1. What are the main differences between NOSQL & RDBMS Databases?

- Schema:

  In RDBMS structure and data types are fixed in advance, while in NoSQL it is typically dynamic, with some enforcing data validation rules.

- Scaling:

  Relational Databases mostly provide only vertical scaling, in NoSQL horizontal scaling out of the box.

- Transactions:

  In RDBMS transactions are based on ACID principles, while in NoSQL transactions are very simple.

- Data Manipulation:

  SQL in RDBMS and APIs in NoSQL

2. List all NOSQL database types.

- Key-Value Store
- Document-based Store
- Column-based Store
- Graph-based
- *Multi-model

3. How to persist Redis data?

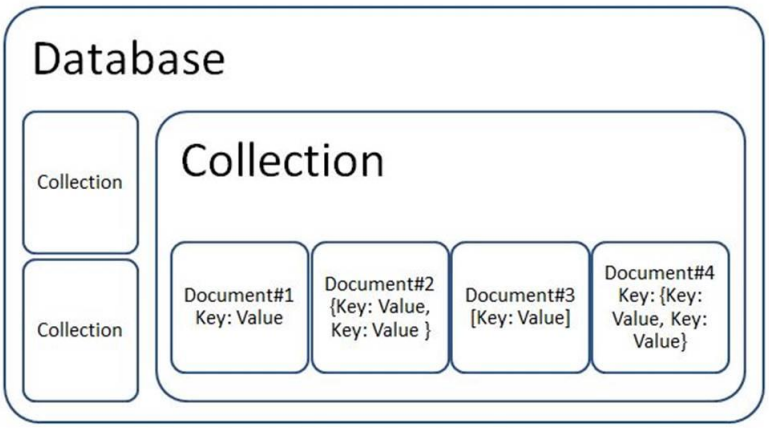
- RDB Mechanism – snapshots during special interval.
- AOF – every write operation is saved to special file.
- SAVE Command – similar to RDB, a snapshot of current state of Redis.

4. What are the use cases for key-value databases?

- Cache
- Recommendation engines
- User Profiles and session management
- Ad Services

5. Explain how the data is stored in document databases. You many take MongoDB as example.

Each piece of information is stored in document, presented usually as JSON object. Documents are grouped and stored inside Collections.

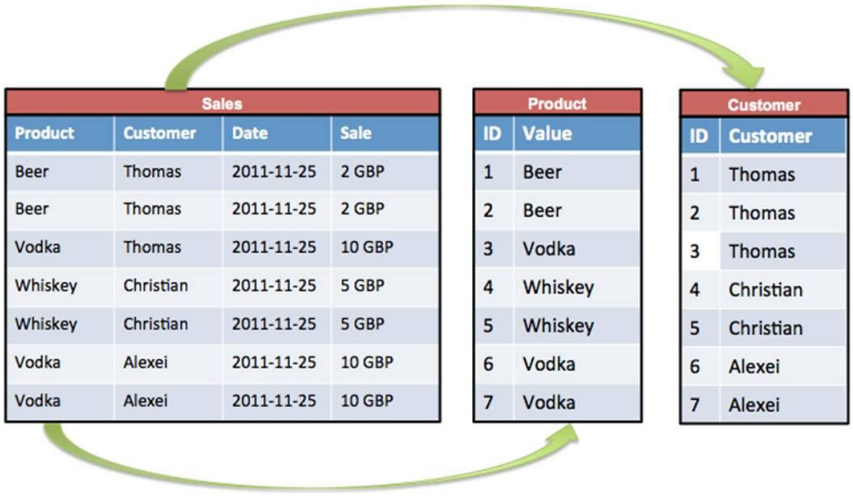


6. How to configure master node on Cassandra?

Cassandra uses masterless architecture to have no single point of failure that is why you can't configure master node.

7. How does column-based database store data (compared with row based)?

Column-based databases use table to collect information, but store each column separately, connecting each item with rowId. Row-based databases store each row as a single entity.



Sales

Product	Customer	Date	Sale
Beer	Thomas	2011-11-25	2 GBP
Beer	Thomas	2011-11-25	2 GBP
Vodka	Thomas	2011-11-25	10 GBP
Whiskey	Christian	2011-11-25	5 GBP
Whiskey	Christian	2011-11-25	5 GBP
Vodka	Alexei	2011-11-25	10 GBP
Vodka	Alexei	2011-11-25	10 GBP

Product

ID	Value
1	Beer
2	Beer
3	Vodka
4	Whiskey
5	Whiskey
6	Vodka
7	Vodka

Customer

ID	Customer
1	Thomas
2	Thomas
3	Thomas
4	Christian
5	Christian
6	Alexei
7	Alexei

8. What is the structure of Graph databases? (Name 3 main concepts)

- Nodes – entities storing any kind of data (the same as row in RDBMS and document in document databases).
- Edges – relationship between nodes.
- Properties – storing a piece of information.

9. How to delete nodes with relationships in neo4j?

If a node has any relationship with any other and you try to delete it with 'Delete' command, you'll face up with an error. To delete such nodes you may use 'Detach delete' or delete relationships first.

10. What are the disadvantages of Graph databases?

- They hardly store big data, for example when nodes contain a lot of information.
- Not optimized for large-volume analytics queries, when you use ranges and so on.
- Not fast with queries through all database (when query touches all nodes for example).
- Hard to scale.

11. What are the key features of Cosmos DB?

- Many different APIs (Cassandra, Mongo, Gremlin, Table API).
- Fast performance (for 1 KB write operation it requires under 15ms).
- Easy to scale, manage and configure through Azure portal.
- All data is indexed automatically by Azure.