

Programming Applications with Databases

Exercise Set 6

1. Download and install locally the latest version of the MongoDB Community Server. Run the server, run the client shell, and run a query showing available databases. Finally, run the client application in C# presented during classes (or create one in your favorite technology).
[1p]
2. For the *library* database attached earlier to the examples, propose a structure in the document model and insert data which includes 2 books, 3 copies of books, 2 readers, and 4 borrowings. Ensure that at least one document includes some nested substructure.
[1p]
3. Prepare an appropriate validation schema for the previously created structure. Check whether the inserted data passes the validation. See more: <https://docs.mongodb.com/manual/core/schema-validation/>
[2p]
4. Run the following queries:
 - get full documents list, sorted in an explicit order, and limited to the middle 2 items (select a specific page),
 - get documents list filtered by a condition applied on the nested structure.
[1p]
5. Execute the example of replica sets presented in the MongoDB lecture presentation.
[1p]
6. Propose a way for performing the JOIN operation from SQL on 2 and 3 MongoDB collections. Prepare small examples to explain the proposal.
[2p]
7. Refer to the sharding tutorial at <https://www.mongodb.com/docs/manual/sharding/>. Prepare a small example (similar to the replication one) to explain the concept.
[1p]
8. Refer to aggregations described at <https://www.mongodb.com/docs/manual/aggregation/>. Prepare a small example (similar to the replication one) to explain the concept.
[1p]

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