MONGODB for CYBERGARDEN

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Introduction:

MongoDb is a no-sql or no relational database. It is query and json object based storage. The reason for the selection of the mongodb for our cybergarden is ease of its usage and latency benefits. MonoDB is programming language independent, by which database can be created in local or cloud and accessed in any language. In this document we stick to the python language with the “pymongo” python module. We assume the machine is Linux based as the sensor values red in the Raspberry pie.

Installation:

1. Get the mongodb from the linux pkg.
    a. sudo apt-get update
    b. sudo apt install mongodb
2. Start the database and check for its status
    a. sudo service mongodb start
    b. sudo service mongodb status
3. Launch the mongo terminal
    a. mongo: to launch database
4. mongoDB compass is the GUI provide with which we can access and see the database.
    a. wget https://downloads.mongodb.com/compass/mongodb-compass_1.26.1_amd64.deb
    b. sudo dpkg -i mongodb-compass_1.26.1_amd64.deb
    c. mongodb-compass
    d. Detailed steps can be found: https://docs.mongodb.com/compass/current/install/
5. We might have to use the cloud based Atlas mongoDB. For which create a free tier account and use it. MongoDB Atlas
6. In the scripts we use both the mongoDB compass on local machine and mangoDB atlas for remote access.

DataBase:

Schema:

Time (ms)	Col1	col2	col3	col4	col5	col6	col7	col8	col9
double	int	int	int	int	int	int	int	int	int

Note: Time field is the time since epoch in ms when the document is inserted into the DataBase.

Handtool commands:

The number of commands is very large for Database. I will show some basic commands and how we can fetch all the commands further. Look into the screenshot below.
MongoDB is the collection of collections. Collections are the name given to the storage within the database. Inside collections you can find the record. Each record is the JSON object. Hence when you insert or delta or update the database it needs to be json format else database will not accept it. In our CyberGarden project as shown below, the name of the database is **cybergarden** and it has only one collection called **"collection"** and the collection has all the json objects. Execute python script it just does all this for you.

```
sandesh@sandesh-Predator-PH315-52:~$ mongo
MongoDB shell version v3.6.3
connecting to: mongodb://127.0.0.1:27017
MongoDB server version: 3.6.3
Server has startup warnings:
2021-04-27T17:14:14.940-0600 I STORAGE  [initandlisten]
2021-04-27T17:14:14.940-0600 I STORAGE  [initandlisten] ** WARNING: Using the XFS filesystem
is strongly recommended with the WiredTiger storage engine
2021-04-27T17:14:14.940-0600 I STORAGE  [initandlisten] **          See
http://dochub.mongodb.org/core/prodnotes-filesystem
2021-04-27T17:14:15.392-0600 I CONTROL  [initandlisten]
2021-04-27T17:14:15.392-0600 I CONTROL  [initandlisten] ** WARNING: Access control is not
enabled for the database.
2021-04-27T17:14:15.392-0600 I CONTROL  [initandlisten] **          Read and write access to data
and configuration is unrestricted.
2021-04-27T17:14:15.392-0600 I CONTROL  [initandlisten]
> show dbs
admin           0.000GB
config          0.000GB
cybergarden  0.001GB
learn     0.000GB
local     0.000GB
> use cybergarden <This creates database if it doesn't exist>
switched to db cybergarden
> show collections <Show the collection in the database>
collection
> db.collection.help() <Show all the commands you need>
```

Scripts:

1. Python script to read CSV file and create local database: mongo.py
2. For remote access change the ip and port number in the mongo.py script. I have not created the ATLAS cluster as it needs the credit card details even for the free trial.

References:

[1] https://www.youtube.com/watch?v=E-1xI85Zog8
[2] https://www.youtube.com/watch?v=pWbMrx5rVBE
[3] https://www.geeksforgeeks.org/mongodb-and-python/
[4] https://www.youtube.com/watch?v=UVfzZ2FvrVE&list=RDCMUCVvzjWVhcYGfznHOQdMParQ&index=2
[5] Using ATLAS cluster: https://www.youtube.com/watch?v=esKNjzDZItQ