones(3) => [1 1 1]
  numpy.zeros(5) => [0 0 0 0 0]
  numpy.zeros((2, 3)) => [[0 0 0] [0 0 0]]

- Initialise with a range of values:
  numpy.arange(0, 5) => [0 1 2 3 4]
  numpy.linspace(0, 1, 6) => [0.0 0.2 0.4 0.6 0.8 1.0]

Numpy Array Operators And Methods

- Array operators:
  A + B => [3 4 5]
  A * B => [2 4 6]
  A ** B => [1 4 9]
  sqrt(A) => [1. 1.41421356 1.73205081]

- Array methods:
  C = numpy.array([0, 1, 2])
  C.min() => 0
  C.max() => 2
  C.argmin() => 0
  C.argmax() => 2
  C.sum() => 3
  C.mean() => 1.0
  C.std() => 0.8164965809277260 3

Dictionaries

Dictionaries

- Mutable container of unsorted items:
  {“key1” : value1, “key2”: value2}

- Item assignment:
  proton_number = {}
  proton_number[“C”] = 6
  proton_number[“N”] = 7
  proton_number[“O”] = 8
  proton_number[“S”] = 16

- Look up items:
  proton_number[“C”] => 6

- Get a list of all keys:
  proton_number.keys() => [“C”, “N”, “O”, “S”]