Data Structures and Algorithms/Big Data and Database Programming
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Topic 1: At least 4 ways to use Python.

The recommended Python version is 3. So in the following assignments I should write the command as “python3” for clarity.

Q1: Our first task is to present data within Python and on the web. To show things on the web, we’ll use a Python module called Flask (pip3 install flask).

Then, create a text file “a1.py” as below. Replace the XXXX with your name.

```
from flask import Flask

app = Flask(__name__)

@app.route('/')
def hello_world():
        return 'Hello XXXX'

if __name__ == '__main__':
        app.run(host="0.0.0.0", port=5002)
```

How do you run this program? What does it show? How do you make it stop?
Note: If there are problems, change the port number.

Q2: Just on the console. Let’s study some Python variables and simple control structures.

Create the following text file a2.py. We can run it simply as “python a2.py” (no need to use a browser).

```
myvar = 1
print(type(myvar))
```

What does it print?

Q3: Interactive. Let’s just type python

```
python3
Python 3.8.8 (default, Apr 13 2021, 12:59:45)
[Clang 10.0.0 ] :: Anaconda, Inc. on darwin
```

```
Type "help", "copyright", "credits" or "license" for more
information.
>>> myvar = 1
>>> print(type(myvar))

>>> myvar = "hello"
>>> print(type(myvar))

>>> for x in range(5):
...     print(x)
...
```

Please fill in the lines that I omitted.

Q4: Make a Notebook using Google Colab and demonstrate (screenshot) what it does with this input:

```
myvar = 1
print(type(myvar))
```

Extra questions:
E1 What is “range”? Why do we write range(5)? What is the technical name of “5” when it is inside the parentheses as in the example?
E2 Why should you **not** name your Python file flask.py

Reading and viewing (when you have time):

https://runestone.academy/ns/books/published/pythonds/Introduction/ReviewofBasicPython.html

https://www.youtube.com/watch?v=kQDxmjfkIKY Python data structures in 2 hours.