

About Python

Monday, December 24, 2018

6:54 PM

- Multipurpose, interpreted programming language
- Created in 1991 by Guido van Rossum
- Python Package index is the official repository of software for python
- There are over 100,000 packages available
- Over 3000 packages are related to automation
- Most packages can be installed using PIP
 - o PIP is cli utility used for managing packages
- Easier to learn than most languages

Basics

Tuesday, January 8, 2019 10:49 AM

Python	To enter the Dynamic Interpreter (shell)
Exit() or CTRL+D	To Exit Shell
#!/usr/bin/env python	Shebang (first line of your script) Enforces which python version is used and required if you want to excute your script as a standalone version.
Help()	View the python built in documentation
Dir()	Returns the attributes and methods of the object of module
Type()	Displays the type of the object (string, dictionary, integer)
String Methods	<string>.upper() .lower() .replace() .startswith() .format() .split()
String examples	Test = 'cisco' test.replace('c', 'r') ipadd = '10.1.1.1' ipadd.split('.')
If/elif/else	Python conditional statements
List Methods	<list>.append() .insert() .pop() .count() .sort() .extend()
Dictionary Methods	<dict>.update() .pop() .get() .keys() .values() .items()
Dictionary .get Method	The get is a conditional check facts.get('home')
Safely open files	With open('vlans.txt', 'r') as config: Vlans = config.readlines()
if __name__ == "__main__":	Script entry point
__init__.py	Required at each directory of a python package
test = re.findall(r'(.*?)\s*</code></td>', source)	Search for any string between two strings
Python --version	Check version of python
Pip3 list	View python packages installed

Dictionaries

Monday, December 24, 2018 10:17 AM

Allow you to work with key value pairs

- Python dictionaries have no order

<code>clear(...)</code>	<code>test.clear()</code> ---> None. Remove all items from D.
<code>copy(...)</code>	<code>test.copy()</code> ---> a shallow copy of D
<code>get(self, key, default=None, /)</code>	Return the value for key if key is in the dictionary, else default.
<code>items(...)</code>	<code>test.items()</code> ---> a set-like object providing a view on D's items
<code>keys(...)</code>	<code>D.keys()</code> -> a set-like object providing a view on D's keys
<code>pop(...)</code>	<code>D.pop(k[,d])</code> -> v, remove specified key and return the corresponding value. If key is not found, d is returned if given, otherwise <code>KeyError</code> is raised
<code>popitem(...)</code>	<code>D.popitem()</code> -> (k, v), remove and return some (key, value) pair as a 2-tuple; but raise <code>KeyError</code> if D is empty.
<code>setdefault(self, key, default=None, /)</code>	Insert key with a value of default if key is not in the dictionary.
<code>update(...)</code>	<code>D.update([E,]**F)</code> -> None. Update D from dict/iterable E and F. If E is present and has a <code>.keys()</code> method, then does: for k in E: <code>D[k] = E[k]</code> If E is present and lacks a <code>.keys()</code> method, then does: for k, v in E: <code>D[k] = v</code> In either case, this is followed by: for k in F: <code>D[k] = F[k]</code>
<code>values(...)</code>	<code>D.values()</code> -> an object providing a view on D's values
<code>fromkeys(iterable, value=None, /)</code> from <code>builtins.type</code>	Create a new dictionary with keys from iterable and values set to value.

Functions

Wednesday, September 23, 2020 3:56 PM

- Write reusable pieces/chunks of code
- Functions are not run in a program until they are "called" or "invoked" in a program
- Function characteristics
 - Has a name
 - Has parameters (0 or more)
 - Has a docstring (optional but recommended)
 - Has a body
 - Returns something

Install Python for Network Engineers

Tuesday, January 8, 2019 9:51 AM

1. Visit <https://www.python.org/downloads/> to download the latest version of python.



2. Double click Download Python 3.7.2
3. Once the download completes double click the installer. You may have to locate the file in your downloads folder on your computer. In order to install python you will need administrative privileges or atleast the admin password for you device.
4. Here we will select the option for all users unless you share your systems and other users are running different versions of python. If that is not the case. Select install for all users and click next.
5. We will leave this page default and then click next.
6. On the customize python page we will click the add python path option and then click next. Other wise when you go to run python in command prompt or powershell you will have to enter the full path each time. So now we click next.
7. Once the install completes click finish.
8. Verify it is installed and works idle and the command line version.

Open-source software (OSS) is a type of [computer software](#) in which [source code](#) is released under a [license](#) in which the [copyright](#) holder grants users the rights to study, change, and [distribute the software](#) to anyone and for any purpose.^[1]

From <https://en.wikipedia.org/wiki/Open-source_software>

JSON

Wednesday, September 23, 2020 3:58 PM

- Wrapped in {}
- Lists use []
- List of dictionaries
- String, int, and boolean attribs
- Comma-separated dict
- Another customer

Lists

Wednesday, September 23, 2020 3:56 PM

Naming Conventions

Wednesday, September 23, 2020 3:07 PM

Names to avoid

- Single character names except for counters or iterators
- Dashes (-) in any package/module name
- `_double_leading_and_trailing_underscore_names` (reserved in Python)

Packages:

- Should always be snake case (`lower_with_under()`)

Modules:

- Should always be snake case (`lower_with_under()`)

Functions:

- Should always be a verb
- Should always be snake case (`lower_with_under()`)
 - o File names should be snake case
 - o Test files always start with `test_`

Classes:

- PascalCase (CamelCase)
- Should always be a noun

Exceptions:

- PascalCase (CamelCase)

Global/Class Constants: `CAPS_WITH_UNDER`

Global/Class Variables: `lower_with_under`

Instance Variables: `lower_with_under`

Method Names: `lower_with_under()`

Function/Method Parameters: `lower_with_under`

Local Variables:

- `lower_with_under`
- noun

79 limited to 72 characters

Imports

- Used to import Python Packages
- `From <file_name> import <class>`
- should usually be on separate lines

Avoid overly complex or compound names

- No AND or OR

Avoid leaky abstractions

- List vs. ArrayList
- Sorter vs. QuickSorter

Avoid overly generic names

- Words like process, manage, and handle imply that the purpose of the function of calls is too

broad

Consistency is more important than style

- Match the style already in place
 - o If existing code is camel case - use camel case
 - o If underscore, use underscore

Code should not contain inappropriate or funny comments/names

Be lazy - Don't reinvent the wheel

You must read and understand all of the code that you put out for code review!

The best way to learn how to write good code is to read good code.

- Spend time reading other people's code.

Tables libraries

Wednesday, September 23, 2020 3:04 PM

Tabulate	https://pypi.python.org/pypi/tabulate
Prettytable	https://pypi.python.org/pypi/PrettyTable
Texttable	https://pypi.python.org/pypi/texttable
Termtables	https://pypi.python.org/pypi/termtables

XML

Wednesday, September 23, 2020 4:00 PM

Mandatory XML header

- `<?xml version="1.0" encoding="UTF-8" ?>`

Mandatory top-most element

List elements

Standard data in "elements"

Closing element prepended with forward slash "/"

Attributes: business customer

Attribute personal customer

Useful but often hard to translate

YAML

Wednesday, September 23, 2020 4:03 PM

YAML "Always quote your strings"

End your yaml file with ... so you don't truncate data

- NOTE Easier to read and write but can take longer to parse
- Supports comments
- List of dictionaries again
- Dash indicates list element
- Quotes only needed if ":" exists
- Optional ending of three periods

Unittesting

Wednesday, September 23, 2020 4:37 PM

Pip install mock

Python3 -m coverage run --source=. -m unittest discover
Coverage report -m

Python3 -m unittest Test_job.AnotherTest.Test_get_test

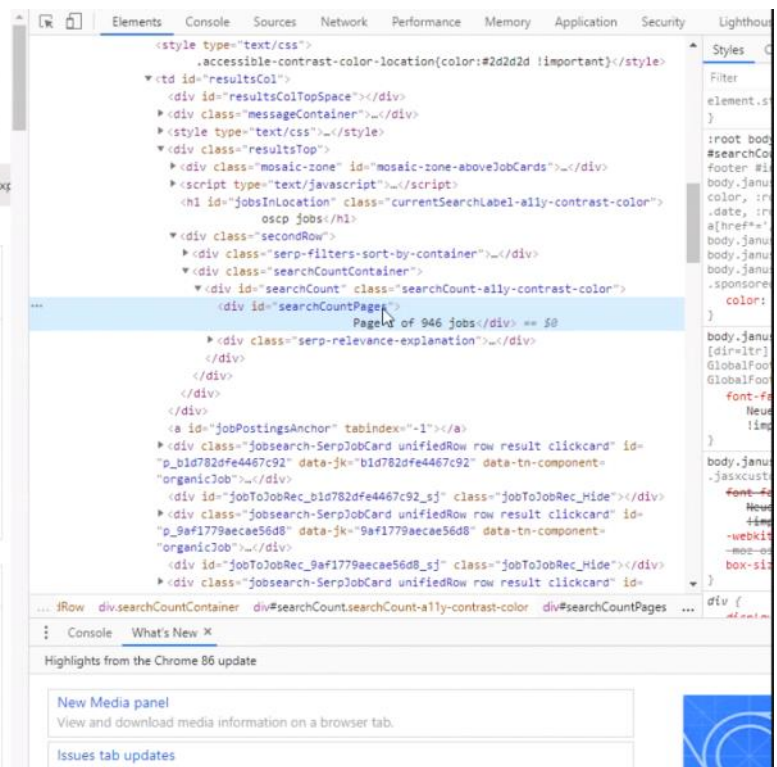
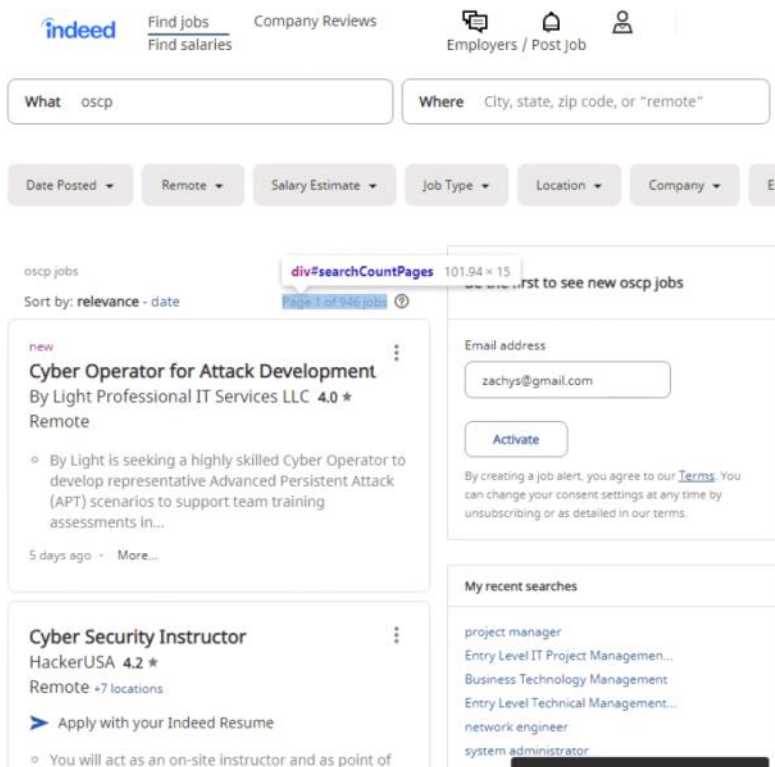
Python Environments

Thursday, September 24, 2020 7:25 AM

- Virtual environments allow you to have project environments that use their own versions of applications.
- Python 3.3 or higher to use venv in windows. Builtin.
 - o Pip env
 - o Virtualenv
- To create a new virtual environment
 - o python3 -m venv <Name of Environment>
- To activate
 - o <Name of Environment>\Scripts\activate.bat
- To deactivate your environment
 - o deactivate
- To verify environment path
 - o where python (Do this in cmd)
- View installed python packages
 - o pip list
- To get the packages for the requirements.txt file do
 - o pip freeze
- To install with dependencies from a requirements.txt file do
 - o pip install -r requirements.txt
- To delete virtual environment and all of its contents in windows
 - o rmdir <Name of Environment> /s
- NOTE:
 - o Never put files inside your venv directory
 - The virtual environment is something you use and throw away.
 - o Never commit your virtual environment to source control
 - .ignore your venv

```
104 # Environments
105 .env
106 .venv
107 .inat_venv
108 env/
109 inat_venv/
110 venv/
111 HW/
112 env.bak/
113 venv.bak/
https://github.com/labeveryday/INat/blob/master/.gitignore
```

- To give your environment access to global packages
 - o python -m <env> <Name of Environment> --system-site-packages
- To view packages installed in your environment
 - o pip list --local



Setup.py Breakdown

Thursday, September 24, 2020 7:48 AM

To create a python package

`__init__.py`

From setuptools import setup, find_packages

Import <your_package>