# Introduction to Python Objects and Expressions

Lecture 0: Course Introduction

Daniel Kadyrov

July 3rd, 2023

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# Agenda

Course and Instructor Introduction

② Group Introduction

Course Downloads

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## 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

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#### 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

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#### 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

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# Group Introduction

**Group Survey** 

## Fill out this survey

https://forms.gle/VM3yhQr4FZrhaCXz6



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## Course Information

#### Learning Objectives

- 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

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## Course Information

#### Assignments

- 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

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## Course Information

Office Hours and Contact Information

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

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## Course Downloads

- Git and GitHub
- Python through PyEnv
- Visual Studio Code

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#### Create a GitHub student account

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/



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#### Download and install Git

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



#### Course Repository

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

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#### Fork and clone the repository

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>
```

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# Python Installing Pyenv

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.

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# Python

Installing Pyenv

#### 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'
```

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# Python

#### Checking for PyEnv

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.

```
Windows PowerShell
PS C:\Users\daniel> pvenv
pyenv 3.1.1
Usage: pyeny <command> [<args>]
Some useful pyeny commands are
  compands List all available pyeny commands
              Creates a duplicate python environment
               Set on show the local application-specific Duthon version
               Set or show the global Python version
               Set or show the shell-specific Python version
               Install a Python version using python-build
               Uninstall a specific Python version
               Undate the cached version DR
               Rehash pyeny shims (run this after installing executables)
               Show the current Python version
               Show the current Python version and its origin
  version-name Show the current Python version
  versions List all Python versions available to oveny
               Runs an executable by first preparing PATH so that the selected Python
               Display the full path to an executable
               List all Python versions that contain the given executable
See 'pyenv help <command>' for information on a specific command
For full documentation see: https://github.com/nyeny-win/nyeny-winttreader
PS C:\Hisers\daniel> |
```

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.

# Python

#### Installing Python through PyEnv

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
```

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## Visual Studio Code

- Download and install Visual Studio Code
- Install the Python extension
- Ochoose your theme!

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