Comparing MongoDB and Couchbase

Requirements:  
 1. USB drive with at least 32 gb storage (USB 3.0 or higher is recommended)  
 2. Rufus 4.2 or higher.  
 3. A computer with 64-bit architecture, 2.2Ghz CPU, 8Gb RAM + USB port  
  
Tutorial link: <https://drive.google.com/file/d/1WmZs-cvXsoI9tGhU2jdv6ATBb67eOro0/view?usp=drive_link>

This assignment is completed in the following steps:

1. Creating a Live USB with Persistence:  
   Follow this tutorial: <https://youtu.be/3wofbmwLNUw?si=hk67LYwoxGqZrD3d>
2. Install Mongodb :  
   run the following commands in order:  
    $ sudo apt update  
    $ sudo apt upgrade  
    $ sudo apt install mongodb-server  
   This will install both the mongodb server and client in the system.
3. Install Couchbase :  
   run the following commands after completing previous step.  
    $ curl -O <https://packages.couchbase.com/releases/couchbase-release/couchbase-release-1.0-noarch.deb>  
    $ sudo dpkg -i ./couchbase-release-1.0-noarch.deb  
    $ sudo apt-get update  
    $ sudo apt-get install couchbase-server-community  
     
   This will install the community version for couchbase
4. Import dataset into MongoDB:  
   Download the dataset from: <https://github.com/ozlerhakan/mongodb-json-files/blob/master/datasets/students.json>  
     
   run the following command in shell:  
    $ mongoimport --db *database* --collection *name\_collection* --file <PATH>  
     
   # here   
    database = the name of your database (chose any name)  
    name\_collection = the name of your collection (as per your wish)  
    <PATH> = Path to the location where the dataset (.json) file is stored
5. Import dataset into Couchbase:  
   Follow the tutorial video from timestamp - 26:02
6. Perform CRUD operations in MongoDB as well as Couchbase and note the runtime of queries:  
   Create:  
    **mongodb:** var startTime = new Date()  
   db.student\_collection.insertOne({  
    "\_id" : 201,  
    "name" : "Yash Kumar",  
    "scores" : [  
    {  
    "score" : 10.10,  
    "type" : "exam"  
    },  
    {  
    "score" : 10.11,  
    "type" : "quiz"  
    },  
    {  
    "score" : 10.12,  
    "type" : "homework"  
    }  
    ]  
   }  
   )  
   var endTime = new Date()  
   var runtime = endTime - startTime  
   print("Runtime: " + runtime + " milliseconds");  
     
   **couchbase**:  
   INSERT INTO `yash\_bucket` (KEY, VALUE)  
   VALUES (  
   'document201',  
    {  
    "\_id": 201,  
    "name": "Yash Kumar",  
    "scores": [  
    {  
    "score": 10.10,  
    "type": "exam"  
    },  
    {  
    "score": 10.11,  
    "type": "quiz"  
    },  
    {  
    "score": 10.12,  
    "type": "homework"  
    }  
    ]  
    }  
   );
7. Read operation:  
    **mongodb:**var startTime = new Date()  
   db.student\_collection.find({  
    "\_id" : 201,  
    "name" : "Yash Kumar",  
    "scores" : [  
    {  
    "score" : 10.10,  
    "type" : "exam"  
    },  
    {  
    "score" : 10.11,  
    "type" : "quiz"  
    },  
    {  
    "score" : 10.12,  
    "type" : "homework"  
    }  
    ]  
   }  
   )  
   var endTime = new Date()  
   var runtime = endTime - startTime  
   print("Runtime: " + runtime + " milliseconds");  
     
   **couchbase:**SELECT \* FROM `yash\_bucket` WHERE name = 'Yash Kumar';
8. Update operation:  
   **mongodb:** var startTime = new Date()  
   db.student\_collection.updateOne(  
    {  
    "\_id": 201,  
    "name": "Yash Kumar",  
    "scores.type": "exam"  
    },  
    {  
    $set: {  
    "scores.$.score": 90  
    }  
    }  
   );  
   var endTime = new Date()  
   var runtime = endTime - startTime  
   print("Runtime: " + runtime + " milliseconds");  
     
   **couchbase:**  
   UPDATE `yash\_bucket`  
   SET scores[0].score=90  
   WHERE name = 'Yash Kumar';
9. Delete operation:  
   **mongodb:**var startTime = new Date()  
   db.student\_collection.deleteOne({  
    "\_id": 201,  
    "name": "Yash Kumar",  
   });  
   var endTime = new Date()  
   var runtime = endTime - startTime  
   print("Runtime: " + runtime + " milliseconds");  
     
   **couchbase**:  
   DELETE FROM `yash\_bucket` WHERE name = 'Yash Kumar';
10. Compare the performance of both databases  
    - Repeat this process multiple times for more accuracy  
    - Use more datasets. Some smallers datasets and some very large datasets.