Answer Sheet

Q1)

An application development team complains that they are experiencing performance issues with ElastiCache. After investigation, a database specialist determines that the performance issues occur during the automated back-up window.

What actions can the specialist perform to improve backup performance (select TWO)?

- Increase the number of shards.
- ✅ Create backups from a read replica.

Explanation:-by performing backups from one of the read replicas, the primary node remains unaffected and can continue serving requests without any performance degradation.

- ✅ Set the reserved-memory-percent parameter.

Explanation:-reserved-memory-percent parameter specifies the amount of memory available for non-data use. Setting or increasing this parameter value for cluster nodes can improve performance during backups since more memory will be allocated for the backup processes.

- Schedule automated back-up window to occur at midnight.
- Perform a resharding operation.

Q2)

A user is using mysql to connect to Amazon Aurora MySQL DB Cluster.

How should the user configure the connection parameters so that the client connection is protected against man-in-the-middle attack?

- encrypt=true;trustServerCertificate=true
- ✅ --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=verify-full

Explanation:-–ssl_mode=verify-full ensures that the client connection is encrypted and performs validation of the certificate to ensure that the server is trusted.

- --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=require
- Set ssl_server_dn_match property to true

Q3)

A company security policy mandates that all connections to databases must be encrypted.

How can DBA enforce that all client connections to an Amazon Aurora PostgreSQL DB cluster are encrypted?

- Set –ssl-mode to REQUIRED
- Set encrypt parameter to true
- ✅ Set rds.force_ssl parameter to 1

Explanation:-rds.force_ssl parameter must be set to 1 to require client connection to RDS databases to be encrypted.

- Execute ALTER USER SQL command with REQUIRE SSL option

Q4)

A database specialist needs to truncate a DynamoDB table.

How can this operation be performed?

- Use aws dynamodb truncate-table CLI command.
- ✅ Use aws dynamodb scan CLI command to scan the table. Iterate through all keys and use aws dynamodb delete-item CLI command to delete each item.

Explanation:-DynamoDB does not have an equivalent command to the SQL TRUNCATE command. The only way to delete all data in a DynamoDB table is to perform a scan of the table to fetch all the item keys. Then you must iterate through the keys and delete each item using the delete-item command.

- Use aws dynamodb delete-from CLI command.
- Use aws dynamodb batch-delete-item CLI command.

Q5)

A user is connecting to an Oracle on Amazon RDS database.

How should the user configure the connection parameters so that the client connection is protected against man-in-the-middle attack?

- ✅ Set ssl_server_dn_match property to true

Explanation:-ssl_server_dn_match property must be set to true on the client in order to perform certificate verification and ensure that the certificate is from the server.

- encrypt=true;trustServerCertificate=true
- --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=require
- --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=verify-full

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Q6)

A development team is refactoring and migrating a legacy application to AWS services. The legacy application uses a relational SQL based database. The team intends to use a NoSQL DynamoDB database in AWS.

What is the first action the team should do when designing the application data model for DynamoDB?

- Convert SQL table DDL to DynamoDB table schemas.
- ✅ Identify database query access patterns.

Explanation:-the first and most important step in designing a DynamoDB application is to identify the data query access patterns that the application utilizes and model the database based on those patterns.

- Map relational SQL tables to DynamoDB tables.
- Identify data capacity requirements.

Q7)

A database specialist wants to grant the read role to DocumentDB user “Bob” on DocumentDB database “production”.

What action must the database specialist perform to accomplish this requirement?

- ✅ Run command db.grantRolesToUser("Bob", [{role: "read", db: "production"}]).

Explanation:-db.grantRolesToUser command is used for assigning DocumentDB database roles to DocumentDB database users.

- Create a Resource-Based Policy with “Allow” Effect on “read” Action for DocumentDB user “Bob”. Assign the policy to DocumentDB instance.
- Assign AWS Managed Policy “AmazonDocDBReadOnlyAccess” to IAM User “Bob”.
- Create an IAM policy with “Allow” Effect on “read” Action for the “production” DocumentDB instance resource. Assign the IAM policy to IAM User “Bob”.

Q8)

A game development company is developing a new on-line multiplayer game. Game user profile data will contain the user's match history. Match history data is expected to be in size on the order of 500KB. Additionally, user profile data schema is expected to go through revisions as new game features are implemented.

How should the team store the user profile data?

- Use Amazon DynamoDB to store user profile data.
- Use Amazon RDS to store user profile data.
- Use Amazon DynamoDB to store user profile data. Use Amazon RDS to store user match history.
- ✅ Use Amazon DynamoDB to store user profile data. User S3 to store user match history. Store a link to the S3 object as an attribute in DynamoDB.

Explanation:-a recommended approach to storing items greater than 400KB in DynamoDB is to store them in S3, and link the S3 object as an attribute in DynamoDB.

Q9)

An application development team is looking to implement a caching solution with cross-region read replica capability.

What solution meets this requirement?

- ✅ ElastiCache for Redis with Global Datastore feature

Explanation:-the Global Datastore feature for ElastiCache can be used to create cross-region read replica clusters.

- ElastiCache for Redis with --automatic-failover-enabled flag
- ElastiCache for Redis with cluster mode enabled
- Amazon DAX Cluster

Q10)

In order to optimize cost and performance of a DynamoDB table, a database specialist would like to identify frequently accessed keys.

What service can the specialist use to achieve this in the most optimal way.

- CloudTrail Events
- ✅ CloudWatch Contributor Insights

Explanation:-CloudWatch Contributor Insights is a service for analyzing log data and identifying top contributors influencing system performance. It can be used to determine frequently accessed attribute keys of DynamoDB tables.

- Performance Insights
- AWS X-Ray

Q11)

A database specialist wants to perform an online data migration from on-premise MongoDB cluster to Amazon DocumentDB in order to minimize source database downtime.

AWS DMS is being used to perform data migration. According to migration best practices, what should the specialist do before beginning the full load of migration data?

- ✅ Create indexes on the target database.

Explanation:-AWS DMS does not migrate indexes. For large data migrations, it is most efficient to pre-create indexes in the target Amazon DocumentDB cluster before migrating the data.

- Ensure that DMS is using the primary node of the source cluster.
- Turn off CDC on the source database.
- Set oplog to 0 on the source database.

Q12)

An application team complains that DocumentDB cluster takes a long time to return query results.

What actions can be performed to solve this issue (Select TWO)?

✅ Create an index on the field being queried.
Explanation:-creating an index on the field being queried speeds up the query operations. Option E is incorrect because db.r4.large is the smallest instance class for DocumentDB instances.
⚪ Configure MongoDB cluster with “primaryPreferred”.
✅ Configure MongoDB cluster with “secondaryPreferred”.
Explanation:-setting the “secondaryPreferred” read preference option distributes requests to read replicas. This is recommended as it increases performance efficiency of the database cluster.
⚪ Set “tls” parameter to “disabled”.
⚪ Set the instance class to db.r4.large.

Q13)

A DocumentDB database specialist wants to examine execution time of operations that are being performed on the cluster in order to investigate slow operations.

What can the specialist use to perform this analysis?

⚪ AWS X-Ray
✅ DocumentDB profiler
Explanation:-DocumentDB profiler feature can be enabled to log the details (including execution time) of MongoDB operations to CloudWatch Logs. Then, CloudWatch Logs Insights can be used to analyze the data and investigate slow queries.
⚪ Performance Insights
⚪ Amazon Inspector

Q14) What can a database specialist use to identify blocked queries on a DocumentDB cluster?

⚪ CloudWatch Logs
⚪ AWS X-Ray
⚪ CloudTrail Events
✅ MongoDB currentOp command
Explanation:-MongoDB currentOp command can be used to list queries that are either blocked or executing longer than a specified time.

Q15)

A CSV file containing data that must be imported into a DynamoDB table is stored in a S3 bucket.

What is the optimal method for importing this data into the DynamoDB table?

⚪ Use AWS Data Pipeline to read the file and import the data into the DynamoDB table.
⚪ Use AWS CLI to read the file and import the data into the DynamoDB table.
✅ Use AWS Lambda Function to read the file and import the data into the DynamoDB table.
Explanation:-creating an AWS Lambda Function to read the file from the S3 bucket and import the data items into the DynamoDB table is the simplest and most cost-efficient method to import CSV data.
⚪ Use AWS Management Console to import the data into the DynamoDB table.

Q16)

An application team wishes to use Amazon ElastiCache to improve their application performance. The application has a requirement that the data must always be the most recent.

Which caching strategy should the team employ?

⚪ Lazy Loading
✅ Write-Through
Explanation:-Write-Through caching strategy updates the cache with every write operation thus ensuring that the cache always contains the most recent data.
⚪ Cache-Aside
⚪ Read-Through

Q17)

An application stores its data in a DynamoDB table. The application team finds that they have a new query pattern, so they create a new LSI to accommodate the new queries. The application starts to experience throttling when performing write operations on the base table even though the number of table updates has not increased.

What is the cause of the issue?

⚪ Data replication to the LSI is synchronous causing latency.
✅ LSI shares write-capacity with the base table.
Explanation:-LSI and base table share capacity units. Performing write operations to a table causes the LSI to be also updated. This consumes write capacity units from the base table. In this case, the addition of the LSI is causing the provisioned write capacity to be exceeded.
⚪ LSI shares read-capacity with the base table.
⚪ Creation of the LSI forces write operations to be strongly consistent.

Q18)

AWS KMS CMK's are being used to provide server-side encryption of DynamoDB tables. Security team wants to audit the CMKs and identify DynamoDB tables that are using the keys for encryption at rest.

What service can be used to perform this activity?

- AWS Trusted Advisor
- ✅ CloudTrail

Explanation:-When DynamoDB uses AWS KMS Customer Managed Keys for server-side encryption, it uses KMS requests (e.g. GenerateDataKey, Decrypt, CreateGrant) for performing various encryption operations. These KMS API operations are logged in CloudTrail logs. Therefore, CloudTrail logs can be used to identify what CMK's are used by DynamoDB tables.

- CloudWatch
- AWS Config

Q19)

Security team wants to maintain a record of all GetItem and PutItem operations performed on a DynamoDB table for audit purposes.

What solution can they use to meet this requirement?

- CloudTrail
- ✅ Enable DynamoDB Streams. Use AWS Lambda to read and record stream records.

Explanation:-DynamoDB streams record events every time any table item is modified. AWS Lambda function can be used to process and record these stream records.

- CloudWatch
- AWS Config

Q20)

A developer is implementing a mobile photo sharing application. The application uses a DynamoDB table to store user profile data. The developer wishes to use web identity federation to allow users to authenticate using social networks like Facebook and Google.

What service can the developer use to authorize the application users and grant them access to the DynamoDB tablee

- AWS Directory Service
- ✅ AWS STS

Explanation:-AWS Security Token Service can be used to provide temporary security credentials to applications using web identity federation. The application can then use these credentials to access AWS DynamoDB table on behalf of the application users.

- AWSIAM
- AWS Resource Access Manager

Q21)

A Java application has a requirement to query data in a DynamoDB table by date range.

What is the recommended approach to store the date in the DynamoDB table?

- Use the String data type and Epoch format.
- ✅ Use the String data type and ISO 8601 format.

Explanation:-AWS SDK for Java provides direct data type mapping from Date Java data type to DynamoDB String type with date values stored in ISO 8601 format.

- Use the Date data type
- Use the Number data type and the Epoch format.

Q22)

An application uses DocumentDB as its database. The application development team wants to implement automatic rotation of database credentials.

How should the application team meet this requirement?

- Store credentials in AWS KMS. Update the application to retrieve the credentials. Create an AWS Lambda function to rotate the credentials. Create CloudWatch Alarm to trigger the Lambda function.
- Store credentials in AWS KMS. Update the application to retrieve the credentials. Enable secret rotation.
- Store credentials in System Manager Parameter Store. Update the application to retrieve the credentials. Enable secret rotation.
- ✅ Store credentials in AWS Secrets Manager. Update the application to retrieve the credentials. Enable secret rotation.

Explanation:-AWS Secrets Manager can be used to securely store and automatically rotate database credentials

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Q23)

An application team wishes to use Amazon ElastiCache to improve their application performance. The application frequently requests the same items. The team wants to minimize cache space utilization and infrastructure costs.

Which caching strategy should the team employ?

- Write-Around
- ✅ Lazy Loading

Explanation:-Lazy Loading caching strategy loads data into the cache only when it is requested by the application. Thus, it reduces use of cache

space by items not frequently requested.

- Write-Through
- Write-Back

Q24)

A game company is developing a mobile multiplayer game. As the game's popularity increases to many concurrent users, the company wants to implement a leaderboard feature.

What database would provide an optimal solution for this use case?

- DynamoDB
- AWS RDS
- None of these
- ✓ ElastiCache for Redis

Explanation:-Redis provides native capability for sorted sets which is an ideal solution for complex and compute intensive data structures such as leaderboards.

Q25)

A serverless application is being developed using AWS Lambda and Amazon RDS as a database. It is expected that AWS Lambda functions will open a large number of simultaneous connections to the database server. The team would like to reduce the memory and CPU overhead for connection management on the database.

What is the optimal solution to this requirement?

- Create an AWS PrivateLink.
- ✓ Create an RDS Proxy.

Explanation:-RDS proxy is a service that can be used to pool simultaneous connections from serverless applications and alleviate the connection management from the RDS database instance.

- Upgrade the database so a larger database class.
- Create an AWS ElastiCache cluster.
