CODING BOOTCAMP

FOR CYBER PROFESSIONALS

thecyberinstructor.com

About Karan (Instructor)

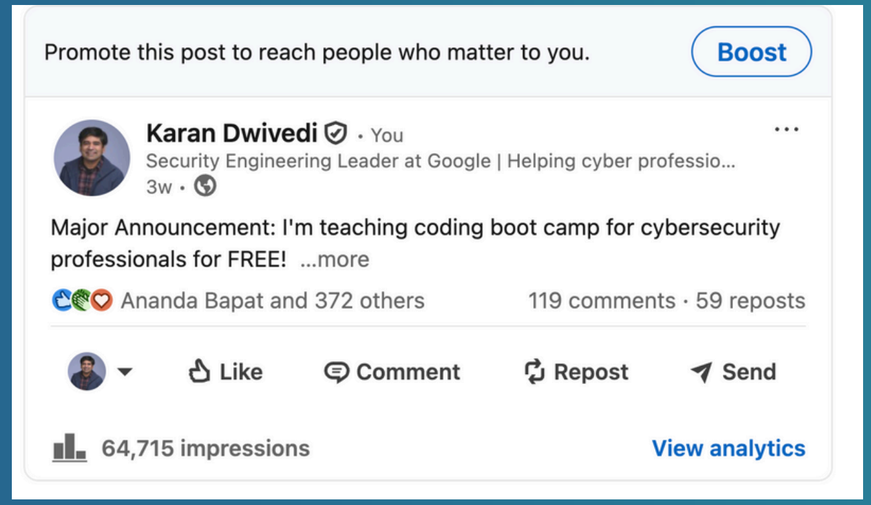
- Hi I’m Karan Dwivedi!
- Sec Eng @ Google, Yahoo, 10+ yrs experience
- Founder @ The Cyber Instructor
- Wrote a book to get started in cybersecurity – kickstartseceng.com
- Received EB1A Extraordinary ability green card in US

About Apurv (Course Staff)

- Hi I’m Apurv Singh Gautam !
- CTI Researcher @ Cyble, 6+ yrs experience
- Member @ Curated Intel
- Loves to contribute and help others
- 8k+ followers on LinkedIn

How to get the most out of this course!

- Follow lectures
- Do the exercises and capstone
- Ask questions!
- Network!
- Post your progress on LinkedIn/Social Media
- Tag Karan and Apurv for broader reach



Course Outline

- **Class 1: Python refresher (Exercise 1: Whois lookup tool)**
- Class 2: Common Algorithms (Exercise 2: Secrets Manager)
- Class 3: 1D data structures (Exercise 3: Mini Firewall)
- Class 4: Trees and Graphs (Exercise 4: Mini File System)
- Class 5: Capstone Demos and wrap up

The Cyber Instructor

- Mission: Provide highest quality cybersecurity education to the planet!
- Vision: Anyone can grow in cybersecurity using our offerings
- Impact: At scale!
- Principles:
  - Lead with Value
  - Quality >> Quantity
  - Strive for excellence
- https://www.linkedin.com/company/103318086/

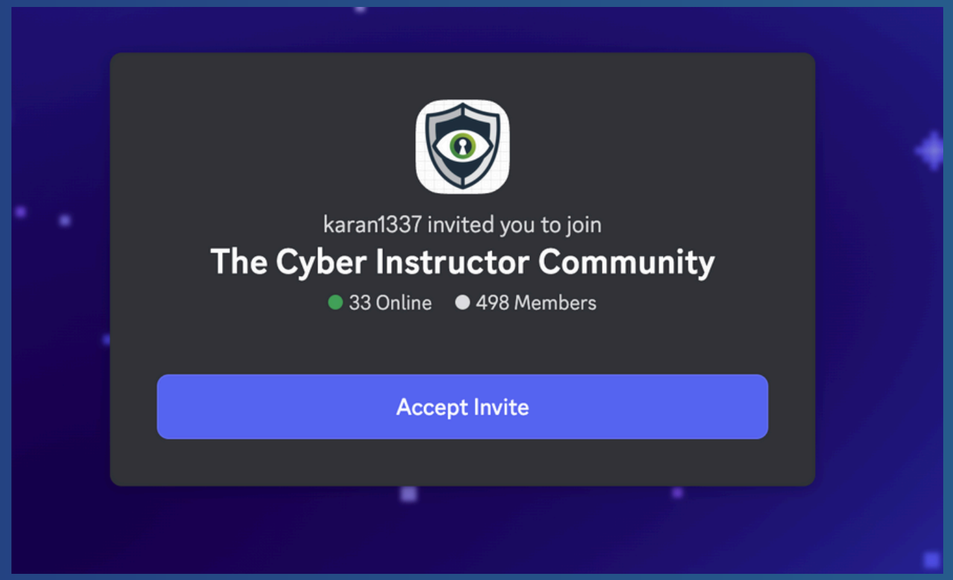
Course Schedule

- Live lectures, exercises and capstone project
- We will remind you of each deadline
- #annoucements, email etc.

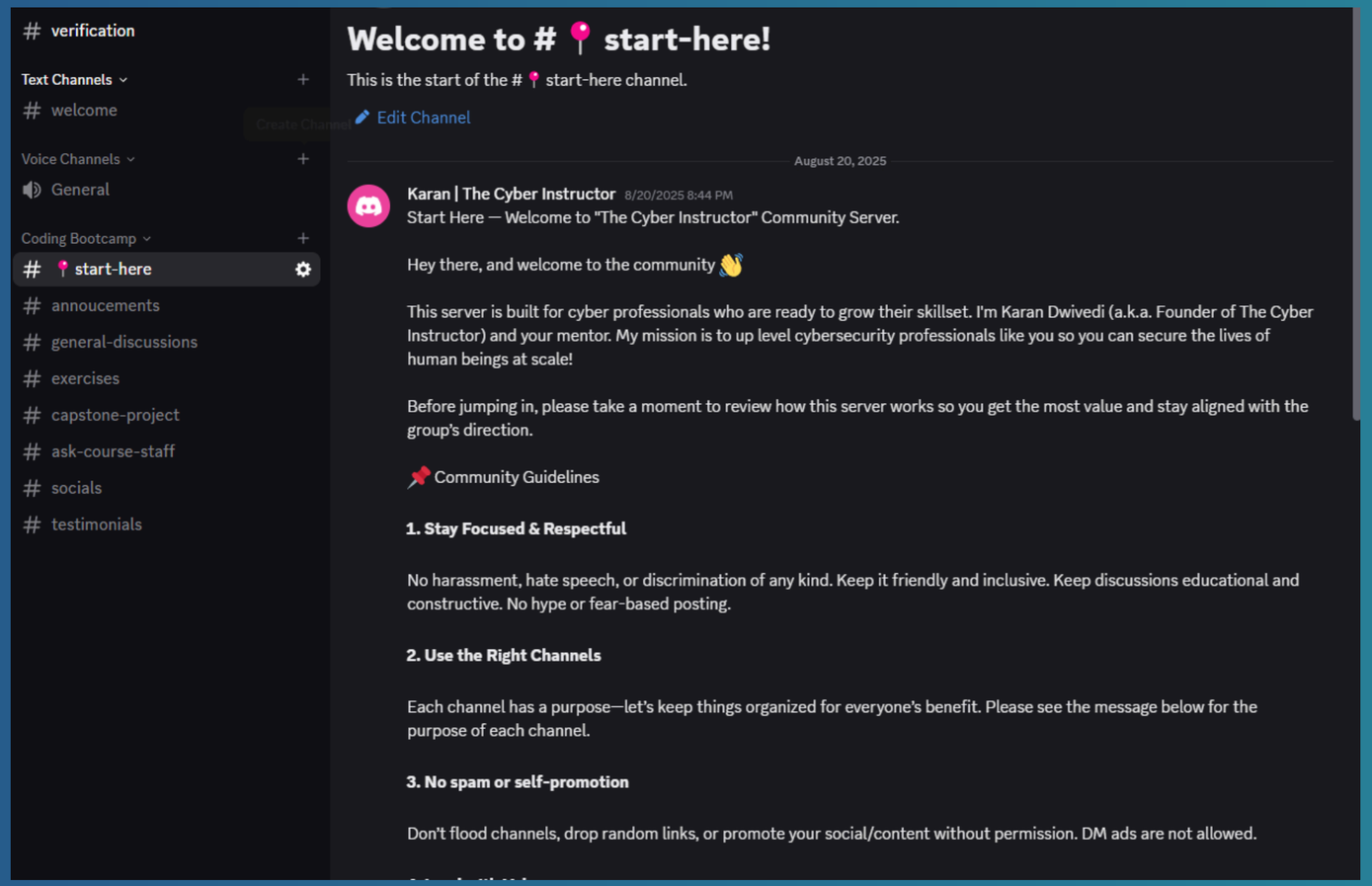
CODING BOOTCAMP FOR CYBERSECURITY PROFESSIONALS

Sept 12th	Class 1 (Basics of python)
Sept 18th	Exercise 1 Deadline (Whois lookup)
Sept 19th	Class 2 (Common Algorithms)
Sept 21st	Decide your capstone project (recommended deadline)
Sept 25th	Exercise 2 Deadline
Sept 26th	Class 3 (1D Data Structures
Sept 27th	Certificate Request Deadline
Oct 2nd	Exercise 3 Deadline (Mini Firewall)
Oct 3rd	Capstone Project Deadline
Oct 10th	Class 5 (Capstone Demos and Course wrap up

Course logistics – Discord



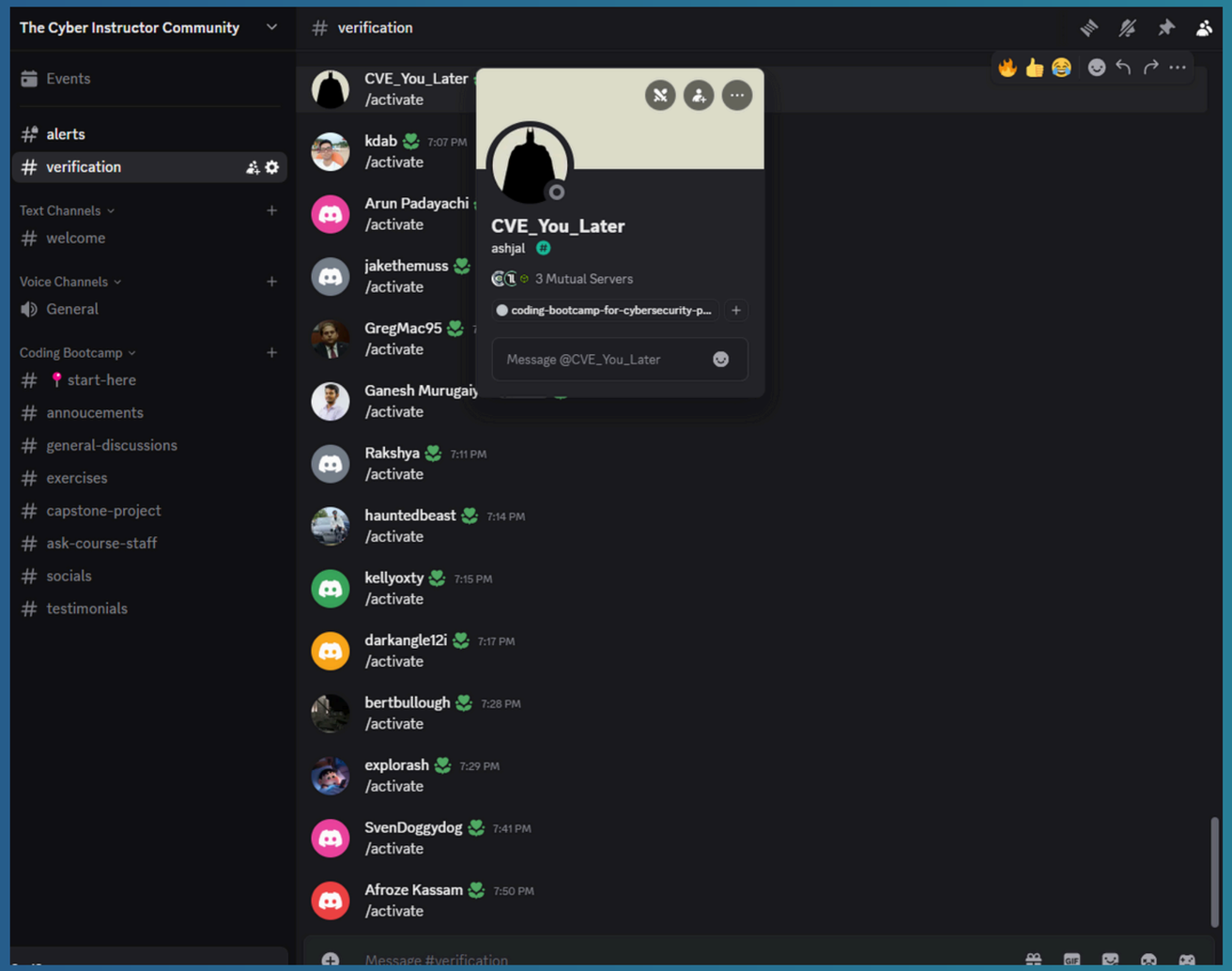
Join using:
https://link.thecyberinstructor.com/cb-discord-invite



Course logistics – Discord

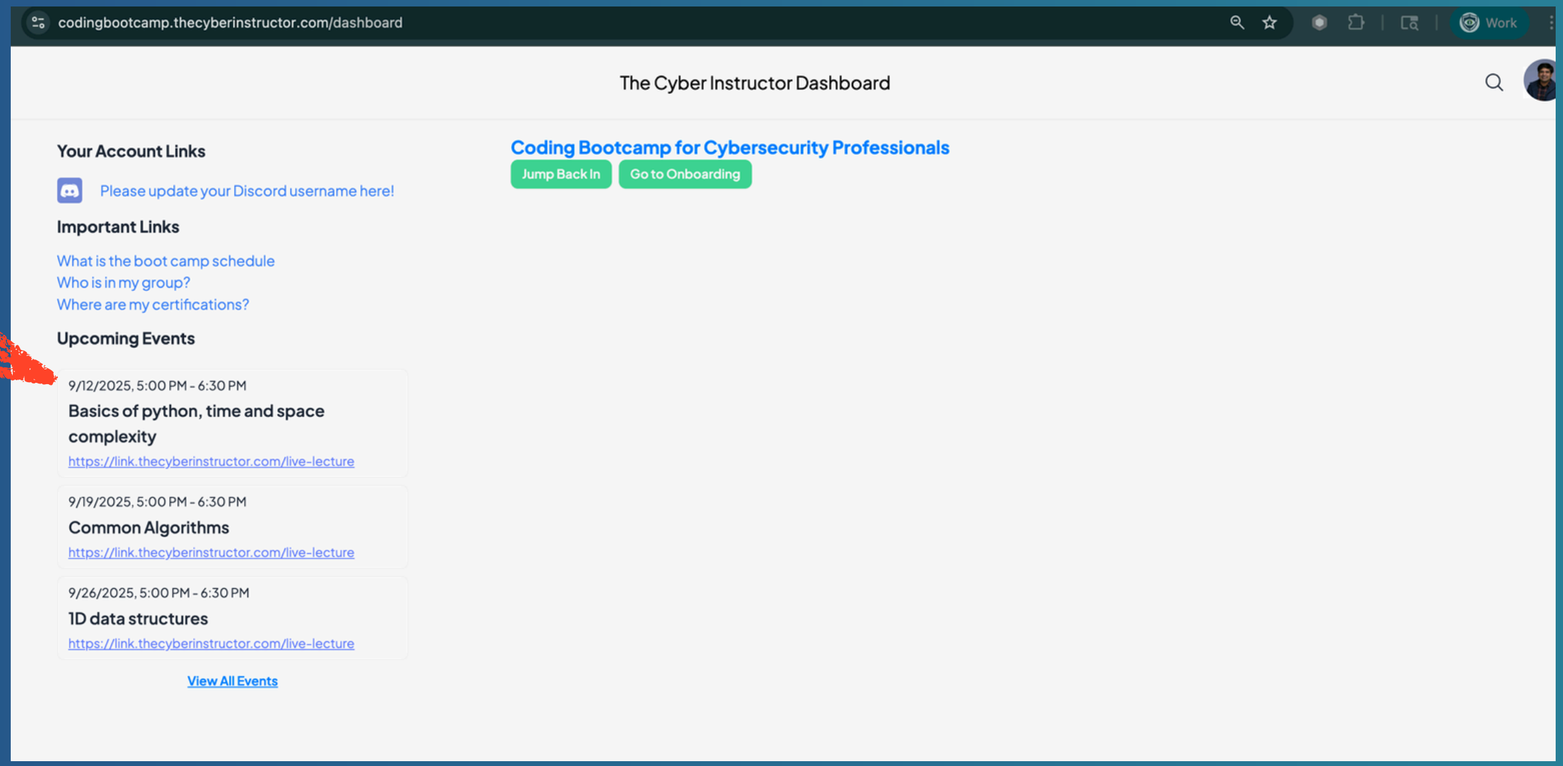
Use /activate in the #verification channel to be added to the right role for the course!

Role: @coding-bootcamp-for-cybersecurity-professionals



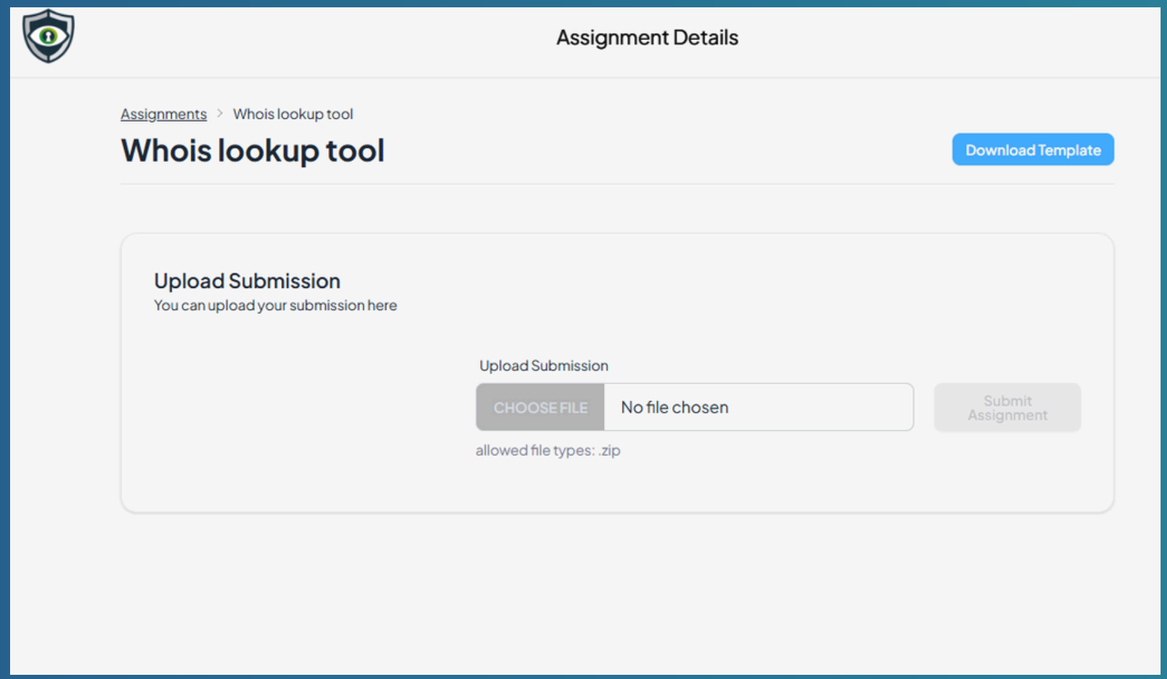
Course logistics – Lectures

- Lecture links will be available in the events page on your dashboard.
- The most recent link is always https://link.thecyberinstructor.com/live-lecture
- We will also share in #annoucements



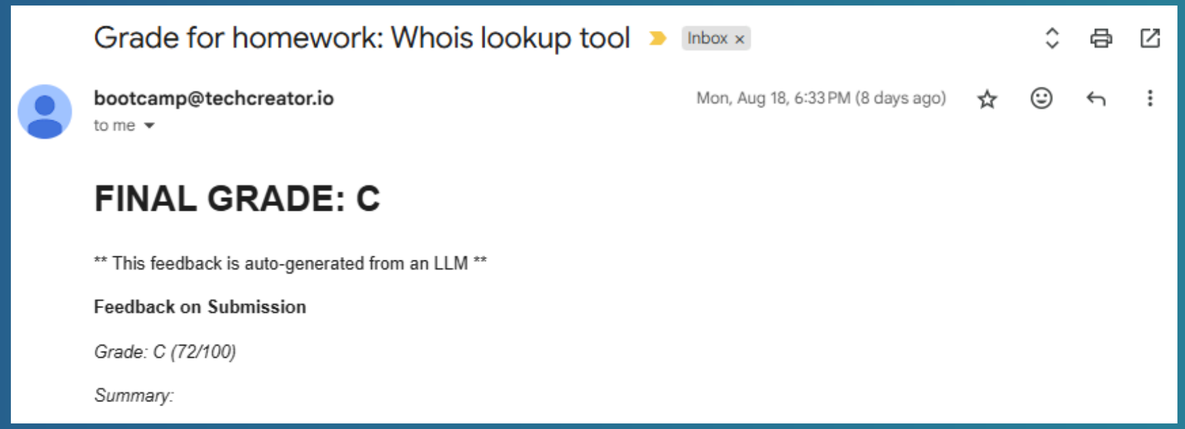
Course logistics – Exercises

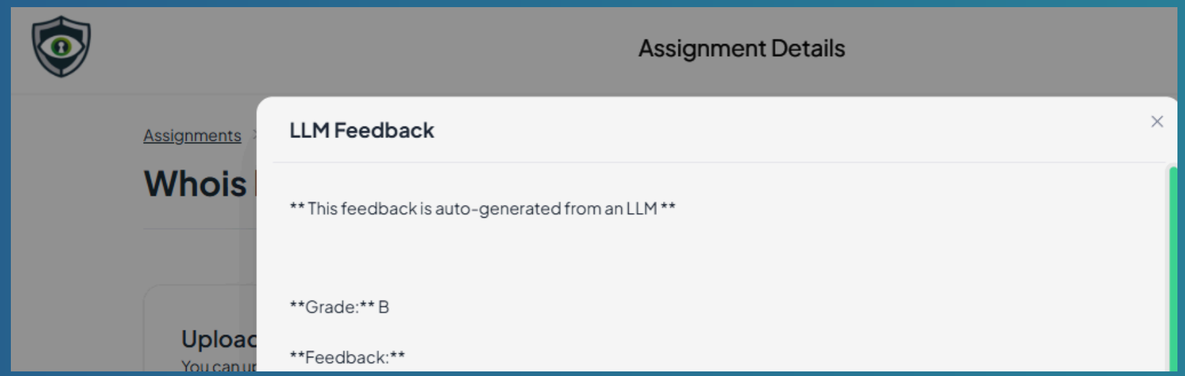
- Exercises can be completed locally in python.
- To submit, please use upload assignment to trigger autograder
- We will maintain a scoreboard for exercises for fun and reward!
- Link for assignments
- Honor system (please avoid AI)



Course logistics – Exercises

- After submission you will get an email from autograder
- Ping in #exercises channel for questions





Course logistics – Capstone

- Project of your choice!
- Decide capstone idea early, due Oct 3rd.
- Use #capstone-project channel for any questions
- Capstone is due Friday night (Oct 3rd)

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Oct 10th	Class 5 (Capstone Demos and Course wrap up

Course logistics – Certification

- You can opt to get a certificate at a nominal price.
- Prove your coding skills to anyone!
- https://link.thecyberinstructor.com/request-bootcamp-cert

Course logistics – Certification

- Certificate opt in deadline is 27th Sept (right after 3rd class)
- Criteria:
  - PASS all assignments
  - WORKING capstone project
- https://link.thecyberinstructor.com/request-bootcamp-cert

Course logistics – How to get a free certificate

Awarded to:

- Top 3 students – Fastest, earliest and highest grade exercise submissions
- Top 2 capstone projects (as judged by course staff)

Python Intro

- Strings
- Lists, Tuples and Dictionaries
- Conditionals
- Loops
- Exception Handling
- Files
- Imports
- Functions
- Classes

Ref: https://python101.pythonlibrary.org/intro.html

Installing Python

- Install python 3.0
- https://www.python.org/downloads/
- Get the latest version for your OS
- Great for running and testing code locally


```
Karans-MacBook-Pro:~ Karan$ python3 --version
Python 3.9.6
Karans-MacBook-Pro:~ Karan$
```

Python Intro – Strings

Strings are immutable. Strings in python 3 are unicode by default

```
my_string = "this is a string"
print(my_string)

# String concat
second_string = "this is another string"

#String slicing
print(my_string[0:5])

#String substitution
my_string = "I like %s and %s" % ("Security", "Coding")

#Substitution using templates (dictionary)
print("%(lang)s is fun" % {"lang":"Python"})

#Substitution using format function
print("Python is a {0}, {1}".format("simple", "language"))
```

Python Intro – List, Tuples, Dicts

Lists can be created in two ways. List are mutable

```
my_list = []
my_list2 = list()

alpha_list = [34, 23, 67, 100, 88, 2]
print(alpha_list)

# Returns None as the alpha_list will be sorted in place instead of being assigned to sorted_list. The sort function does not return any value

sorted_list = alpha_list.sort()
print(sorted_list)
print(alpha_list)
```


Python Intro – List, Tuples, Dicts

```
# Tuples – Immutable list
my_tuple = (1, 2, 3, 4, 5)
print(my_tuple[0:3])

abc_list = list(my_tuple)
print(abc_list)

# Dict – hash table with key:value pairs
my_dict = {}
another_dict = dict()
other_dict = {"one":1, "two":2, "three":3}
print(other_dict)

# Print keys in dict
print(other_dict.keys())

# Check if a key exists in the dict
print("two" in other_dict)

# Print value of a key
print(other_dict["two"])
```


Python Intro – Empty Checks on Lists, Tuple and Strings

```
#Empty and None check on strings
empty_list = []
empty_tuple = ()
empty_string = ""
nothing = None

if empty_list == []:
    print("It's an empty list!")

if empty_tuple:
    print("It's not an empty tuple!")

if not empty_string:
    print("This is an empty string!")

if not nothing:
    print("Then it's nothing!")
```


Python Intro – Conditionals

Python cares about spaces, don't mix tabs and spaces, especially in if conditions

```
var1 = 1
var2 = 2
if var1 < var2:
 print("var 1 is less than var 2")

val3 = int(input("input var3:"))
if val3 < var2:
 print("var 3 is less than var 2")

# Conditional operators are and, or, not
if var1 == 1 and var2 == 2:
 print("var1 is 1 and var2 is 2")

if var1 > 2:
 print("var1 > 2")
elif var1 < 2:
 print("var1 < 2")
else:
 print("var1 == var2")
```

Python Intro – Loops

for and while loops

```
# range function creates a list that is n in length
print(range(0,5))

for number in range(5):
 print(number)

if __name__ == "__main__":
 print("within main")
 # write main code here

for key in other_dict.keys():
 print(key)

while val3 > 0:
 print(key)
 val3 = val3 - 1
```


Python Intro – Exception Handling

```
try:
 1/0
except ZeroDivisionError:
 print("cannot divide by zero")

my_dict = {"a":1, "b":2, "c":3}
try:
    value = my_dict["a"]
except IndexError:
    print("This index does not exist!")
except KeyError:
    print("This key is not in the dictionary!")
except:
    print("Some other error occurred!")
else:
    print("No error occurred")
finally:
    print("The finally statement has executed")
```

Python Intro – Files

```
#File Handling
# Default mode for file open is read only
handle = open("test.txt", "r")
# read() reads the entire file
data = handle.read()
print(data)
handle.close()

# readline() will read line by line and readlines() will read all lines.

# Use with keyword to open files. Creates a context manager to automatically close the file when processing is done.

try:
 with open("test.txt") as file_handler:
  for line in file_handler:
   print(line)
except IOError:
 print("An IOError occurred")
```

Python Intro – Imports

Python comes with lots of pre-made code baked in.
These pieces of code are known as modules and packages.
A module is a single importable Python file whereas a package is made up of two or more modules.
A package can be imported the same way a module is.

```
>>> import math
>>> math.sqrt(4)
2.0

>>> from math import sqrt
>>> sqrt(16)
4.0
```


Python Intro – Functions

```
def func():
 print("Inside func")

def add(a,b):
 return a+b

print(add(1,2))

# For any number of args or keywords, use *args and **kwargs

def many(*args, **kwargs):
# args turns into a tuple
 print(args)
# kwargs turns into a dict
 print(kwargs)

many(1, 2, 3, name="Mike", job="programmer")
```


Python Intro – Classes

```
# Class definition
class Vehicle(object):
 def __init__(self, color, doors):
  self.color = color
  self.doors = doors

 def brake(self):
  return "Braking"

 def drive(self):
  return "Driving"
```


Python Intro – (Sub) Classes

```
# Subclass definition from Vehicle

class Vehiclesub(Vehicle):

 def brake(self):
  return "this message is from a subclass"

if __name__ == "__main__":
 print("within main")
 # write main code here
 car = Vehiclesub("blue color", "black door")
 print(car.brake())
```


Exercise: Whois Look up

Design a script that calls the WHOIS server to look up the Registrar of a list of domains.

- Input: List of domains separated by a space in the command line
- Output: List of Registrar names corresponding to the domains

Extra Credit (optional)

1. Take input from a file instead of the command line (e.g. input.txt)
2. Parallel lookups where more than one domain can be looked up at a time (read about threading in python!)
3. Rate-limiting the requests so you don't get blocked by WHOIS servers

Exercise: Whois Look up

Good Submission

- Should output only the Registrar and nothing else

```
RegistrarSafe, LLC
```

Bad Submission

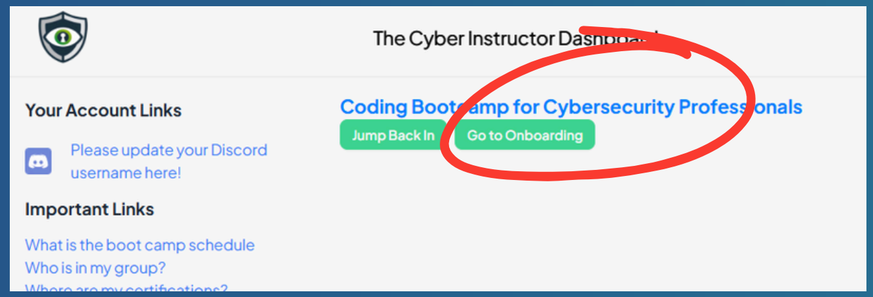
- Outputs all fields of Whois information

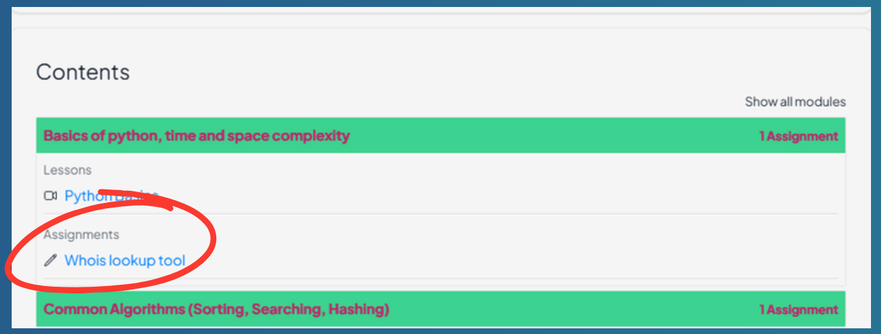

```
{
  "domain_name": "FACEBOOK.COM",
  "registrar": "RegistrarSafe, LLC",
  "registrar_url": [
    "http://www.registrarsafe.com",
    "https://www.registrarsafe.com"
  ],
  "reseller": null,
  "whois_server": "whois.registrarsafe.com",
  "referral_url": null,
  "updated_date": "2025-04-23 19:08:37",
  "creation_date": "1997-03-29 05:00:00",
  "expiration_date": "2034-03-30 04:00:00",
  "name_servers": [
    "A.NS.FACEBOOK.COM",
    "B.NS.FACEBOOK.COM",
    "C.NS.FACEBOOK.COM",
    "D.NS.FACEBOOK.COM"
  ],
  "status": [
    "clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited",
    "clientTransferProhibited https://icann.org/epp#clientTransferProhibited",
    "clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited",
    "serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited",
    "serverTransferProhibited https://icann.org/epp#serverTransferProhibited",
    "serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited",
    "clientDeleteProhibited https://www.icann.org/epp#clientDeleteProhibited",
    "clientTransferProhibited https://www.icann.org/epp#clientTransferProhibited",
    "clientUpdateProhibited https://www.icann.org/epp#clientUpdateProhibited",
    "serverDeleteProhibited https://www.icann.org/epp#serverDeleteProhibited",
    "serverTransferProhibited https://www.icann.org/epp#serverTransferProhibited",
    "serverUpdateProhibited https://www.icann.org/epp#serverUpdateProhibited"
  ],
  "emails": [
    "abusecomplaints@registrarsafe.com",
    "domain@fb.com"
  ],
  "dnssec": "unsigned",
  "name": "Domain Admin",
  "org": "Meta Platforms, Inc.",
  "address": "1601 Willow Rd",
  "city": "Menlo Park",
```

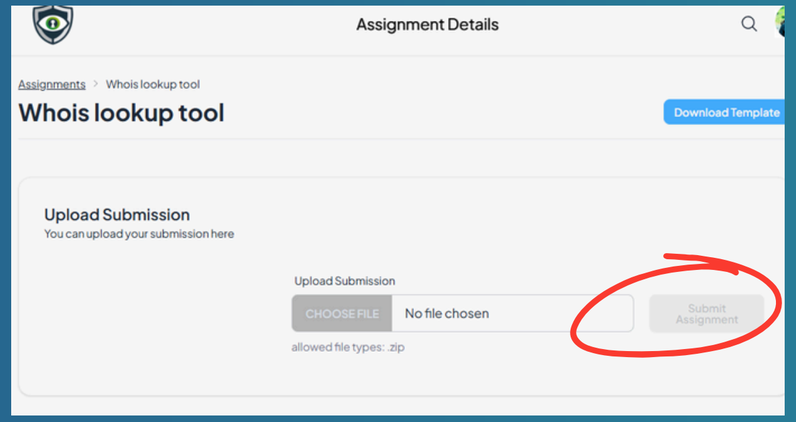
Submit to Autograder

- Zip your script. You can name it anything
- Upload your zip under Whois lookup tool Assignment
- You will receive your grade and feedback within a few minutes

https://codingbootcamp.thecyberinstructor.com/dashboard







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Things to remember

- Avoid using library functions that solve the problem completely (e.g., implement sorting manually instead of using sort()) and AI code generation. For the capstone project, you are free to use any library.
- Avoid DOS on whois servers
- Autograder is configured to check basic submission, but feel free to submit scripts with extra credit additions (you will get a higher grade for extra credits)
- Exercise is due Thursday night 11:59 PM PST (Sept 18th) (a day prior to next class)

Questions?

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