Introduction to Python for network science

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Common programming languages for science

- **General-purpose languages (GPL)**
  Python
  C++

- **Domain-specific languages (DSL):**
  R
  Matlab
  Julia ? (can be classified as GPL)

Python properties

Interperted and high level GPL

It is dynamically-typed and garbage-collected.

It supports multiple programming paradigms (including OOP)

Open source

It emphasizes code readability

Excellent interaction with other languages.

Modules

- Scientific computation modules:
  NumPy, SciPy, and SymPy
- Statistics modules:
  Pandas
- Network modules
  igraph, Networkx
- Plotting modules:
  matplotlib, ggplot

Tools

- Interactive python console:
  ipython

- Python notebook
  jupyter
  Google colab (online)

- Installer for python libraries
  pip install <library>

Python basics

- **Basic data types**
  Like most languages, Python has a number of basic types including integers, floats, booleans, and strings
- **Basic operators**
  +
  -
  *
  /
  **
- Common comparison operators
  ==, !=, >, <, >=, <=

Python basics

- **Boolean operators**
  and
  or
  not

- **Attribution**
  =

Strings, lists, arrays, ...

Live demonstration