Lecture 13 (2-13-26)

Python Scripting

Python is an **interpreted**, **object-oriented**, **high-level** programming language with dynamic semantics.

Why Python?

1. Encourages very **readable** and well **structured** code
2. Rich **ecosystem of libraries and frameworks** (NumPy, SciPy, Pandas, NLTK, Django, Flask, Tornado, TensorFlow, etc.)
3. Free and **open source**, widely spread, with vibrant **community**

Whats the name of the python interpreter?

- python3
- to check what python3 you are using use the following command:
  - `which python3`

- When you run python3, you can no longer use shell commands
- Your scripts should still have a **she-bang**
  - `#!/usr/bin/env python3`

- to check the type of something in python:
  - use : `type('samuel')`
- to see the attributes and method something has:
  - use : `dir('samuel')`
- to use an attribute:
  - `'samuel'.upper() #returns SAMUEL`
  - Methods are functions, that is why you need the parentheses
- to create a variable:

    - `name = 'aynaz'`
    - you can use `type(name)`
    - you can do `name.upper()`
- For **most methods** python returns an new object, so your original is **not** modified
- you can do `name = name.upper()` to actually save the change
- `number = '123'`
    - `number` is a string
- you can do `name = int('123')`
    - now `name` is an int
- for most functions you can do
    - `import random`
    - `help(random.randint)`
        - returns documentation

Python script example `roll.py`

- to run you can `python3 hello.py`
- or simply `chmod +x hello.py`

```
#!/usr/bin/env python3

import random #importing library

ramdon.randint(1,6) #random number generated from [1,6]

#using format strings (f-string)
print(f'n is {n}')
print(f' n is {n*n}')


#conditional example
if n < 1:
     print(f'{n}<3')
else:
     print(f'{n} >= 3)

#while loop example
n = None #None in python represents nothing
while n != 5:
     print(n)
```

```
    n = random.randint(1,6)

#Docstring
'''
This is an example of a docstring
it also serves as a block comment
'''

#for loop
for i in range(0,5): #(start, end before)
    print(i)

for i in range(1,5,2): #(start, end before, step)
    print(i)

for ta in ['sam', 'aynaz', 'leo']:
    print(ta)

#using enumerate to get the index and the value

for ta in enumerate(['sam', 'aynaz', 'leo']):
    print(index, ta)
```

Python: `fizzbuzz.py`

```
#!/usr/bin/env python3

def fizzbuzz(start=1, end=100): #setting default parameters
    for number in range(start, end + 1):
        if number % 15 == 0:
            print('FizzBuzz')
        elif number % 3 == 0:
            print('Fizz')
        elif number % 5 == 0:
            print('Buzz')
        else:
            print(number)`


fizzbuzz(20, 90) #prints 20 to 90
fizzbuzz(90) #prints 90 to 100
```

```
fizzbuzz(end=20) #pritns 1 to 20
```