Lab-4 Python and MongoDB



Brief Survey!





Python Exercises

- INDIVIDUAL submission
- Create a Python script named concepts.py to demonstrate the concepts:
 - a. Variables, types, operators
 - b. Booleans and conditional (if-else) statements
 - c. Strings and string methods
 - d. Lists, loops (while, for), iteration (for-in)
 - e. Dictionaries and dict methods
 - f. Functions, parameters, and returns



Python Exercises (cont.)

```
concepts.py U X
concepts.py > ...
      """a. Variables, types, operators
      # define variable x with type int
   5 x = 10
      # define variable y with type float
      y = 12.5
      print(f"variable x has type {type(x)}")
      print(f"variable y has type {type(y)}")
      # addition operation between x and y with '+' operator
      print(f''x + y = \{x + y\}'')
```



Python Installation

- Python 3.8.x / Python 3.9.x / Python 3.10.x
- Installation Guide for Windows User
- Installation Guide for Mac User (Install Python 3 with the Official Installer)





Verify the Python Installation

- python --version
- python3 --version
- python3.x(replace x with the version number you downloaded) --version
- py --version

C:\Users\17029>python --version Python 3.10.8

```
root № 18.04[~] python3.7 --version
Python 3.7.15
root № 18.04[~]
```



FAQs

- What is py.exe? (Windows users)
- Why does running python.exe open the Microsoft Store? (Windows users)
- ·Work with multiple to usory with any questions! Reach out to usory windows users)



Python Interactive Mode

- Python interactive mode is a command line shell which gives immediate feedback for each statement.
- Python interactive mode is a good way to play around and try variations on syntax.

```
.....$ python
```

Python 3.10.8 (tags/v3.10.8:aaaf517, Oct 11 2022, 16:50:30) [MSC v.1933 64 bit (AMD64)] on win32 Type "help", "copyright", "credits" or "license" for more information.



Python Interactive Mode (cont.)

quit the Python interactive mode

all platforms: exit()

Windows: ctrl + break(pause)

Mac/Linux: ctrl + D



pip

- pip is a package manager for Python packages or modules
- •pip is included by default if you have Python version 3.4 or later
- use pip to install packages

python –m pip install <package>

pip install <package>



Editor/IDE

- Visual Studio Code (VSCode)
- PyCharm
- IDLE
- Spyder
- •



MongoDB

- NoSQL database, NO tables/rows
- uses collections of documents to store data, each document is a JSON-like object with a set of key-value pairs
- uses its own query language called the MongoDB Query Language(MQL)

SQL: > select * from orders where customer_id = '123'

MQL: > db.orders.find({customer_id: '123'})



MongoDB Installation

- MongoDB Community Server 6.0.4
- Installation Guide for Windows User
- Installation Guide for Mac User





Verify the MongoDB Installation

mongod --version

```
root ● 18.04[~] mongod --version
db version v6.0.1
Build Info: {
    "version": "6.0.1",
    "gitVersion": "32f0f9c88dc44a2c8073a5bd47cf779d4bfdee6b",
    "openSSLVersion": "0penSSL 1.1.1 11 Sep 2018",
    "modules": [],
    "allocator": "tcmalloc",
    "environment": {
        "distmod": "ubuntu1804",
        "distarch": "x86_64",
        "target_arch": "x86_64"
    }
}
```



PyMongo

- PyMongo is a Python distribution containing tools for working with MongoDB, and is the recommended way to work with MongoDB from Python
- install PyMongo with pip

python –m pip install pymongo

pip install pymongo



Verify the PyMongo Installation

• activate the Python interactive mode and enter import pymongo

```
root 18.04[~] python3.7
Python 3.7.15 (default, Oct 19 2022, 13:01:26)
[GCC 7.5.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import pymongo
>>>
```



Database Exercises

- INDIVIDUAL submission
- Create a Python script named database.py to perform CRUD operations on a

local MongoDB database:

- a. create
- b. read
- c. write (update)
- d. delete



Database Exercises (cont.)

```
database.pv
    import pymongo
    import sys
 4 # connect to your local mongoDB server
    my_client = pymongo.MongoClient("mongodb://localhost:27017/", serverSelectionTimeoutMS=5000)
    # check for a successful connection
    try:
        my_client.server_info()
    except pymongo.errors.ServerSelectionTimeoutError as err:
        print("Connection timed out, please check if your mongod is running!")
11
        sys.exit(1)
12
    # create a database named 'mydatabase'
    my_database = my_client["mydatabase"]
    # create a collection named 'mycollection'
    my_collection = my_database['mycollection']
19
    # INSERT YOU CODE BELOW #
    23
24
25
```



More References

- Python tutorial
- PyMongo tutorial
- MongoDB tutorial

Databases concepts

Database concept references:

- https://www.ibm.com/cloud/blog/sql-vs-nosql
- https://www.mongodb.com/docs/
 - https://www.mongodb.com/docs/manual/introduction/
- https://www.w3schools.com/python/python mongodb getstarted.asp
- E cs518.lab3b.pymongo-tutorial



Submission (due 2/28 11:59 p.m.)

Canvas (INDIVIDUAL submission)

a Python script: concepts.py

a Python script: database.py

a document (pdf/docx): answers to the database questions.

GitLab





More Questions?



