Assignment 3 (15% of total marks)

Due date: Wednesday, 27 May 2020, 9:00 pm Singapore time.

Scope:

The tasks of this assignment cover the implementation of hierarchical data structures as BSON documents, query language of MongoDB database systems, aggregations and cursors and implementation of data manipulations on BSON documents.

Assessment criteria:

Marks will be awarded for:

- Correct,
- Comprehensive, and
- Appropriate

application of the materials covered in this subject.

Only electronic submission through Moodle at: https://moodle.uowplatform.edu.au/ is accepted. All email submission will be deleted and mark 0 ("zero") will be awarded.

For all the implemented tasks, your report or output must include a listing of all JSON scripts and its output.

The submission procedure is explained at the end of this specification.

Assignment Specification:

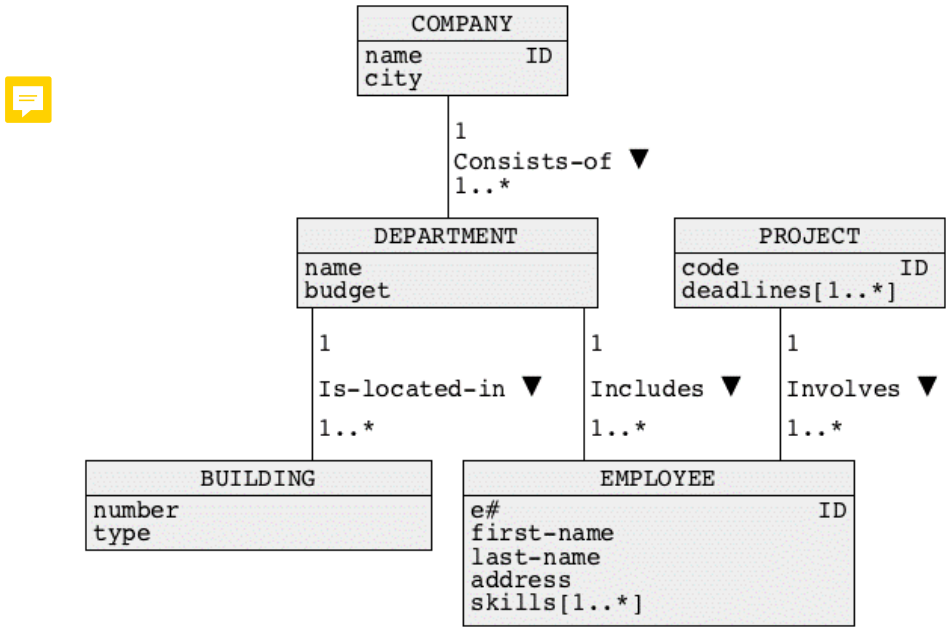
Preliminary actions

In this implementation task, you may use the virtual machine that runs MongoDB Enterprise Edition database server 3.6.5. or the actual installation of MongoDB in your computer system.

Download and unzip a file Assignment3-all-files.zip. You should get the specification of the Assignment 3 and a Java script file, customerOrder.js.

Task 1 (5.0 marks)
Task 1 Implementation of BSON documents

Consider the following conceptual schema of a sample MongoDB database.



Start mongo client and connect to the MongoDB database server. Next, implement the following actions.

(1) Create a new MongoDB database with a name the same your UOW student number.

(2) Create a collection with a name the same as the prefix of your UOW email address, e.g., sjapit.

(3) Insert into the collection the documents whose contents are consistent with the conceptual schema given above. It is important that your documents represent the hierarchical structures in the best possible way. You do not need to enforce all identification constraints determined in the conceptual schema. Insert at least one document for each class of objects given in the schema with the meaningful values of all properties describing the classes of objects in the schema.

(4) List the contents of the collection created in a step (2) and loaded with the documents in a step (3) in a pretty format.

Save a report from the processing of actions listed above in a file solution1.lst. To create a report, you can Copy the contents of Terminal window and Paste it into a file solution1.lst. The results of all actions must be included into a file solution1.lst in the same order as their specifications listed above.

Deliverables

Submit a file solution1.lst with a report from implementation and processing of the actions listed above. The report MUST have no errors. The report must list all methods processed. The report MUST list in a pretty format all documents inserted into a collection.

Task 2 (5.0 marks)
Retrieving information from BSON documents

Start mongo client and connect to the MongoDB database server. Next, process a script file customerOrder2.js to insert BSON documents into a collection customerOrder. Make yourself familiar with the contents of the collection.

a) Find all customer orders' detail by customer from Singapore who have ever made order after 1 April 2020.

b) Find the first name, last name, emails, and address of customers from Singapore who have ever bought a personal computer.

c) Find the first name, last name and email of customer who have no telephone.

d) Find the first name, last name, date of birth (DOB), and the language of customers who speak both English and Mandarin.

e) Find the first name, last name, address, and balance of customer whose balance is in a range between 1000 and 2500.

f) Find the first name, last name, and email of customer who bought MicroSD. Do not list the object id of the customer.

Save the listings of processed queries and the results of processing in a file solution2.lst. To create a report, you can process the queries one by one and later 'Copy' the contents of Terminal window and 'Paste' it into a file solution2.lst. The results of query processing must be included into a file solution2.lst in the same order as the respective queries listed above.

Deliverables
Submit a file solution2.lst with a report from processing the queries listed above. The report MUST have no errors. The report must list all methods processed by mongo command line shell.

Task 3 (5.0 marks)
Aggregation and Data manipulations on BSON documents

If you have not done it yet, start mongo client and connect to the MongoDB database server. Next, process a script file customerOrder2.js to insert BSON documents into a collection customerOrder. Make yourself familiar with the contents of the collection.

Use a query language of MongoDB database system to retrieve the following information from a collection customerOrder.

a) List the first name and last name of customer who made the order ord001.

b) Find the order number (orderNumber) of the order that was attended by a staff whose staff number = stf890.

c) Find the first and last name of customer who have made orders on 15-MAY-2020.

d) Find the total number of orders made by each customer. For each customer, list his/her email address and the total number of orders performed.

e) Change the staff number of order number ord005 to stf789.

f) Delete from a collection the documents that contain information about the customers whose first name is Andrew and the last name is Smith or customers who live in Singapore.

Save the listings of processed queries and the results of processing in a file solution3.lst. To create a report, you can process the queries one by one and later 'Copy' the contents of Terminal window and 'Paste' it into a file solution3.lst. The results of query processing must be included into a file solution3.lst in the same order the as respective queries listed above.

Deliverables

Submit a file solution3.lst with a report from processing the queries listed above. The report MUST have no errors. The report must list all methods processed by mongo command line shell.

Submissions

This assignment is due by 9:00 pm (2100 hours) Wednesday, 27 May 2020, Singapore time.

Submit the files **solution1.lst**, **solution2.lst, solution3.lst** through Moodle in the following way:

1) Zip all the files (Solution1.lst, solution2.lst and solution3.lst into one zipped

folder. Name your zipped file as YourName-A3)

2) Access Moodle at **http://moodle.uowplatform.edu.au/**

3) To login use a Login link located in the right upper corner the Web page or in the middle of the bottom of the Web page

4) When successfully logged in, select a site CSCI235 (SP220) Database Systems

5) Scroll down to a section Submissions of Assignments

6) Click at Submit your Assignment 3 here link.

7) Click at a button Add Submission

8) Move the zipped file created in Step 1 above into an area provided in Moodle. You can drag and drop files here to add them. You can also use a link *Add…*

9) Click at a button Save changes,

10) Click at check box to confirm authorship of a submission,

11) When you are satisfied, remember to click at a button Submit assignment.

A policy regarding late submissions is included in the subject outline.

Only one submission per student is accepted.

Assignment 3 is an individual assignment and it is expected that all its tasks will be solved individually without any cooperation with the other students. Plagiarism is treated seriously. Students involved will likely receive zero. If you have any doubts, questions, etc. please consult your lecturer or tutor during lab classes or over e-mail.

End of specification