CS585: Big Data Management
Spring-2017

Assignment 4
(MongoDB)

Total Points: 100 (5 each question)
Release Date: 03/30/2017
Due Date: 04/12/2017 (@ 11:59pm)

References: Lecture notes & MongoDB Manual

Your task is to design a MongoDB database and apply some CRUD (Create/Read/Update/Delete) operations as follows.

1) Create a collection named "test", and insert into this collection the documents found in this link (10 documents): http://docs.mongodb.org/manual/reference/bios-example-collection/

2) Write a CRUD operation(s) that changes the _id of "John McCarthy" to value 2.

3) Write a CRUD operation(s) that inserts the following new records into the collection:

```
{
    "_id" : 20,
    "name" : {
        "first" : "Alex",
        "last" : "Chen"
    },
    "birth" : ISODate("1933-08-27T04:00:00Z"),
    "death" : ISODate("1984-11-07T04:00:00Z"),
    "contribs" : [
        "C++",
        "Simula"
    ],
    "awards" : [
        {
            "award" : "WPI Award",
            "year" : 1977,
            "by" : "WPI"
        }
    ]
}
```

```
{
    "_id" : 30,
    "name" : {
        "first" : "David",
        "last" : "Mark"
    },
    "birth" : ISODate("1911-04-12T04:00:00Z"),
    "death" : ISODate("2000-11-07T04:00:00Z"),
    "contribs" : [
        "C++",
        "FP",
        "Lisp",
    ],
    "awards" : [
        {
            "award" : "WPI Award",
            "year" : 1963,
            "by" : "WPI"
        },
        {
            "award" : "Turing Award",
            "year" : 1966,
            "by" : "ACM"
        }
    ]
}
```

4) Report all documents of people who got a "Turing Award" after 1976

5) Report all documents of people who got less than 3 awards or have contribution in "FP"

6) Report the contributions of "Dennis Ritchie" (only report the name and the contribution array)

7) Update the document of "Guido van Rossum" to add "OOP" to the contribution list.

8) Insert a new filed of type array, called "comments", into the document of "Alex Chen" storing the following comments: "He taught in 3 universities", "died from cancer", "lived in CA"

9) For each contribution by "Alex Chen", say X, list the peoples' names (fisrt and last) who have contribution X. E.g., Alex Chen has two contributions in "C++" and "Simula". Then, the output should be similar to:
   a. {Contribution: "C++",
      People: [{first: "Alex", last: "Chen"}, {first: "David", last: "Mark"}]},
      { Contribution: "Simula",
        ….}

10) Report all documents where the first name matches the regular expression "Jo*", where "*" means any number of characters. Report the documents sorted by the last name.

11) Report the distinct organization that gave awards. This information can be found in the "by" field inside the "awards" array. The output should be an array of the distinct values, e.g., ["wpi', "acm', …]

12) Delete from all documents the "death" field.

13) Delete from all documents any award given on 2011.

14) Update the award of document _id =30, which is given by WPI, and set the year to 1965.

15) Add (copy) all the contributions of document _id = 3 to that of document _id = 30

16) Report only the names (first and last) of those individuals who won at least two awards in 2001.

17) Report the document with the largest id. First, you need to find the largest _id (using a CRUD statement), and then use that to report the corresponding document.

18) Report only one document where one of the awards is given by "ACM".

19) Delete the documents inserted in Q3, i.e., _id = 20 and 30.

20) Report the number of documents in the collection.

Submission Mechanism
Submit all your CRUD statements in a single file electronically using blackboard system.