

School of Information Technology

Department of Computer Science



COS326 Database Systems: Practical 9 2022

Release Date: 18 October 2022

Submission Date: 23 October 2022

Lecturer: Mr S.M Makura

Total: 50 Marks

Objectives

1. Get exposure to the MongoDB document DBMS.
2. Learn how to create and use documents, collections and JavaScript functions for a MongoDB database.
3. Learn how to develop Java applications that access data in a MongoDB database.
4. Appreciate the differences between SQL and NoSQL databases.

For this practical exercise you will use the MongoDB database. When you are done:

Create a folder as follows:

The folder name should be **uXXXXXXXX**(XXXXXXXX is your student number) and should contain the following sub-folders:

- a. **Application:** contains your .jar file, as well as any other files necessary to execute your application (this will be opened for marking).
 - b. **Source:** all your .java files go here (these files will also be checked during marking)
2. Create a zip file of the folder and upload it to ClickUP via the submission link for practical 9.

NO LATE submissions will be accepted after the submission date and time has lapsed. Do not wait till the last minute to submit and start giving excuses that you faced technical challenges when you tried to submit.

Task 1: JAVA APPLICATION TO PROCESS DATABASE DATA [50 marks]

- a. Using MongoDB, create a database called **prac9db**, a collection called **facebook**. [5 Marks]
- b. Use the **mongoimport** tool to import the data file **Facebookdata.json** (available on ClickUP) into the **facebook** collection in your prac9db database and then:
- c. Create a Java application using NetBeans or any IDE you are comfortable with that will do the following/ be composed of the following:
 - i) Must connect to the prac9 database. Utilise the mongodb java driver provided to do this (available on ClickUP). [5 Marks]
 - ii. Create a new collection called **messages** in the prac9db database and store objects of the form:

```
{  
  from: {  
    name: "person name", id : "person id"  
  }, message: "message text"  
}
```

into this collection. This data should be obtained from the documents in the **facebook** collection. [5 marks]

- iii) Must have a JavaFX/Java Swing GUI with a button called “Get Collection Names” which, when clicked will get the collection names and print them on the screen. [10 Marks]
- (iv) There must be another button called “Get array docs” which, when clicked gets the array of documents in the facebook collection and prints the documents in this array. [10 Marks]
- v) There must be another button called “Count” which, when clicked, counts the number of 'messages' in the facebook collection and prints the count. [5 Marks]
- vi) There must be another button called “Count Spring” which, when clicked, counts the number of documents, in the messages collection, which have the word “spring” or the word “September” or both words. [10 marks]