

Quiz: Cloud Databases

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1. You like the efficiency gains of columnar storage Redshift offering by AWS.

You are developing an online transaction processing (OLTP) system that has very large number of attributes that needs to be collected.

You are expecting frequent updates to small set of attributes.

Is Redshift database service a good fit for this use case?

- A. Yes
- B. No

2. You are planning to use a relational database for transaction processing. Application is expected to perform large number read, inserts and updates with sub-second response time. Generally, they perform reads, updates on small number of rows.

In these situations what type of schema structure is generally favored?

- A. Normalized Schema
- B. Denormalized Schema

3. NoSQL Databases usually refer to databases that are:

- A. Non-Relational
- B. Scales using a cluster of low-cost hardware
- C. Flexible Schema with very little schema constraints
- D. Scales to very high read and write request rates
- E. All the above

4. An application stack is not able to scale due performance bottleneck with a MySQL RDS relational database instance. Among the options listed, which one is not the right solution for addressing this issue?

- A. Upgrade to a higher instance class
- B. Add more nodes to the cluster for handling write traffic
- C. Optimize your database
- D. Explore use of In-memory solutions like ElastiCache to cache frequently requested data

5. Can you use AWS ElastiCache to store banking transactions to improve response time and periodically update backend database to record the transactions?
 - A. Yes
 - B. No
6. You have a data warehouse system that stores 100s of columns and analytic queries pull around 10 columns across millions of rows.

If you use a Redshift columnar storage, what are the benefits:

- A. Columnar storage system can access only the blocks that contain the requested columns resulting in substantial reduction in disk I/O
 - B. Columnar storage systems can support very large number of read and write requests
 - C. All the above
7. You want to enable text based searching for your application. What service can you use for supporting this need?
 - A. ElastiCache
 - B. ElasticSearch
 - C. DynamoDB
 - D. RDS
8. You have organized your content in a DynamoDB database across several tables. Often read requests for an item would need data from couple of other tables.

Can you join the tables together in a query against DynamoDB service?

- A. Yes
- B. No

Answers:

1. B – No. Redshift is optimized for batched write operations and for reading high volumes of data. It is not suitable for OLTP applications
2. A - Normalized Schema is suitable for high transaction throughput requirement. Denormalized schema is generally used for reporting and data warehouse systems.
3. E – NoSQL database systems generally have all these attributes listed
4. B – RDS systems have Primary-Standby setup with primary instance handling all read/writes. You can optionally offload READs to Read-Replicas. However, all Writes must go through the primary. You can upgrade the instance, you can optimize the database, you can also offload reads to in-memory caching solutions like ElastiCache.
5. B - There is a risk of data loss with in-memory stores
6. A – Columnar storage systems can compress data more effectively and access only the blocks that contain data for specified columns. Both these results in substantial reduction in disk I/O

7. B - ElasticSearch service is optimized for text based search
8. B - DynamoDB does not support joins