

Assignment (01 /2021)

Answer the following to the best of your knowledge. Feel free to use any resources/notes that you like.

True or False: NoSQL means there is no way of showing relational data. If you could, it would be called SQL. 4 points

☐ True

☒ False

The concept of a "table" in a relational database is similar to which of the following elements in the respective data store? 5 points

☐ Collection in MongoDB, Node in Neo4j

☐ Document in MongoDB, Relationship in Neo4j

☐ Label in MongoDB, Collection in Neo4j

☒ Collection in MongoDB, Label in Neo4j

☐ There no such concepts in NoSQL databases. They are schema-less.

What are the different families of NoSQL? 5 points

☐ Neo4j, MongoDB, Cassandra, Redis

☒ Graph, Key-Value, Column, Document

☐ NoSQL and SQL

☐ ACID and BASE

What are some of the differences between non-relational (NoSQL) and relational databases (DBs)?

8 points

- ☒ Relational DBs have well-defined schemas, Non-relational DBs tend to be schema-less
- ☒ Relation DBs tend to have data that is homogenous, whereas Non-relational DBs tends to have data that is heterogenous
- ☒ Relational DBs are ACID-compliant, Non-relational DBs tend to be BASE
- ☐ Relational DBs are faster, Non-relational are slower
- ☒ Non-relational DBs are more tuned to access patterns, relational DBs are data independent
- ☐ Non-relational DBs are better for ad-hoc queries

In Big Data, what are the components of velocity that we discussed?

6 points

- ☒ Frequency of generation
- ☒ Frequency of processing
- ☐ Frequency of storage
- ☐ Frequency of variety

Which of the requirements of the ACID transaction model implies that there is some sort of locking mechanism with respect to transaction concurrency?

5 points

- ☐ Atomicity
- ☐ Consistency
- ☒ Isolation
- ☐ Durability

Which of the following could be an example of modeling for a Data Access Patterns? 5 points

- ☒ Embedding all the course names a Professor teaches in a Professor Entity
- ☐ A Book table that has a normalized reference to the author that wrote the book (assume one author per book)
- ☐ A join table containing keys from a Student table and a Classes table modeling the many-to-many relationship

How might you depict a relationship in a Document database such as MongoDB? 6 points

- ☐ Create another collection
- ☐ There are no relationships
- ☐ Create another document
- ☒ Embed relevant information within the array of objects (embedded documents)
- ☒ Have a subdocument (child document) within the parent document

In Neo4j, when might you prefer to have the property of a Node as a relationship? Imagine, for example, a Movie node with a genres array. 6 points

- ☐ When you dont have enough relationships in your graph
- ☒ When you are trying to find common ground amongst various Nodes in the graph
- ☐ When you only want details of the Node
- ☒ When the property is "rich"/complex