WELCOME

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Women Who Code Python

Python Libraries 101

OUR MISSION

Inspiring women to excel in technology careers.

WOMEN WHO CODE

OUR VISION

A world where diverse women are better represented as engineers and leaders in technology.

WOMEN WHO CODE

OUR TARGET

Engineers with two or more years of experience looking for support and resources to strengthen their influence and levelup in their careers.

WOMEN WHO CODE

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Our events are intended to inspire women to excel in technology careers, and anyone who is there for this purpose is welcome. We do not tolerate harassment of members in any form. Our **Code of Conduct** applies to all WWCode events and online communities.

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Python Libraries 101:

Python Standard Library

Session #3

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Meet Your Team!

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Today's Agenda

1. The Python Standard Library?
2. Modules we'll be exploring today
    a. collections
    b. itertools
3. Setup and Requirements
4. Hands-on Coding

Python Standard Library

What is the Python Standard Library?

- Python offers a lot of built-in functionality through its standard library.
- Built-in modules are written in C and integrated with the Python shell.
- The standard library is a huge collection of utilities, ranging from math utilities to debugging to creating graphical user interfaces. Popularly used modules are os, sys, json, re, random, math urllib, tkinter, datetime

collections

Collections Module

- Collections is a built-in Python module that implements specialized container data types providing alternatives to Python’s general purpose built-in containers such as dict, list, set, and tuple.
- A Container is an object that is used to store different objects, and provides a way to access these contained objects and iterate over them
- **Syntax:**

   import collections

Collections Module: Containers

- **Counter(iterable):** creates an unordered collection where elements and their respective count are stored as a dictionary
  - **elements():** Returns a count of each element and If an element's count is less than one, it is ignored.
  - **most_common([n]):** Returns a list of the most common elements with their counts. If none is specified it returns the count of all the elements.
  - **update(data):** update the values in the counter

Collections Module: Containers (contd.)

- **deque():** deque objects are a very fast alternative for Python lists. They allow operations from both sides of the iterable
    - **appendleft(n):** adds an element to the left of the deque
    - **extend(iterable):** extends the deque from the right by appending iterable elements
    - **extendleft(iterable):** extends the deque from the left by appending the elements from iterable
    - **popleft():** remove elements from the left
    - **append(), insert(), reverse()**

Collections Module: Containers (contd.)

- **defaultdict():** similar to a regular dictionary but it creates any items that we try to access provided they do not exist yet

- **ordereddict():** similar to a regular dictionary but it remembers the order of the keys in which they were first inserted. The other types of dictionaries do not store keys in an order.

Collections Module: Containers (contd.)

- **namedtuple():** returns a tuple-like object with named fields, these field attributes are accessible by lookup as well as by index
- **ChainedMap():** encapsulates many dictionaries into one unit.
  - **maps():** displays keys with corresponding values of all the dictionaries in ChainMap.
  - **new_child():** adds a new dictionary to the beginning of the ChainMap.
  - ChainMap supports all the usual dictionary methods such as keys(), values(), get(), pop(),items() etc.

itertools

Itertools Module

- Itertools provides us with functions that we can use to operate on iterables and create more complex functions
- Using functions from this module helps create fast, memory-efficient and readable code.
- **Syntax:**

  import itertools

Itertools Module: Infinite Interators

- **count(start, step):** starts printing from the “start” number and prints infinitely
- **cycle(iterable):** prints all values in order from the passed container. It restarts printing from the beginning again when all elements are printed in a cyclic manner.
- **repeat(val, num):** repeatedly prints the passed value infinite number of times. If the optional keyword num is mentioned, then it repeatedly prints num number of times.

Itertools Module: Finite Iterators

- **chain():** accepts a variable number of iterables and loops through all of them, one by one
- **compress():** takes in an iterable and a selector, and returns an iterable with only those items for which the corresponding selector value is true.
- **dropwhile():** goes on dropping values from the iterable until it encounters the first element that evaluates to false.

Itertools Module: Combinatorial Iterators

- **Product():** computes the cartesian product of input iterables
- **Permutations(*iterable, group_size*):** generate all possible permutation of an iterable
- **Combinations(*iterable, group_size*):** prints all the possible combinations(without replacement) of the container passed in arguments in the specified group size in sorted order.

QnA Time!

Let’s Code!

Useful Links

- https://github.com/WomenWhoCode/WWCodePython/tree/master/Python%20Libraries%20Series/Python%20Standard%20Library
- https://docs.python.org/3/library/collections.html
- https://docs.python.org/3/library/itertools.html
- https://pymotw.com/3/itertools/index.html
- https://www.educative.io/edpresso/what-are-itertools-in-python

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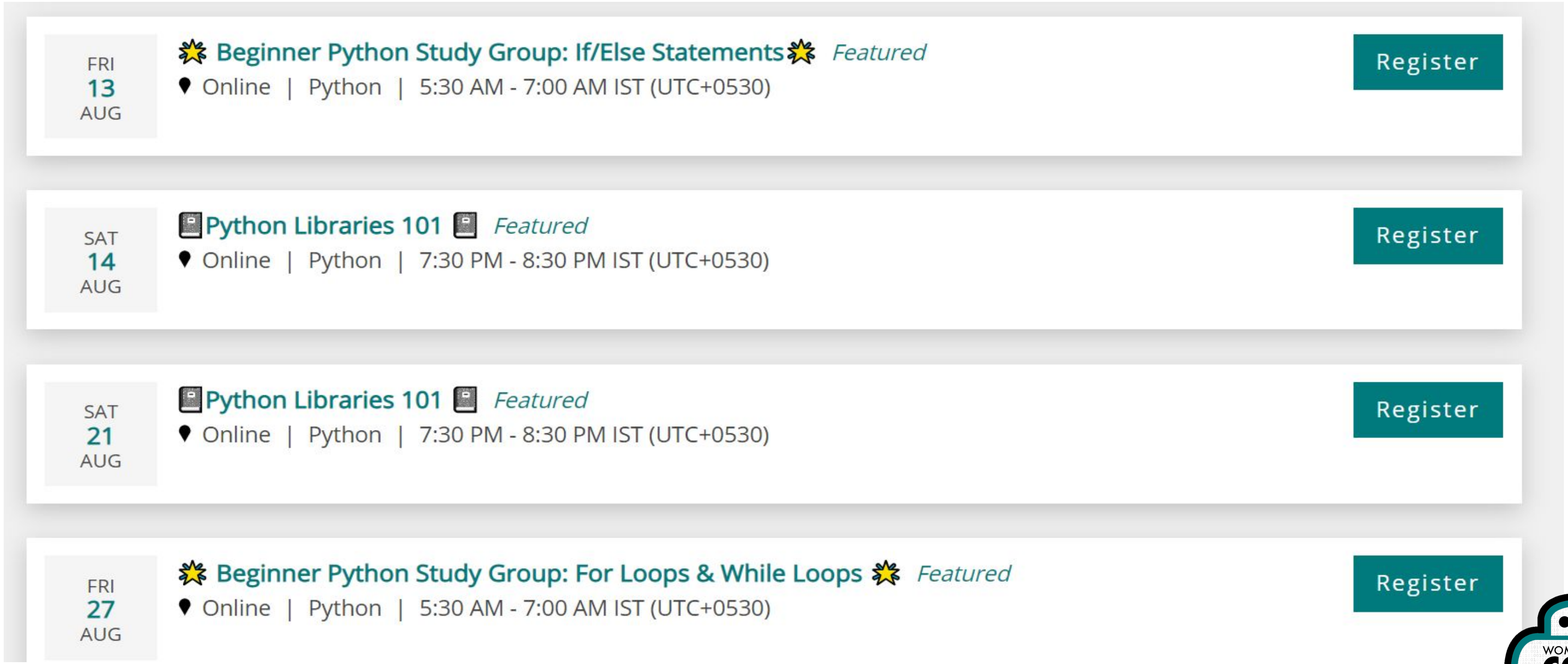
- ➔ Numpy, pandas

Upcoming Events



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