

CSCI2040: Introduction to Python

Administrative matters

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Course webpage: www.cse.cuhk.edu.hk/~cslui/csci2040.html

Lecture: September 3, 2018 till October 31, 2018 (*approximately*)

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Course outline

- Python, software installation & environment
- Variables and data types
- Inputs and outputs
- Variable assignment
- Control flow: while, if, for
- Logical operators
- Lists
- Tuples
- Dictionaries
- List Comprehension
- Object-oriented programming
- Functional programming
- Packages (e.g., matplotlib)
- Examples
- ...etc

Eclipse IDE

- Eclipse is a power IDE
- Download: <http://www.eclipse.org/downloads/eclipse-packages/>
(<http://www.eclipse.org/downloads/eclipse-packages/>)
- Use Eclipse IDE for Java Developers (use this package)
- Have to install PyDev in Eclipse
 - <http://www.eclipse.org/downloads/eclipse-packages/>
(<http://www.eclipse.org/downloads/eclipse-packages/>) (drag to Eclipse)
 - Or <https://codeyarns.com/2014/12/23/how-to-install-pydev/>
(<https://codeyarns.com/2014/12/23/how-to-install-pydev/>)
- Tutorial on PyDev Pluggin in Eclipse
 - Python Development with PyDev and Eclipse – Tutorial: --
<http://www.vogella.com/tutorials/Python/article.html>
(<http://www.vogella.com/tutorials/Python/article.html>)
 - Python Programming in the Eclipse IDE: --
<https://www.ics.uci.edu/~pattis/common/handouts/introtopythoneclipse/>
(<https://www.ics.uci.edu/~pattis/common/handouts/introtopythoneclipse/>)

Python: Installation

We will go through how to

- Install python
- Different ways to launch python
- Installation of Jupyter

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Installation of Python

To install Python, do the following:

- Go to <https://www.python.org> (<https://www.python.org>)
- Go to the "Download"
 - Go can download 3.6 or 2.7 (**Note:** there are some subtle difference between 2.7 and 3.6)
- For Python documentation, please go to "Documentation". You can use both 2.x and/or 3.x documentation. (**Important !!!!!**)

Launching Python

Once you have installed python, you can now develop python program. There are at least two ways to launch python:

- Through terminal:
 - Use your favorite editor to write a python program, say *testing.py*
 - run the python program in your termina:
 - *python testing.py*
 - *python3 testing.py*
 - *python2 testing.py*
 - note that the error in running python or python3 when we don't comment out the last line
 - launch the IDE environment:
 - *idle*
 - *idle3*
 - *idle2*

Demo in class using *terminal* and *idle*

- Show we can use Python as a calculator
- Show the first 'hello world' Python program in IDLE
- Show how to run a program in a terminal

Input and output functions in Python

First, we want to know how to read/write information from the terminal. Let's see how we can provide input and output, which are *input()* and *print()*.

```
In [ ]: # Show how we print in Python 3.x
print("hello world !!")
print("I hate John " + "Lui")
print('I think CSCI' + "2040" + ' is boring.')
```

```
In [ ]: # Let's ask user for an input

new_name = input("Please enter a name: ")    # enter a name and assign
                                             # new_name contains a cha

print("hello world !!")
print("I hate " + new_name)
print("I think CSCI" + "2040" + " is boring")
```

```
In [ ]: # Let's ask user to input a name (character string) and the age (integer)

new_name = input("Please enter a name: ") # new_name
age = int(input("Enter the age of the person above: ")) # age is integer
        convert string to integer

print("hello world !!")
print("I hate " + new_name + ", I believe he is ", age, "years old.")
print("BTW, I think CSCI" + "2040" + " is REALLY boring !!!")
```

Optional: Jupyter and its installation

The Jupyter Notebook is an open-source web application that allows you to create and share documents

that contain live code, equations, visualizations and narrative text.

To install, go to

- <http://jupyter.org> (<http://jupyter.org>)
- Follow the link of "Install the Notebook" (or <http://jupyter.org/install.html> (<http://jupyter.org/install.html>))
- You can install Jupyter (and Python) using Anaconda Distribution (<https://www.anaconda.com/download/#macos> (<https://www.anaconda.com/download/#macos>))
This includes Python, the Jupyter Notebook, and other commonly used packages for scientific computing and data science.
- Or you can install Jupyter using *pip*. Just follow the instruction.
- Sometimes, you may need to install some Python packages in Jupyter. Please refer:
 - (<https://jakevdp.github.io/blog/2017/12/05/installing-python-packages-from-jupyter/> (<https://jakevdp.github.io/blog/2017/12/05/installing-python-packages-from-jupyter/>))

In []: