CSCI2040: Introduction to Python

Administrative matters

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

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Course outline

- Python, software installation & environmnet
- 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/introtopythonineclipse/ (https://www.ics.uci.edu/~pattis/common/handouts/introtopythonineclipse/)

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 (integ

new_name = input("Please enter a name: ")                          # new_n
age = int(input("Enter the age of the person above: "))            # age i

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 [ ]:
```
```