(Intro to) Data Analysis in Python

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Class 01

Reminder:

- All in-class code and lecture slides can be found on GitHub
  - https://github.com/JohnSerences/PSYC193_IntroPython_W2019

Course Schedule (approximate)

- Week00, January 9: What is Python?, Jupyter Environment (Google Colab), First Program, Intro to object types and methods
- **Week01, January 16: More on object types, lists, for loops, list comprehensions, slicing lists**
- Week02, January 23: If…elif…else statements, dictionaries
- Week03, January 30: User input, while statements
- Week04, February 6: NO CLASS
- Week05, February 13: Midterm, writing functions
- Week06, February 20: Classes, object-oriented programming
- Week07, February 27: File Input/Output, data formats for files (e.g. JSON, HDF5)
- -----end of following book-----
- Week08, March 6: NumPy (numerical computing), Plotting (Matplotlib/Seaborn)
- Week09, March 13: Pandas (data frames)
- Final: Room/Time TBD

Grading: In-class exercises

- I went through all notebooks and made comments where needed
- I will pre-fix all comments with “JS:” so you can search for that string to find any notes that I leave for you
- All grades are posted by the last 4 of your student ID
  - Note that any leading zeros are missing – so 0012 would become 12 in the list

- Questions?

Common issues, in-class exercises

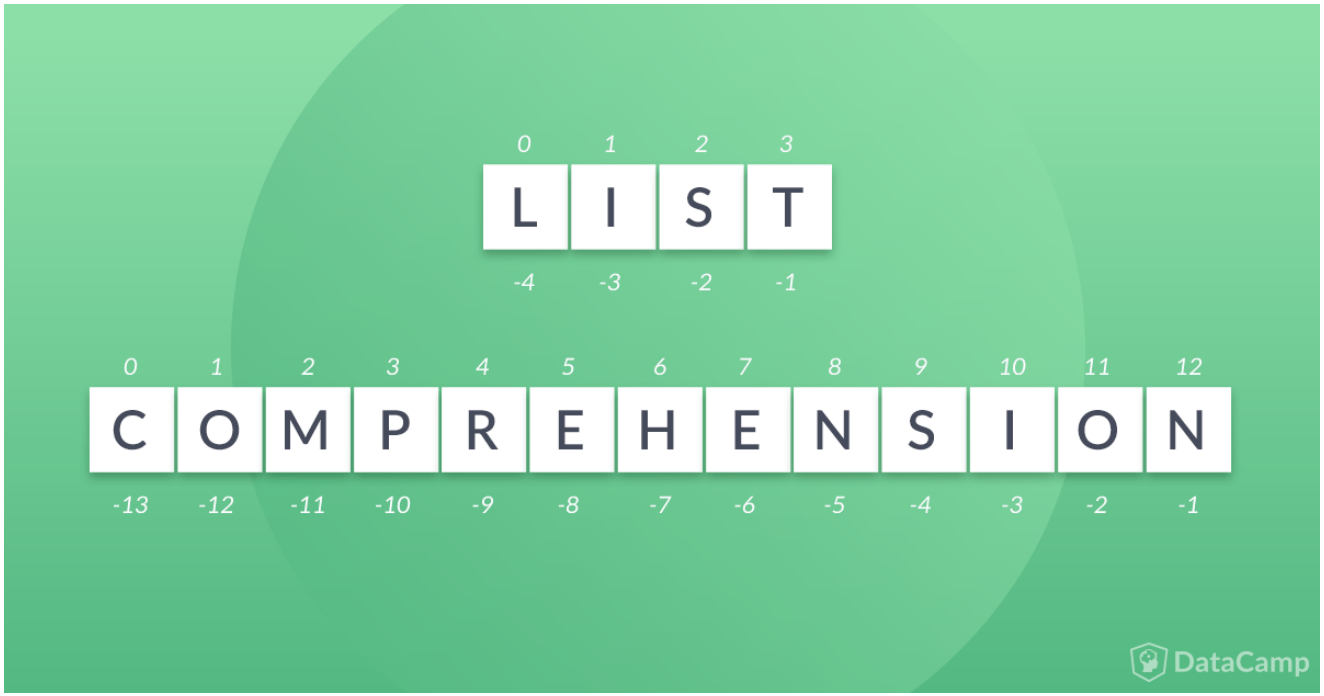
- Most common problems with in-class exercises:
- print('Captain Pickard once said, "There can be no justice so long as laws are absolute.\nEven life itself is an exercise in exceptions."')
  - Note single quotes ‘ ’ on outside to encapsulate the “ ” on the inside…
  - Can insert escape character “\” with a “n” right in the middle of the text string
  - Or could use \n\t, etc.
- Many people did this, which works but not quite as efficient (although arguably better readability…):
  - print('Captain Pickard once said, "There can be no justice so long as laws are absolute.”’ + ‘\n’ + ‘”Even life itself is an exercise in exceptions."')

Common issues, in-class exercises

- Quick note on sort, sorted, and reverse

```
# perm sort
names = [‘john', ‘ella', ‘jack']
names.sort()
# temp sort using sorted function (not method)
sorted_names = sorted(names)
# perm reverse (but undoable with another call to reverse)
names.reverse()
```

Common issues, in-class exercises



In class quiz on material from last week

- Any more questions?

In-class work

- To launch a new notebook and do basic setup
  - Log in to: https://colab.research.google.com/notebooks/welcome.ipynb
    - Can just google: “google colab”
    - Use your AD credentials to login
  - File menu -> “New Python 3 Notebook”
  - File menu -> “Rename” (or just type in the name field in upper left corner)
    - File name should be: Lastname_PSYC193_Class00.ipynb
    - Use exactly this convention EVERY time, only updating the 00 counter (so next class is 01, etc).
  - File menu -> “Locate in drive”
    - This will launch a new window with a file list
    - Right click, Move, navigate to our shared folder and move file
    - Now all your work will be saved in our shared folder…

Key concepts for today

- “for” loop
  - Repeatedly perform a task
  - Can think of this in two general ways:
  - for item in list_of_items, do stuff with each item
  - for value in range_of_values, do stuff with each value
- Indentation
- Defining ranges of numbers (range)
- List comprehensions – more advanced looping
- Slicing – working with part of a list
- Tuple object type: **immutable list**

Some shortcut keys (to start with)

- On a PC cntrl = control key, on Mac cntrl = “apple” key
  - New cell above: cntrl+M A
  - New cell below: : cntrl+M B
  - Convert to code cell: cntrl+M Y
  - Convert to text cell: cntrl+M M

- Run a cell (execute code or display markdown): cntrl+ENTER