Assignment **05** – **MongoDB**

Assignment

- Create a **JavaScript script** with a **sequence of commands** working with our **MongoDB database**
- Explicitly **create 2 collections** for entities of different types
  - I.e., create them using the `createCollection` method
- **Insert about 5 documents** into each one of them
  - These documents must be realistic and non-trivial
  - Involve both **embedded objects and arrays**
  - Interlink the documents using **references**
  - Use both `insertOne` and `insertMany` operations, each at least once
- Express **2 replace operations**
  - One ordinary and one with activated `upsert` mode
- Express **3 update operations**
  - Two ordinary and one with activated `upsert` mode
  - Use at least 3 different update operators
  - Use both `updateOne` and `updateMany` operations, each at least once
- Express **5 find queries** (with non-trivial selections)
  - Use at least one logical operator (`$and`, `$or`, `$not`)
  - Use `$elemMatch` operator (with at least two conditions) on array fields at least once
  - Use both positive and negative projection (each at least once)
  - Use `sort` modifier
  - **Describe the real-world meaning** of all your queries in comments
- Express **1 MapReduce query** (non-trivial, i.e., not easily expressed using ordinary `find` operation)
  - Describe its meaning, contents of intermediate key-value pairs and the final output
  - Note that `reduce` function must be associative, commutative, and idempotent

Requirements

- Call `export LC_ALL=C` in case you have difficulties in launching the `mongosh` shell
- Only **use your own database** when working on the assignment
  - This database already exists and its name is identical to your login name (`pdb241_login`)
- **Do not switch to your database** when you are inside your script
  - I.e., do not execute `USE database` or `db.getSiblingDB('database')` commands
  - Specify the intended database outside of your script using command line options (see below)
- Note that a different dedicated database will be used when assessing your homework
  - You can assume that this database will be completely empty at the beginning
- Each `find` query must be evaluated to a **non-empty result**
- Print the **output of your MapReduce job** using `out: { inline: 1 }` option
  - I.e., do not redirect the output into a standalone collection
  - Do not worry if nothing is actually printed when the script is executed in batch mode

Submission

- **script.js**: JavaScript script with MongoDB database commands

Execution

- Execute the following shell command to evaluate the whole MongoDB script
  - `cat $ScriptFile | mongosh $DatabaseName -u $UserName -p $UserPassword \`
    `--authenticationDatabase admin`
    - `$UserName` is your MongoDB user name (i.e., `pdb241_login`)
    - `$UserPassword` is your MongoDB password (if not specified, you will be prompted)
    - `$DatabaseName` is a name of the database to be used (e.g., `pdb241_login`)
    - `$ScriptFile` is a file with MongoDB queries to be executed (i.e., `script.js`)

Tools

- **MongoDB** (6.0.1) – https://www.mongodb.com/
  - Already installed on the NoSQL server

References

- **The MongoDB 6.0 Manual**
  - https://docs.mongodb.com/v6.0/