ENGG1003 - Thursday Week 2
Data types, and introduction to arrays

Steve Weller

University of Newcastle

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Lecture overview

1. variables and data types §2.2
   - principles
   - live demo

2. arrays in Python §2.3
   - principles
   - live demo

1) variables and data types

- variable names – make them descriptive
- camelCase
- snake_case
- matter of preference/style/taste
  - ▶ experiment, find what works best for you

Assignment

- x = 2
- x = x + 4
- x+= 4 is short for x = x + 4

The type of a variable

- types seen so far:
    - ▶ int
    - ▶ float
    - ▶ str
    - ▶ another (final?) type will be introduced next lecture
- explain "floating point" terminology—think of float as real number (fractional part, not an integer)
- mention "objects" only in passing

The type of a variable (ctd.)

Type function

- §2.2.4 and §2.2.5
- built-in function `type`
- type conversion
- automatic type conversion

Operator precedence

Division—quotient and remainder

Live demo of variables and data types

2) Arrays in Python

Array creation and array elements

- §2.3.1
- array *index*, plural array *indices*
- Python has *zero-based indexing*
- four common ways of creating arrays:
  - ▶ linspace
  - ▶ zeros
  - ▶ array
  - ▶ copy

Zeros function

- create an array of zeros

Len function

- length of an array

- show error when access out of bounds
- contrast with C

Copying an array

- BE VERY CAREFUL with naive/obvious copy method
- `copy` function creates new array and copies values
  - ▶ use this method!

Slicing an array

- needs a figure showing boxes

Live demo of Python arrays