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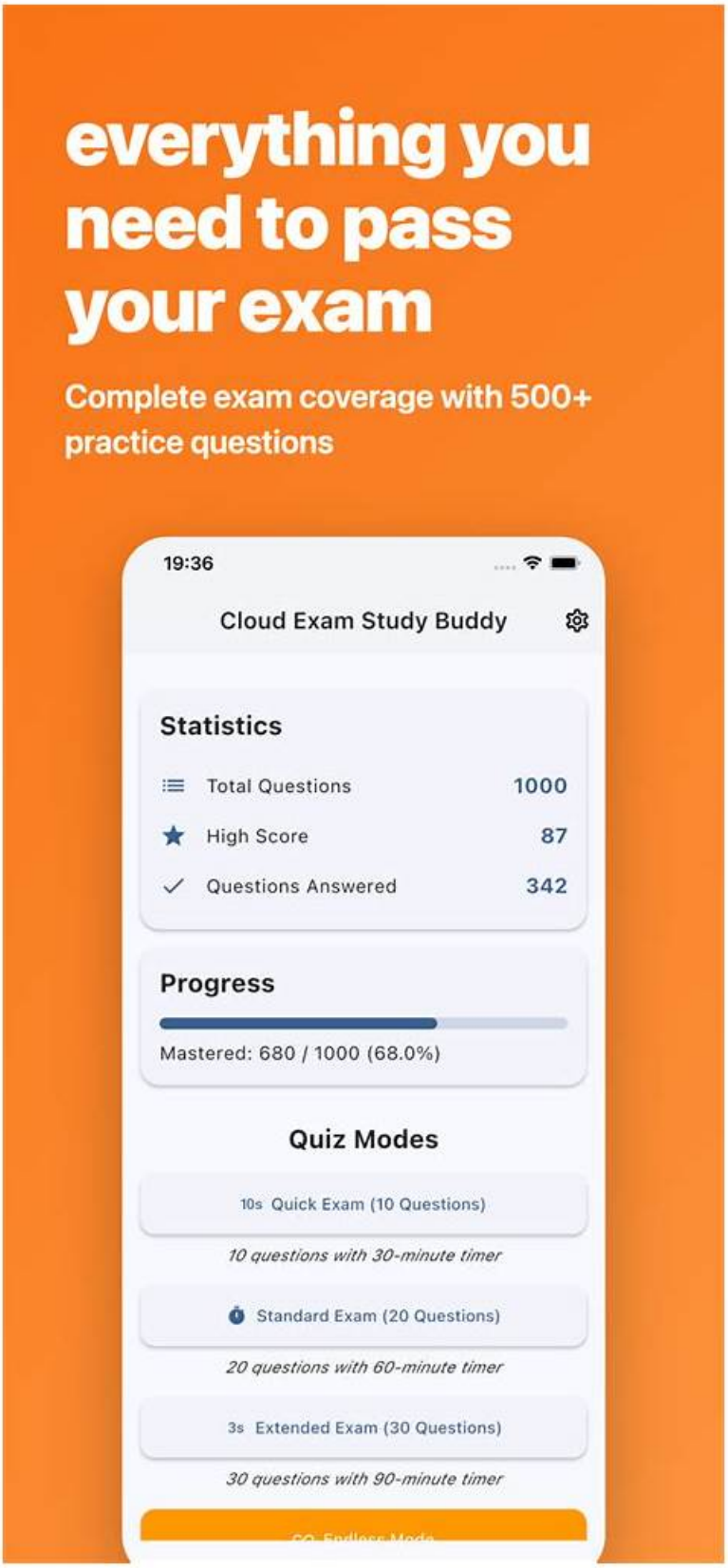

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By passing the DCPDE exam, data engineers can demonstrate their proficiency in using the Databricks platform to build scalable and reliable data pipelines. Databricks Certified Professional Data Engineer Exam certification can help data engineers advance their careers and increase their earning potential by showcasing their expertise in data engineering on Databricks.

Databricks Certified Professional Data Engineer Exam Sample Questions (Q154-Q159):

NEW QUESTION # 154
A Structured Streaming job deployed to production has been experiencing delays during peak hours of the day. At present, during normal execution, each microbatch of data is processed in less than 3 seconds. During peak hours of the day, execution time for each microbatch becomes very inconsistent, sometimes exceeding
30 seconds. The streaming write is currently configured with a trigger interval of 10 seconds.
Holding all other variables constant and assuming records need to be processed in less than 10 seconds, which adjustment will meet the requirement?

- A. Decrease the trigger interval to 5 seconds; triggering batches more frequently allows idle executors to begin processing the next batch while longer running tasks from previous batches finish.
- B. Use the trigger once option and configure a Databricks job to execute the query every 10 seconds; this ensures all backlogged records are processed with each batch.
- C. Increase the trigger interval to 30 seconds; setting the trigger interval near the maximum execution time observed for each batch is always best practice to ensure no records are dropped.
- D. Decrease the trigger interval to 5 seconds; triggering batches more frequently may prevent records from backing up and large batches from causing spill.
- E. The trigger interval cannot be modified without modifying the checkpoint directory; to maintain the current stream state, increase the number of shuffle partitions to maximize parallelism.

Answer: B

Explanation:
The scenario presented involves inconsistent microbatch processing times in a Structured Streaming job during peak hours, with the need to ensure that records are processed within 10 seconds. The trigger once option is the most suitable adjustment to address these challenges:
* Understanding Triggering Options:
* Fixed Interval Triggering (Current Setup):The current trigger interval of 10 seconds may contribute to the inconsistency during peak times as it doesn't adapt based on the processing time of the microbatches. If abatch takes longer to process, subsequent batches will start piling up, exacerbating the delays.
* Trigger Once:This option allows the job to run a single microbatch for processing all available data and then stop. It is useful in scenarios where batch sizes are unpredictable and can vary significantly, which seems to be the case during peak hours in this scenario.
* Implementation of Trigger Once:

* Setup:Instead of continuously running, the job can be scheduled to run every 10 seconds using a Databricks job. This scheduling effectively acts as a custom trigger interval, ensuring that each execution cycle handles all available data up to that point without overlapping or queuing up additional executions.
* Advantages:This approach allows for each batch to complete processing all available data before the next batch starts, ensuring consistency in handling data surges and preventing the system from being overwhelmed.
* Rationale Against Other Options:
* Option A and E (Decrease Interval):Decreasing the trigger interval to 5 seconds might exacerbate the problem by increasing the frequency of batch starts without ensuring the completion of previous batches, potentially leading to higher overhead and less efficient processing.
* Option B (Increase Interval):Increasing the trigger interval to 30 seconds could lead to latency issues, as the data would be processed less frequently, which contradicts the requirement of processing records in less than 10 seconds.
* Option C (Modify Partitions):While increasing parallelism through more shuffle partitions can improve performance, it does not address the fundamental issue of batch scheduling and could still lead to inconsistency during peak loads.
* Conclusion:
* By using the trigger once option and scheduling the job every 10 seconds, you ensure that each microbatch has sufficient time to process all available data thoroughly before the next cycle begins, aligning with the need to handle peak loads more predictably and efficiently.
References
* Structured Streaming Programming Guide - Triggering
* Databricks Jobs Scheduling

NEW QUESTION # 155
A Delta Lake table with Change Data Feed (CDF) enabled in the Lakehouse named customer_churn_params is used in churn prediction by the machine learning team. The table contains information about customers derived from a number of upstream sources. Currently, the data engineering team populates this table nightly by overwriting the table with the current valid values derived from upstream data sources. The churn prediction model used by the ML team is fairly stable in production. The team is only interested in making predictions on records that have changed in the past 24 hours. Which approach would simplify the identification of these changed records?

- A. Replace the current overwrite logic with a MERGE statement to modify only those records that have changed; write logic to make predictions on the changed records identified by the Change Data Feed.
- B. Modify the overwrite logic to include a field populated by calling current_timestamp() as data are being written; use this field to identify records written on a particular date.
- C. Convert the batch job to a Structured Streaming job using the complete output mode; configure a Structured Streaming job to read from the customer_churn_params table and incrementally predict against the churn model.
- D. Apply the churn model to all rows in the customer_churn_params table, but implement logic to perform an upsert into the predictions table that ignores rows where predictions have not changed.

Answer: A

Explanation:
Comprehensive and Detailed Explanation From Exact Extract:
Exact extract: "Change data feed (CDF) provides row-level change information for Delta tables." Exact extract: "Use table_changes to query the set of rows that were inserted, updated, or deleted between two versions (or timestamps)." Exact extract: "MERGE INTO updates and inserts only the rows that changed."

NEW QUESTION # 156
A Structured Streaming job deployed to production has been experiencing delays during peak hours of the day. At present, during normal execution, each microbatch of data is processed in less than 3 seconds. During peak hours of the day, execution time for each microbatch becomes very inconsistent, sometimes exceeding 30 seconds. The streaming write is currently configured with a trigger interval of 10 seconds.
Holding all other variables constant and assuming records need to be processed in less than 10 seconds, which adjustment will meet the requirement?

- A. Decrease the trigger interval to 5 seconds; triggering batches more frequently allows idle executors to begin processing the next batch while longer running tasks from previous batches finish.
- B. Increase the trigger interval to 30 seconds; setting the trigger interval near the maximum execution time observed for each batch is always best practice to ensure no records are dropped.

- C. Use the trigger once option and configure a Databricks job to execute the query every 10 seconds; this ensures all backlogged records are processed with each batch.
- D. The trigger interval cannot be modified without modifying the checkpoint directory; to maintain the current stream state, increase the number of shuffle partitions to maximize parallelism.
- E. Decrease the trigger interval to 5 seconds; triggering batches more frequently may prevent records from backing up and large batches from causing spill.

Answer: E

Explanation:
The adjustment that will meet the requirement of processing records in less than 10 seconds is to decrease the trigger interval to 5 seconds. This is because triggering batches more frequently may prevent records from backing up and large batches from causing spill. Spill is a phenomenon where the data in memory exceeds the available capacity and has to be written to disk, which can slow down the processing and increase the execution time1. By reducing the trigger interval, the streaming query can process smaller batches of data more quickly and avoid spill. This can also improve the latency and throughput of the streaming job2.
The other options are not correct, because:
Option A is incorrect because triggering batches more frequently does not allow idle executors to begin processing the next batch while longer running tasks from previous batches finish. In fact, the opposite is true. Triggering batches more frequently may cause concurrent batches to compete for the same resources and cause contention and backpressure2. This can degrade the performance and stability of the streaming job.
Option B is incorrect because increasing the trigger interval to 30 seconds is not a good practice to ensure no records are dropped. Increasing the trigger interval means that the streaming query will process larger batches of data less frequently, which can increase the risk of spill, memory pressure, and timeouts12. This can also increase the latency and reduce the throughput of the streaming job.
Option C is incorrect because the trigger interval can be modified without modifying the checkpoint directory. The checkpoint directory stores the metadata and state of the streaming query, such as the offsets, schema, and configuration3. Changing the trigger interval does not affect the state of the streaming query, and does not require a new checkpoint directory. However, changing the number of shuffle partitions may affect the state of the streaming query, and may require a new checkpoint directory4.
Option D is incorrect because using the trigger once option and configuring a Databricks job to execute the query every 10 seconds does not ensure that all backlogged records are processed with each batch. The trigger once option means that the streaming query will process all the available data in the source and then stop5. However, this does not guarantee that the query will finish processing within 10 seconds, especially if there are a lot of records in the source. Moreover, configuring a Databricks job to execute the query every 10 seconds may cause overlapping or missed batches, depending on the execution time of the query.

NEW QUESTION # 157
A table named user_ltv is being used to create a view that will be used by data analysts on various teams.
Users in the workspace are configured into groups, which are used for setting up data access using ACLs.
The user_ltv table has the following schema:
email STRING, age INT, ltv INT
The following view definition is executed:
An analyst who is not a member of the marketing group executes the following query:
SELECT * FROM email_ltv
Which statement describes the results returned by this query?

- A. The email, age. and ltv columns will be returned with the values in user ltv.
- B. Three columns will be returned, but one column will be named " redacted " and contain only null values.
- C. The email and ltv columns will be returned with the values in user itv.
- D. Only the email and itv columns will be returned; the email column will contain all null values.
- E. Only the email and ltv columns will be returned; the email column will contain the string " REDACTED " in each row.

Answer: E

Explanation:
The code creates a view called email_ltv that selects the email and ltv columns from a table called user_ltv, which has the following schema: email STRING, age INT, ltv INT. The code also uses the CASE WHEN expression to replace the email values with the string "REDACTED" if the user is not a member of the marketing group. The user who executes the query is not a member of the marketing group, so they will only see the email and ltv columns, and the email column will contain the string "REDACTED" in each row.
Verified References: [Databricks Certified Data Engineer Professional], under "Lakehouse" section; Databricks Documentation, under "CASE expression" section.

NEW QUESTION # 158
You are asked to create a model to predict the total number of monthly subscribers for a specific magazine. You are provided with 1 year's worth of subscription and payment data, user demographic data, and 10 years worth of content of the magazine (articles and pictures). Which algorithm is the most appropriate for building a predictive model for subscribers?

- A. Linear regression
- B. Decision trees
- C. TF-IDF
- D. Logistic regression

Answer: A

NEW QUESTION # 159
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