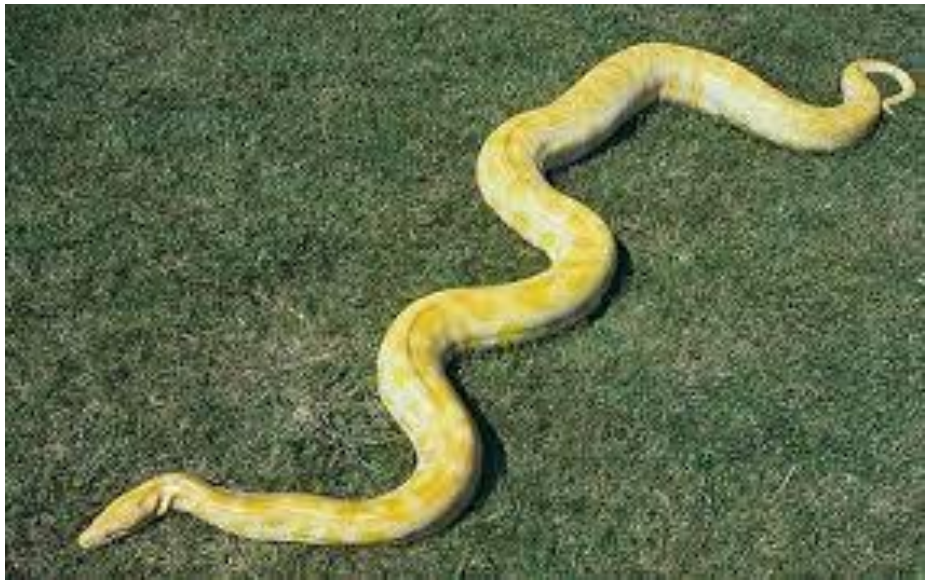
What is Python



Programming language
Script language

Why using Python

- Free for academic use (anyone who has a .edu email address)
- Open source (everything is transparent)
- Millions of people are developing it.

Other specifics of Python

- Advantage
  - The core language is very small
    - There are only very small number of reserved words: import, def, if, else, not, is, None
  - Intuitive
    - Example: if a is float
    - Example: print “hello world”
- Disadvantage:
  - There are too many ways of using it, too many choices of solving problems.
    - Example, the graphic interface can be Tkinter, QT, wxPython, etc
    - Many development environment: KDE, Ipython, Canopy

One way to run Python commands

- Ho to run Python
  - Interactive Python (IPython) user interface
  - Python can be used as a good calculator
- Userful commands:
  - pwd , find out the current directory
  - ls, list the files under the current directory
  - cd, change directory
  - run, to run a python script
  - import, to import a function or a library

More on PyLab

- PyLab is a collection of Python packages that is suitable for us
  - Some most important packages for use
    - Ipython: the interactive interface
    - numPy: numeric Python
    - sciPy: scientific Python
    - matplotlib: 2 dimensional data visualization

Let's practice on using PyLab using commands

- As a simple calculator
  - Wavelength of the our RHEED electron
- As a calculator that can store variables
- Arrays
  - arange(0,10), ones(10), rand(10), ones([5,5])
- Plot
  - x=arange(0,10)
  - plot(x,sin(x))

Python script

- Script is a sequence of commands plus flow control
- Script is stored in a file with subscript .py
- Script editor:
  - Notepad++
- To run a script:
  - In the command line: run filename.py

Case study: RHEED simulation

My library: Pydao

- A collection of Python programs I have accumulated in the past 6 six years.
- Arranged into a package that can be called using import