Accessing MongoDB using Python

Estimated time needed: **30** minutes

Objectives

After completing this lab you will be able to:

- Access the MongoDB database from Python with the pymongo driver
- Perform basic operations such as selecting, inserting and listing using Python
- Create a Python program to run the MongoDB operations

Prerequisites

Before starting this lab, it'll be helpful to have knowledge about basic Python and MongoDB operations. If you're unfamiliar with MongoDB, feel free to take a look at the Getting Started with MongoDB and MongoDB CRUD labs!

About Skills Network Cloud IDE

Skills Network Cloud IDE (based on Theia and Docker) provides an environment for hands on labs for course and project related labs. Theia is an open source IDE (Integrated Development Environment), that can be run on desktop or on the cloud. to complete this lab, we will be using the Cloud IDE based on Theia and MongoDB provided by Skills Network.

Important Notice about this lab environment

Please be aware that sessions for this lab environment are not persisted. Every time you connect to this lab, a new environment is created for you. Any data you may have saved in the earlier session would get lost. Plan to complete these labs in a single session, to avoid losing your data.

Exercise 1 - Install the pymongo driver

We need the pymongo driver to be installed in order to access the mongodb database from Python.

Run the below command on the terminal.

```
python3 -m pip install pymongo
```

This installs the Python mongodb driver as in the image below.

```
theia@theia-[redacted]home/project$ python3 -m pip install pymongo
Collecting pymongo
  Downloading https://files.pythonhosted.org/packages/10/3b/46541b4ee3000019b8ef5b1847292ddc77f492c162bc4d49c424db7fc97a/pymongo-4
.1.1-cp36-cp36m-manylinux1_x86_64.whl (464kB)
    100% |[redacted]| 471kB 2.7MB/s
Installing collected packages: pymongo
Successfully installed pymongo-4.1.1
```

Exercise 2 - Start the server

Open the MongoDB database page by clicking the button below:

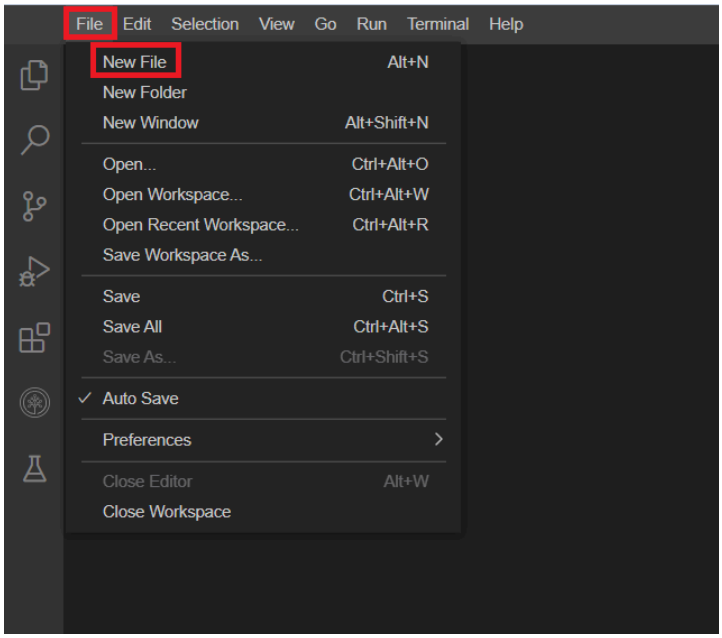
Open MongoDB Page in IDE

On that page, click the `Create` button to create a MongoDB database.

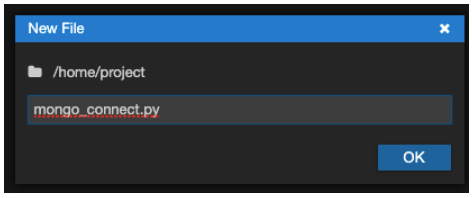
Note down the user name and password from the `Connection Information` tab.

Exercise 3 - Connect to mongodb server using Python

On the menu, use **File->New File** to create a new file, as in the image below.



Give the name as **mongo_connect.py**, as in the figure below, and click on **OK**.

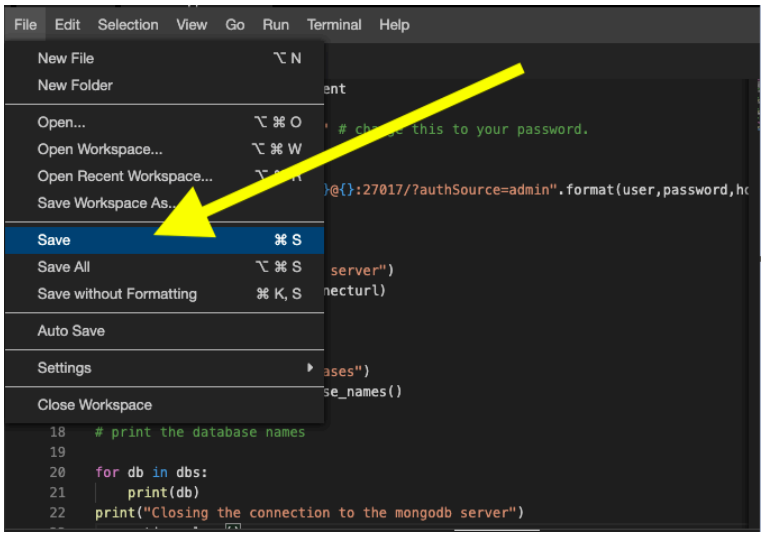


Copy and paste the below code into the newly opened file.

```
from pymongo import MongoClient
user = 'root'
password = 'MjQwOTgtcnNhbm5h' # CHANGE THIS TO THE PASSWORD YOU NOTED IN THE EARLIER EXCERCISE - 2
host='mongo'
#create the connection url
connecturl = "mongodb://{}:{}@{}:27017/?authSource=admin".format(user,password,host)
# connect to mongodb server
print("Connecting to mongodb server")
connection = MongoClient(connecturl)
# get database list
print("Getting list of databases")
dbs = connection.list_database_names()
# print the database names
for db in dbs:
    print(db)
print("Closing the connection to the mongodb server")
# close the server connecton
connection.close()
```

PLEASE ENSURE THAT YOU HAVE REPLACED THE PASSWORD VALUE IN THE FILE ABOVE WITH THE PASSWORD FOR YOUR MONGODB SERVER THAT YOU COPIED AFTER IT WAS STARTED.

Save the code file using the **File->Save** menu option as in the image below.



Copy and paste the below code on the terminal to execute this file.

```
python3 mongo_connect.py
```

You should see an output like the one in the image below.

Exercise 4 - Working with documents

In this exercise we will make the Python program do the following tasks:

- connect to the mongodb server.
- select a database named **training**.
- select a collection named **python**.
- insert a sample document.
- query all the documents in the **training** database and **python** collection.
- close the connection to the server.

Open a new file named **mongo_query.py**.

Copy and paste the below code into **mongo_query.py**.

```
from pymongo import MongoClient
user = 'root'
password = 'MjQwOTgtcnNhbm5h' # CHANGE THIS TO THE PASSWORD YOU NOTED IN THE EARLIER EXCERCISE - 2
host='mongo'
#create the connection url
connecturl = "mongodb://{}:{}@{}:27017/?authSource=admin".format(user,password,host)
# connect to mongodb server
print("Connecting to mongodb server")
connection = MongoClient(connecturl)
# select the 'training' database
db = connection.training
# select the 'python' collection
collection = db.python
# create a sample document
doc = {"lab":"Accessing mongodb using python", "Subject":"No SQL Databases"}
```

```
# insert a sample document
print("Inserting a document into collection.")
db.collection.insert_one(doc)
# query for all documents in 'training' database and 'python' collection
docs = db.collection.find()
print("Printing the documents in the collection.")
for document in docs:
    print(document)
# close the server connecton
print("Closing the connection.")
connection.close()
```

PLEASE ENSURE THAT YOU HAVE REPLACED THE PASSWORD VALUE IN THE FILE ABOVE WITH THE PASSWORD FOR YOUR MONGODB SERVER THAT YOU COPIED AFTER IT WAS STARTED.

Save the file.

Run the file using the below command.

```
python3 mongo_query.py
```

Practice exercise

Write a Python program that can:

- connect to the mongodb server.
- select a database named **training**.
- select a collection named **mongodb_glossary**.
- insert the following documents into the collection **mongodb_glossary**.

{“database”:”a database contains collections”}

{“collection”:”a collection stores the documents”}

{“document”:”a document contains the data in the form of key value pairs.”}

- query and print all the documents in the **training** database and **mongodb_glossary** collection.
- close the connection to the server.

Solution to Practice exercise

```
from pymongo import MongoClient
user = 'root'
password = 'MjQwOTgtcnNhbm5h' # CHANGE THIS TO THE PASSWORD YOU NOTED IN THE EARLIER EXCERCISE - 2
host='mongo'
#create the connection url
connecturl = "mongodb://{}:{}@{}:27017/?authSource=admin".format(user,password,host)
# connect to mongodb server
print("Connecting to mongodb server")
connection = MongoClient(connecturl)
# select the 'training' database
db = connection.training
# select the 'python' collection
collection = db.mongodb_glossary
# create documents
doc1 = {"database":"a database contains collections"}
doc2 = {"collection":"a collection stores the documents"}
doc3 = {"document":"a document contains the data in the form or key value pairs."}
# insert documents
print("Inserting documents into collection.")
db.collection.insert_one(doc1)
db.collection.insert_one(doc2)
db.collection.insert_one(doc3)
# query for all documents in 'training' database and 'python' collection
docs = db.collection.find()
print("Printing the documents in the collection.")
for document in docs:
    print(document)
# close the server connecton
print("Closing the connection.")
connection.close()
```

Authors

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