Introduction to Python Objects and Expressions

Lecture 0: Course Introduction

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Agenda

1. Course and Instructor Introduction
2. Group Introduction
3. Course Downloads

About me

Early Life

- Born and raised in New York City
  - Grew up in Murray Hill, Manhattan
  - Went to PS 116, Salk School of Science, and Nest+M
  - Currently living in Harlem with my dog Karl Marx
- Hobbies include chess, bike commuting, yoga, and surfing
- Social causes I care about include bicycle and transportation infrastructure, clean water access, and hearing loss awareness

About me

Higher Education

- SUNY Binghamton University
  - 2015 Bachelor of Science: Mechanical Engineering
  - 2016 Master of Science: Mechanical Engineering (Acoustics & Dynamic Systems)
  - Clubs: WHRW Radio Station, MIDI, Engineering without Borders
- Stevens Institute of Technology
  - 2021 Master of Science: Computer Science (Data Analysis & Machine Learning)
  - 2024 Ph.D. Ocean Engineering

About me

Work Experience

- Engineering Experience:
  - 2017-2018: Senior Engineer at Thornton Tomasetti
  - 2019-Present: Research Engineer at the STAR Center
- Teaching Experience: Tutoring, ScholarStem, Chess at Three, Eleanor Roosavelt STEM Course
- Other Experience:
  - Food Service: Sigmund's Pretzel Shop, Ray's Candy Store
  - Music: Live/Recording Engineering, DJing, cocktail jazz piano
  - Other: REI SoHo, Lifeguard

Fill out this survey

https://forms.gle/VM3yhQr4FZrhaCXz6

- Learn the basics of Python programming including data structures, functions, and classes while utilizing industry standard programs and packages to develop, test, debug, and collaborate on projects
- Set the foundations of using Python for data science applications including:
  - Collecting, parsing, sanitizing and cleaning, standardizing, and exploring datasets
  - Generating visualizations including graphics, tables, and figures
  - Determine trends and report conclusions from analysis

- Daily assignments on the materials we learned in class. Most likely you will work on these assignments through the end of class and submit them at the beginning at the beginning of the next class
- There will be a final project that will be presented at the end of the semester that will be a culmination of the skills we learned in class

Course Information

Office Hours and Contact Information

- Office hours will be by appointment only
- Contact email: daniel.kadyrov@gmail.com

Course Downloads

1. Git and GitHub
2. Python through PyEnv
3. Visual Studio Code

GitHub offers free accounts to students. It comes with unlimited public repositories and unlimited collaborators as well as other perks. You will need to verify your student status.

Sign up here

https://education.github.com/

Git is a way to manage your code and collaborate with others. It is a version control system that allows you to track changes to your code and revert back to previous versions if necessary. It also allows you to collaborate with others on the same code base.

Download Git here

https://git-scm.com/downloads

The coursework, including all documents, assignments, and code will be hosted on GitHub. You will need to fork the repository to your own GitHub account. This will allow you to make changes to the code without affecting the original code. You will also be able to download the code, through cloning, to your local machine.

Course Repository

https://github.com/dkadyrov/introductiontopython

To fork the repository, go to the repository in your browser and click the fork button in the top right corner. This will create a copy of the repository in your GitHub account. To clone the repository, go to the repository in your browser and click the green code button. Copy the link.

In terminal, you can navigate to the directory you want to clone the repository to through the `cd` command. Then, type `git clone <link>` where `<link>` is the link you copied from the repository. This will create a copy of the repository on your local machine. This is demonstrated in the following code block:

```
cd Documents
cd "Columbia Summer Course"
git clone <link>
```

Python has many different distributions, versions, and management tools. Although Anaconda is commonly used for data science, we will be using PyEnv to manage our Python distributions.

Python constantly gets updated. Currently it is on version 3.11.3. However, many packages and programs still use older versions of Python. PyEnv allows us to manage multiple versions of Python on our machine. We can also set a default version of Python to use.

Windows OS

Copy and paste the following code into your Command Prompt:

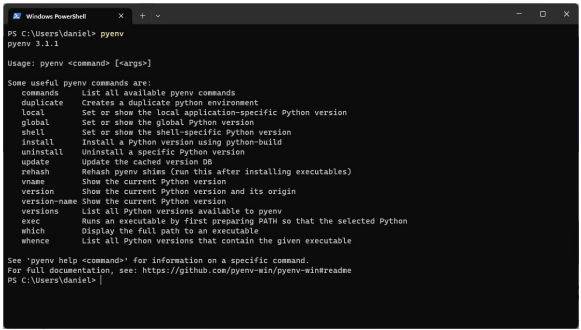
```
Invoke-WebRequest -UseBasicParsing -Uri "https://raw.githubusercontent.com/pyenv-win/
    pyenv-win/master/pyenv-win/install-pyenv-win.ps1" -OutFile "./install-pyenv-win.ps1
    "; &"./install-pyenv-win.ps1"
```

Mac OS

Copy and paste the following code into your Terminal:

```
alias brew='env PATH="${PATH//$(pyenv root)\/shims:/}" brew'
```

To check that PyEnv was installed correctly, type `pyenv` into your terminal or command prompt. You should see a list of commands that you can use with PyEnv.



If you do not see this, try restarting your terminal or command prompt. If you still do not see this, you will have to add PyEnv to your PATH.

To install Python through PyEnv, type `pyenv install <version>` where `<version>` is the version of Python you want to install. For example, to install Python 3.8.5, type `pyenv install 3.8.5`. This environment now needs to be set as the global, default, Python environment through the `global` command. This course is going to use Python 3.10.10 as its distribution.

```
pyenv install 3.10.10
pyenv global 3.10.10
```

Visual Studio Code

1. Download and install Visual Studio Code
2. Install the Python extension
3. Choose your theme!