Python for Pythonistas

Questions? Contact us at udioron@gmail.com | More info: https://www.10x.org.il/training/

DRAFT

- **Target Audience:** Python developers with some python experience :-)

Day 1

Quick overview of some important Python features

- The Python community
- virtualenv
- ipython
- Python 3: f-strings; Type annotations; mypy
- docstrings and doctests; func(a,b,*,x,y)
- walrus operator
- Coding conventions: pep8, black
- ???

Functional Programming

- First class functions, lambda expressions
- Variadic functions
- Enclosed functions, closures
- Simple Decorators
- Decorators with parameters
- functools

Better Error handling

- Overview: How and how not to try...except errors
- Custom exceptions
- finally
- logging

Generators

- Iteratrors: iter(); next()
- Building and using generators
- Generator expressions
- Lazy evaluation; itertools

(+Bonus: JupyterLab)

Day 2

Modules

- Package modules; relative imports; project structure

Python Projects and Environments

- requirements files; ~~poetry~~ uv
- sys.path; PYTHONPATH

Object Oriented Python

- Quick review: Instance variables, methods, __init__, __str__, __repr__ …
- Context managers; contextlib
- Simple Inheritance; overriding
- Class variables, static and class methods
- Multiple Inheritance; Mixins

Data Serialization and Data Classes

- unicode and utf8
- pickle
- json
- (bson, msgpack; protobuf; flatbuffers)
- TypedDict
- namedtuples and NamedTuples
- Dataclasses; ~~attrs~~; **pydantic**
- (vs: pandas)

Day 3

Unit Testing with pytest

- building and running unit tests; asserts
- exercise: TDD using ~~python's unittest~~ pytest
- pytest fixtures
- mark; parametrize
- coverage
- more pytest: capture and logging
- pytest-xdist

Concurrency in Python: An Overview

- threads: usage and limits, the GIL
- multiprocessing: usage and limits
- concurrent.futures
- message queue with celery

Crash Intro to NoSQL with MongoDB

- Quick overview - SQL vs NoSQL
- Running Mongo; The Mongo shell
- Collections and documents
- CRUD: Create, Retrieve. Update and Delete documents
- Querying
- Indexes
- pymongo

~~Telegram Bot Workshop/Mini-Hackathon~~

- ~~How to build a telegram bot?~~
- ~~Building simple bots - in pairs.~~
- ~~Friendly Competition - Build your own telegram bot - in pairs.~~

Extra Day 4: Scientific Python (Optional)

Jupyter Notebook

- Using jupyter notebook and jupyter lab for scientific python

Numpy

- creating numpy arrays; array properties; accessing arrays
- operations on arrays; array manipulation
- working with images and RGB data
- axis operations; broadcasting; fancy indexes; ufuncs
- masks & masked_array

Matplotlib

- matplotlib with jupyter using pylab
- creating charts: histogram, xy, bar.
- customizing charts: titles, axis, colors.

Pandas

- series: creating and using
- dataframe: creating manually and from existing data (csv/json)
- using, accessing and selecting columns, indexes and rows
- modifying dataframes
- filtering and querying data
- sorting and aggregating data
- exporting data and creating graphs
- date and time based data