Snowflake.ARA-C01.by.TonyTinh.83q

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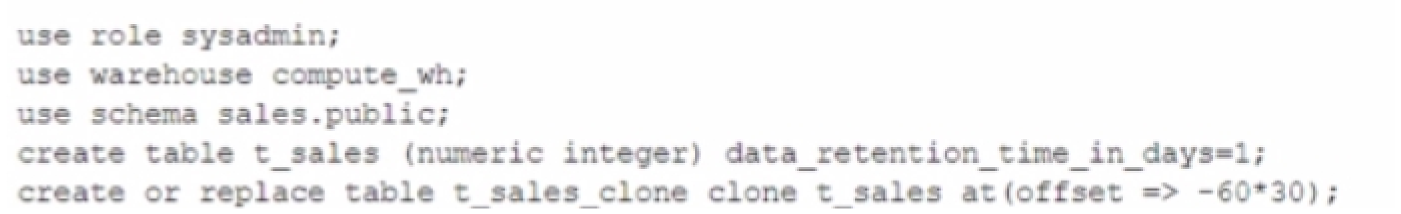
# Exam Code: ARA-C01

# Exam Name: SnowPro Advanced: Architect Certification

**Exam A**

**QUESTION 1**
A user is executing the following command sequentially within a timeframe of 10 minutes from start to finish:



```
use role sysadmin;
use warehouse compute_wh;
use schema sales.public;
create table t_sales (numeric integer) data_retention_time_in_days=1;
create or replace table t_sales_clone clone t_sales at(offset => -60*30);
```

What would be the output of this query?

A. Table T_SALES_CLONE successfully created.
B. Time Travel data is not available for table T_SALES.
C. The offset -> is not a valid clause in the clone operation.
D. Syntax error line 1 at position 58 unexpected 'at'.

**Correct Answer: A**
**Section:**
**Explanation:**
The query is executing a clone operation on an existing table t_sales with an offset to account for the retention time. The syntax used is correct for cloning a table in Snowflake, and the use of the at(offset => -60*30) clause is valid. This specifies that the clone should be based on the state of the table 30 minutes prior (60 seconds * 30). Assuming the table t_sales exists and has been modified within the last 30 minutes, and considering the data_retention_time_in_days is set to 1 day (which enables time travel queries for the past 24 hours), the table t_sales_clone would be successfully created based on the state of t_sales 30 minutes before the clone command was issued.

**QUESTION 2**
Based on the Snowflake object hierarchy, what securable objects belong directly to a Snowflake account? (Select THREE).

A. Database
B. Schema
C. Table
D. Stage
E. Role
F. Warehouse

**Correct Answer: A, E, F**
**Section:**
**Explanation:**
A securable object is an entity to which access can be granted in Snowflake.Securable objects include databases, schemas, tables, views, stages, pipes, functions, procedures, sequences, tasks, streams, roles, warehouses, and shares1.
The Snowflake object hierarchy is a logical structure that organizes the securable objects in a nested manner. The top-most container is the account, which contains all the databases, roles, and warehouses for the customer organization. Each database contains schemas, which in turn contain tables, views, stages, pipes, functions, procedures, sequences, tasks, and streams. Each role can be granted privileges on other roles or securable objects.Each warehouse can be used to execute queries on securable objects2.
Based on the Snowflake object hierarchy, the securable objects that belong directly to a Snowflake account are databases, roles, and warehouses. These objects are created and managed at the account level, and do not depend on any other securable object. The other options are not correct because:
Schemas belong to databases, not to accounts.A schema must be created within an existing database3.

Tables belong to schemas, not to accounts.A table must be created within an existing schema4.
Stages belong to schemas or tables, not to accounts. A stage must be created within an existing schema or table.
1: Overview of Access Control | Snowflake Documentation
2: Securable Objects | Snowflake Documentation
3: CREATE SCHEMA | Snowflake Documentation
4: CREATE TABLE | Snowflake Documentation
[5]: CREATE STAGE | Snowflake Documentation

**QUESTION 3**
Which of the following ingestion methods can be used to load near real-time data by using the messaging services provided by a cloud provider?

A. Snowflake Connector for Kafka
B. Snowflake streams
C. Snowpipe
D. Spark

**Correct Answer: A, C**
**Section:**
**Explanation:**
Snowflake Connector for Kafka and Snowpipe are two ingestion methods that can be used to load near real-time data by using the messaging services provided by a cloud provider. Snowflake Connector for Kafka enables you to stream structured and semi-structured data from Apache Kafka topics into Snowflake tables. Snowpipe enables you to load data from files that are continuously added to a cloud storage location, such as Amazon S3 or Azure Blob Storage. Both methods leverage Snowflake's micro-partitioning and columnar storage to optimize data ingestion and query performance. Snowflake streams and Spark are not ingestion methods, but rather components of the Snowflake architecture. Snowflake streams provide change data capture (CDC) functionality by tracking data changes in a table. Spark is a distributed computing framework that can be used to process large-scale data and write it to Snowflake using the Snowflake Spark Connector.Reference:
Snowflake Connector for Kafka
Snowpipe
Snowflake Streams
Snowflake Spark Connector

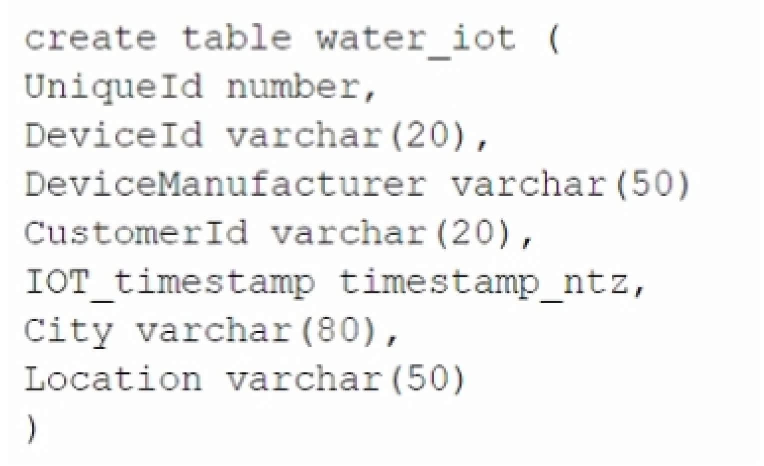
**QUESTION 4**
An Architect is designing a file ingestion recovery solution. The project will use an internal named stage for file storage. Currently, in the case of an ingestion failure, the Operations team must manually download the failed file and check for errors.
Which downloading method should the Architect recommend that requires the LEAST amount of operational overhead?

A. Use the Snowflake Connector for Python, connect to remote storage and download the file.
B. Use the get command in SnowSQL to retrieve the file.
C. Use the get command in Snowsight to retrieve the file.
D. Use the Snowflake API endpoint and download the file.

**Correct Answer: B**
**Section:**
**Explanation:**
The get command in SnowSQL is a convenient way to download files from an internal stage to a local directory. The get command can be used in interactive mode or in a script, and it supports wildcards and parallel downloads.The get command also allows specifying the overwrite option, which determines how to handle existing files with the same name2
The Snowflake Connector for Python, the Snowflake API endpoint, and the get command in Snowsight are not recommended methods for downloading files from an internal stage, because they require more operational overhead than the get command in SnowSQL. The Snowflake Connector for Python and the Snowflake API endpoint require writing and maintaining code to handle the connection, authentication, and file transfer.The get command in Snowsight requires using the web interface and manually selecting the files to download34Reference:
1: SnowPro Advanced: Architect | Study Guide
2: Snowflake Documentation | Using the GET Command

3: Snowflake Documentation | Using the Snowflake Connector for Python
4: Snowflake Documentation | Using the Snowflake API
: Snowflake Documentation | Using the GET Command in Snowsight
:SnowPro Advanced: Architect | Study Guide
:Using the GET Command
:Using the Snowflake Connector for Python
:Using the Snowflake API
: [Using the GET Command in Snowsight]

**QUESTION 5**
A table for IOT devices that measures water usage is created. The table quickly becomes large and contains more than 2 billion rows.



```
create table water_iot (
UniqueId number,
DeviceId varchar(20),
DeviceManufacturer varchar(50)
CustomerId varchar(20),
IOT_timestamp timestamp_ntz,
City varchar(80),
Location varchar(50)
)
```

The general query patterns for the table are:
1. Deviceld, lOT_timestamp and Customerld are frequently used in the filter predicate for the select statement
2. The columns City and DeviceManuf acturer are often retrieved
3. There is often a count on Uniqueld
Which field(s) should be used for the clustering key?

A. lOT_timestamp
B. City and DeviceManuf acturer
C. Deviceld and Customerld
D. Uniqueld

**Correct Answer: C**
**Section:**
**Explanation:**
A clustering key is a subset of columns or expressions that are used to co-locate the data in the same micro-partitions, which are the units of storage in Snowflake. Clustering can improve the performance of queries that filter on the clustering key columns, as it reduces the amount of data that needs to be scanned. The best choice for a clustering key depends on the query patterns and the data distribution in the table. In this case, the columns Deviceld, IOT_timestamp, and Customerld are frequently used in the filter predicate for the select statement, which means they are good candidates for the clustering key. The columns City and DeviceManufacturer are often retrieved, but not filtered on, so they are not as important for the clustering key. The column Uniqueld is used for counting, but it is not a good choice for the clustering key, as it is likely to have a high cardinality and a uniform distribution, which means it will not help to co-locate the data. Therefore, the best option is to use Deviceld and Customerld as the clustering key, as they can help to prune the micro-partitions and speed up the queries.Reference:Clustering Keys & Clustered Tables,Micro-partitions & Data Clustering,A Complete Guide to Snowflake Clustering

**QUESTION 6**
Which Snowflake objects can be used in a data share? (Select TWO).

A. Standard view
B. Secure view

C. Stored procedure
D. External table
E. Stream

**Correct Answer: A, B**
**Section:**
**Explanation:**

**QUESTION 7**
A Snowflake Architect Is working with Data Modelers and Table Designers to draft an ELT framework specifically for data loading using Snowpipe. The Table Designers will add a timestamp column that Inserts the current tlmestamp as the default value as records are loaded into a table. The Intent is to capture the time when each record gets loaded into the table; however, when tested the timestamps are earlier than the loae_take column values returned by the copy_history function or the Copy_HISTORY view (Account Usage).
Why Is this occurring?

A. The timestamps are different because there are parameter setup mismatches. The parameters need to be realigned
B. The Snowflake timezone parameter Is different from the cloud provider's parameters causing the mismatch.
C. The Table Designer team has not used the localtimestamp or systimestamp functions in the Snowflake copy statement.
D. The CURRENT_TIMEis evaluated when the load operation is compiled in cloud services rather than when the record is inserted into the table.

**Correct Answer: D**
**Section:**
**Explanation:**
The correct answer is D because the CURRENT_TIME function returns the current timestamp at the start of the statement execution, not at the time of the record insertion. Therefore, if the load operation takes some time to complete, the CURRENT_TIME value may be earlier than the actual load time.
Option A is incorrect because the parameter setup mismatches do not affect the timestamp values. The parameters are used to control the behavior and performance of the load operation, such as the file format, the error handling, the purge option, etc.
Option B is incorrect because the Snowflake timezone parameter and the cloud provider's parameters are independent of each other. The Snowflake timezone parameter determines the session timezone for displaying and converting timestamp values, while the cloud provider's parameters determine the physical location and configuration of the storage and compute resources.
Option C is incorrect because the localtimestamp and systimestamp functions are not relevant for the Snowpipe load operation. The localtimestamp function returns the current timestamp in the session timezone, while the systimestamp function returns the current timestamp in the system timezone. Neither of them reflect the actual load time of the records.Reference:
Snowflake Documentation: Loading Data Using Snowpipe: This document explains how to use Snowpipe to continuously load data from external sources into Snowflake tables. It also describes the syntax and usage of the COPY INTO command, which supports various options and parameters to control the loading behavior.
Snowflake Documentation: Date and Time Data Types and Functions: This document explains the different data types and functions for working with date and time values in Snowflake. It also describes how to set and change the session timezone and the system timezone.
Snowflake Documentation: Querying Metadata: This document explains how to query the metadata of the objects and operations in Snowflake using various functions, views, and tables. It also describes how to access the copy history information using the COPY_HISTORY function or the COPY_HISTORY view.

**QUESTION 8**
An Architect needs to automate the daily Import of two files from an external stage into Snowflake. One file has Parquet-formatted data, the other has CSV-formatted data.
How should the data be joined and aggregated to produce a final result set?

A. Use Snowpipe to ingest the two files, then create a materialized view to produce the final result set.
B. Create a task using Snowflake scripting that will import the files, and then call a User-Defined Function (UDF) to produce the final result set.
C. Create a JavaScript stored procedure to read. join, and aggregate the data directly from the external stage, and then store the results in a table.
D. Create a materialized view to read, Join, and aggregate the data directly from the external stage, and use the view to produce the final result set

**Correct Answer: B**

**Section:**
**Explanation:**
According to the Snowflake documentation, tasks are objects that enable scheduling and execution of SQL statements or JavaScript user-defined functions (UDFs) in Snowflake. Tasks can be used to automate data loading, transformation, and maintenance operations. Snowflake scripting is a feature that allows writing procedural logic using SQL statements and JavaScript UDFs. Snowflake scripting can be used to create complex workflows and orchestrate tasks. Therefore, the best option to automate the daily import of two files from an external stage into Snowflake, join and aggregate the data, and produce a final result set is to create a task using Snowflake scripting that will import the files using the COPY INTO command, and then call a UDF to perform the join and aggregation logic. The UDF can return a table or a variant value as the final result set.Reference:
Tasks
Snowflake Scripting
User-Defined Functions

**QUESTION 9**
A company has a source system that provides JSON records for various loT operations. The JSON Is loading directly into a persistent table with a variant field. The data Is quickly growing to 100s of millions of records and performance to becoming an issue. There is a generic access pattern that Is used to filter on the create_date key within the variant field.
What can be done to improve performance?

A. Alter the target table to Include additional fields pulled from the JSON records. This would Include a create_date field with a datatype of time stamp. When this field Is used in the filter, partition pruning will occur.
B. Alter the target table to include additional fields pulled from the JSON records. This would include a create_date field with a datatype of varchar. When this field is used in the filter, partition pruning will occur.
C. Validate the size of the warehouse being used. If the record count is approaching 100s of millions, size XL will be the minimum size required to process this amount of data.
D. Incorporate the use of multiple tables partitioned by date ranges. When a user or process needs to query a particular date range, ensure the appropriate base table Is used.

**Correct Answer: A**
**Section:**
**Explanation:**
The correct answer is A because it improves the performance of queries by reducing the amount of data scanned and processed. By adding a create_date field with a timestamp data type, Snowflake can automatically cluster the table based on this field and prune the micro-partitions that do not match the filter condition. This avoids the need to parse the JSON data and access the variant field for every record.
Option B is incorrect because it does not improve the performance of queries. By adding a create_date field with a varchar data type, Snowflake cannot automatically cluster the table based on this field and prune the micro-partitions that do not match the filter condition. This still requires parsing the JSON data and accessing the variant field for every record.
Option C is incorrect because it does not address the root cause of the performance issue. By validating the size of the warehouse being used, Snowflake can adjust the compute resources to match the data volume and parallelize the query execution. However, this does not reduce the amount of data scanned and processed, which is the main bottleneck for queries on JSON data.
Option D is incorrect because it adds unnecessary complexity and overhead to the data loading and querying process. By incorporating the use of multiple tables partitioned by date ranges, Snowflake can reduce the amount of data scanned and processed for queries that specify a date range. However, this requires creating and maintaining multiple tables, loading data into the appropriate table based on the date, and joining the tables for queries that span multiple date ranges.Reference:
Snowflake Documentation: Loading Data Using Snowpipe: This document explains how to use Snowpipe to continuously load data from external sources into Snowflake tables. It also describes the syntax and usage of the COPY INTO command, which supports various options and parameters to control the loading behavior, such as ON_ERROR, PURGE, and SKIP_FILE.
Snowflake Documentation: Date and Time Data Types and Functions: This document explains the different data types and functions for working with date and time values in Snowflake. It also describes how to set and change the session timezone and the system timezone.
Snowflake Documentation: Querying Metadata: This document explains how to query the metadata of the objects and operations in Snowflake using various functions, views, and tables. It also describes how to access the copy history information using the COPY_HISTORY function or the COPY_HISTORY view.
Snowflake Documentation: Loading JSON Data: This document explains how to load JSON data into Snowflake tables using various methods, such as the COPY INTO command, the INSERT command, or the PUT command. It also describes how to access and query JSON data using the dot notation, the FLATTEN function, or the LATERAL join.
Snowflake Documentation: Optimizing Storage for Performance: This document explains how to optimize the storage of data in Snowflake tables to improve the performance of queries. It also describes the concepts and benefits of automatic clustering, search optimization service, and materialized views.

**QUESTION 10**
A Snowflake Architect is designing an application and tenancy strategy for an organization where strong legal isolation rules as well as multi-tenancy are requirements.
Which approach will meet these requirements if Role-Based Access Policies (RBAC) is a viable option for isolating tenants?

A. Create accounts for each tenant in the Snowflake organization.

B. Create an object for each tenant strategy if row level security is viable for isolating tenants.
C. Create an object for each tenant strategy if row level security is not viable for isolating tenants.
D. Create a multi-tenant table strategy if row level security is not viable for isolating tenants.

**Correct Answer: A**
**Section:**
**Explanation:**
This approach meets the requirements of strong legal isolation and multi-tenancy. By creating separate accounts for each tenant, the application can ensure that each tenant has its own dedicated storage, compute, and metadata resources, as well as its own encryption keys and security policies. This provides the highest level of isolation and data protection among the tenancy models. Furthermore, by creating the accounts within the same Snowflake organization, the application can leverage the features of Snowflake Organizations, such as centralized billing, account management, and cross-account data sharing.
Snowflake Organizations Overview | Snowflake Documentation
Design Patterns for Building Multi-Tenant Applications on Snowflake

**QUESTION 11**
Which statements describe characteristics of the use of materialized views in Snowflake? (Choose two.)

A. They can include ORDER BY clauses.
B. They cannot include nested subqueries.
C. They can include context functions, such as CURRENT_TIME().
D. They can support MIN and MAX aggregates.
E. They can support inner joins, but not outer joins.

**Correct Answer: B, D**
**Section:**
**Explanation:**

According to the Snowflake documentation, materialized views have some limitations on the query specification that defines them. One of these limitations is that they cannot include nested subqueries, such as subqueries in the FROM clause or scalar subqueries in the SELECT list. Another limitation is that they cannot include ORDER BY clauses, context functions (such as CURRENT_TIME()), or outer joins. However, materialized views can support MIN and MAX aggregates, as well as other aggregate functions, such as SUM, COUNT, and AVG.
Limitations on Creating Materialized Views | Snowflake Documentation
Working with Materialized Views | Snowflake Documentation

**QUESTION 12**
The Data Engineering team at a large manufacturing company needs to engineer data coming from many sources to support a wide variety of use cases and data consumer requirements which include:
1) Finance and Vendor Management team members who require reporting and visualization
2) Data Science team members who require access to raw data for ML model development
3) Sales team members who require engineered and protected data for data monetization
What Snowflake data modeling approaches will meet these requirements? (Choose two.)

A. Consolidate data in the company's data lake and use EXTERNAL TABLES.
B. Create a raw database for landing and persisting raw data entering the data pipelines.
C. Create a set of profile-specific databases that aligns data with usage patterns.
D. Create a single star schema in a single database to support all consumers' requirements.
E. Create a Data Vault as the sole data pipeline endpoint and have all consumers directly access the Vault.

**Correct Answer: B, C**
**Section:**
**Explanation:**
These two approaches are recommended by Snowflake for data modeling in a data lake scenario. Creating a raw database allows the data engineering team to ingest data from various sources without any transformation or

cleansing, preserving the original data quality and format. This enables the data science team to access the raw data for ML model development. Creating a set of profile-specific databases allows the data engineering team to apply different transformations and optimizations for different use cases and data consumer requirements. For example, the finance and vendor management team can access a dimensional database that supports reporting and visualization, while the sales team can access a secure database that supports data monetization.
Snowflake Data Lake Architecture | Snowflake Documentation
Snowflake Data Lake Best Practices | Snowflake Documentation

**QUESTION 13**
An Architect on a new project has been asked to design an architecture that meets Snowflake security, compliance, and governance requirements as follows:
1) Use Tri-Secret Secure in Snowflake
2) Share some information stored in a view with another Snowflake customer
3) Hide portions of sensitive information from some columns
4) Use zero-copy cloning to refresh the non-production environment from the production environment
To meet these requirements, which design elements must be implemented? (Choose three.)

A. Define row access policies.
B. Use the Business-Critical edition of Snowflake.
C. Create a secure view.
D. Use the Enterprise edition of Snowflake.
E. Use Dynamic Data Masking.
F. Create a materialized view.

**Correct Answer: B, C, E**
**Section:**
**Explanation:**

These three design elements are required to meet the security, compliance, and governance requirements for the project.
To use Tri-Secret Secure in Snowflake, the Business Critical edition of Snowflake is required. This edition provides enhanced data protection features, such as customer-managed encryption keys, that are not available in lower editions.Tri-Secret Secure is a feature that combines a Snowflake-maintained key and a customer-managed key to create a composite master key to encrypt the data in Snowflake1.
To share some information stored in a view with another Snowflake customer, a secure view is recommended. A secure view is a view that hides the underlying data and the view definition from unauthorized users.Only the owner of the view and the users who are granted the owner's role can see the view definition and the data in the base tables of the view2.A secure view can be shared with another Snowflake account using a data share3.
To hide portions of sensitive information from some columns, Dynamic Data Masking can be used. Dynamic Data Masking is a feature that allows applying masking policies to columns to selectively mask plain-text data at query time.Depending on the masking policy conditions and the user's role, the data can be fully or partially masked, or shown as plain-text4.

**QUESTION 14**
Which of the following are characteristics of how row access policies can be applied to external tables? (Choose three.)

A. An external table can be created with a row access policy, and the policy can be applied to the VALUE column.
B. A row access policy can be applied to the VALUE column of an existing external table.
C. A row access policy cannot be directly added to a virtual column of an external table.
D. External tables are supported as mapping tables in a row access policy.
E. While cloning a database, both the row access policy and the external table will be cloned.
F. A row access policy cannot be applied to a view created on top of an external table.

**Correct Answer: A, B, C**
**Section:**
**Explanation:**
These three statements are true according to the Snowflake documentation and the web search results. A row access policy is a feature that allows filtering rows based on user-defined conditions. A row access policy can be applied to an external table, which is a table that reads data from external files in a stage. However, there are some limitations and considerations for using row access policies with external tables.
An external table can be created with a row access policy by using the WITH ROW ACCESS POLICY clause in the CREATE EXTERNAL TABLE statement.The policy can be applied to the VALUE column, which is the column that

contains the raw data from the external files in a VARIANT data type1.
A row access policy can also be applied to the VALUE column of an existing external table by using the ALTER TABLE statement with the SET ROW ACCESS POLICY clause2.
A row access policy cannot be directly added to a virtual column of an external table. A virtual column is a column that is derived from the VALUE column using an expression.To apply a row access policy to a virtual column, the policy must be applied to the VALUE column and the expression must be repeated in the policy definition3.
External tables are not supported as mapping tables in a row access policy. A mapping table is a table that is used to determine the access rights of users or roles based on some criteria.Snowflake does not support using an external table as a mapping table because it may cause performance issues or errors4.
While cloning a database, Snowflake clones the row access policy, but not the external table. Therefore, the policy in the cloned database refers to a table that is not present in the cloned database.To avoid this issue, the external table must be manually cloned or recreated in the cloned database4.
A row access policy can be applied to a view created on top of an external table. The policy can be applied to the view itself or to the underlying external table.However, if the policy is applied to the view, the view must be a secure view, which is a view that hides the underlying data and the view definition from unauthorized users5.
CREATE EXTERNAL TABLE | Snowflake Documentation
ALTER EXTERNAL TABLE | Snowflake Documentation
Understanding Row Access Policies | Snowflake Documentation
Snowflake Data Governance: Row Access Policy Overview
Secure Views | Snowflake Documentation

**QUESTION 15**
Which data models can be used when modeling tables in a Snowflake environment? (Select THREE).

A. Graph model
B. Dimensional/Kimball
C. Data lake
D. lnmon/3NF
E. Bayesian hierarchical model
F. Data vault

**Correct Answer: B, D, F**
**Section:**
**Explanation:**
Snowflake is a cloud data platform that supports various data models for modeling tables in a Snowflake environment. The data models can be classified into two categories: dimensional and normalized. Dimensional data models are designed to optimize query performance and ease of use for business intelligence and analytics. Normalized data models are designed to reduce data redundancy and ensure data integrity for transactional and operational systems. The following are some of the data models that can be used in Snowflake:
Dimensional/Kimball: This is a popular dimensional data model that uses a star or snowflake schema to organize data into fact and dimension tables. Fact tables store quantitative measures and foreign keys to dimension tables. Dimension tables store descriptive attributes and hierarchies. A star schema has a single denormalized dimension table for each dimension, while a snowflake schema has multiple normalized dimension tables for each dimension. Snowflake supports both star and snowflake schemas, and allows users to create views and joins to simplify queries.
Inmon/3NF: This is a common normalized data model that uses a third normal form (3NF) schema to organize data into entities and relationships. 3NF schema eliminates data duplication and ensures data consistency by applying three rules: 1) every column in a table must depend on the primary key, 2) every column in a table must depend on the whole primary key, not a part of it, and 3) every column in a table must depend only on the primary key, not on other columns. Snowflake supports 3NF schema and allows users to create referential integrity constraints and foreign key relationships to enforce data quality.
Data vault: This is a hybrid data model that combines the best practices of dimensional and normalized data models to create a scalable, flexible, and resilient data warehouse. Data vault schema consists of three types of tables: hubs, links, and satellites. Hubs store business keys and metadata for each entity. Links store associations and relationships between entities. Satellites store descriptive attributes and historical changes for each entity or relationship. Snowflake supports data vault schema and allows users to leverage its features such as time travel, zero-copy cloning, and secure data sharing to implement data vault methodology.

**QUESTION 16**
A Snowflake Architect is setting up database replication to support a disaster recovery plan. The primary database has external tables.
How should the database be replicated?

A. Create a clone of the primary database then replicate the database.
B. Move the external tables to a database that is not replicated, then replicate the primary database.

C. Replicate the database ensuring the replicated database is in the same region as the external tables.

D. Share the primary database with an account in the same region that the database will be replicated to.

**Correct Answer: B**
**Section:**
**Explanation:**
Database replication is a feature that allows you to create a copy of a database in another account, region, or cloud platform for disaster recovery or business continuity purposes. However, not all database objects can be replicated. External tables are one of the exceptions, as they reference data files stored in an external stage that is not part of Snowflake. Therefore, to replicate a database that contains external tables, you need to move the external tables to a separate database that is not replicated, and then replicate the primary database that contains the other objects. This way, you can avoid replication errors and ensure consistency between the primary and secondary databases. The other options are incorrect because they either do not address the issue of external tables, or they use an alternative method that is not supported by Snowflake. You cannot create a clone of the primary database and then replicate it, as replication only works on the original database, not on its clones. You also cannot share the primary database with another account, as sharing is a different feature that does not create a copy of the database, but rather grants access to the shared objects. Finally, you do not need to ensure that the replicated database is in the same region as the external tables, as external tables can access data files stored in any region or cloud platform, as long as the stage URL is valid and accessible.Reference:
[Replication and Failover/Failback]1
[Introduction to External Tables]2
[Working with External Tables]3
[Replication : How to migrate an account from One Cloud Platform or Region to another in Snowflake]4

**QUESTION 17**
An Architect is integrating an application that needs to read and write data to Snowflake without installing any additional software on the application server.
How can this requirement be met?

A. Use SnowSQL.

B. Use the Snowpipe REST API.

C. Use the Snowflake SQL REST API.

D. Use the Snowflake ODBC driver.

**Correct Answer: C**
**Section:**
**Explanation:**
The Snowflake SQL REST API is a REST API that you can use to access and update data in a Snowflake database. You can use this API to execute standard queries and most DDL and DML statements. This API can be used to develop custom applications and integrations that can read and write data to Snowflake without installing any additional software on the application server. Option A is not correct because SnowSQL is a command-line client that requires installation and configuration on the application server. Option B is not correct because the Snowpipe REST API is used to load data from cloud storage into Snowflake tables, not to read or write data to Snowflake. Option D is not correct because the Snowflake ODBC driver is a software component that enables applications to connect to Snowflake using the ODBC protocol, which also requires installation and configuration on the application server.Reference: The answer can be verified from Snowflake's official documentation on the Snowflake SQL REST API available on their website. Here are some relevant links:
Snowflake SQL REST API | Snowflake Documentation
Introduction to the SQL API | Snowflake Documentation
Submitting a Request to Execute SQL Statements | Snowflake Documentation

**QUESTION 18**
What transformations are supported in the below SQL statement? (Select THREE).
CREATE PIPE ... AS COPY ... FROM (...)

A. Data can be filtered by an optional where clause.

B. Columns can be reordered.

C. Columns can be omitted.

D. Type casts are supported.

E. Incoming data can be joined with other tables.

F. The ON ERROR - ABORT statement command can be used.

**Correct Answer: A, B, C**
**Section:**
**Explanation:**
The SQL statement is a command for creating a pipe in Snowflake, which is an object that defines the COPY INTO <table> statement used by Snowpipe to load data from an ingestion queue into tables1.The statement uses a subquery in the FROM clause to transform the data from the staged files before loading it into the table2.
The transformations supported in the subquery are as follows2:
Data can be filtered by an optional WHERE clause, which specifies a condition that must be satisfied by the rows returned by the subquery. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
copy into mytable
from (
select * from @mystage
where col1 = 'A' and col2 > 10
);
```
Columns can be reordered, which means changing the order of the columns in the subquery to match the order of the columns in the target table. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
copy into mytable (col1, col2, col3)
from (
select col3, col1, col2 from @mystage
);
```
Columns can be omitted, which means excluding some columns from the subquery that are not needed in the target table. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
copy into mytable (col1, col2)
from (
select col1, col2 from @mystage
);
```
The other options are not supported in the subquery because2:
Type casts are not supported, which means changing the data type of a column in the subquery. For example, the following statement will cause an error:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
copy into mytable (col1, col2)
from (
select col1::date, col2 from @mystage
);
```
Incoming data can not be joined with other tables, which means combining the data from the staged files with the data from another table in the subquery. For example, the following statement will cause an error:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
copy into mytable (col1, col2, col3)
from (
select s.col1, s.col2, t.col3 from @mystage s
join othertable t on s.col1 = t.col1
);
```
The ON ERROR - ABORT statement command can not be used, which means aborting the entire load operation if any error occurs. This command can only be used in the COPY INTO <table> statement, not in the subquery. For example, the following statement will cause an error:
SQLAI-generated code. Review and use carefully.More info on FAQ.
```
create pipe mypipe as
```

```
copy into mytable
from (
select * from @mystage
on error abort
);
```
1: CREATE PIPE | Snowflake Documentation
2: Transforming Data During a Load | Snowflake Documentation

**QUESTION 19**
Data is being imported and stored as JSON in a VARIANT column. Query performance was fine, but most recently, poor query performance has been reported.
What could be causing this?

A. There were JSON nulls in the recent data imports.
B. The order of the keys in the JSON was changed.
C. The recent data imports contained fewer fields than usual.
D. There were variations in string lengths for the JSON values in the recent data imports.

**Correct Answer: B, D**
**Section:**
**Explanation:**
Data is being imported and stored as JSON in a VARIANT column. Query performance was fine, but most recently, poor query performance has been reported. This could be caused by the following factors:
The order of the keys in the JSON was changed. Snowflake stores semi-structured data internally in a column-like structure for the most common elements, and the remainder in a leftovers-like column. The order of the keys in the JSON affects how Snowflake determines the common elements and how it optimizes the query performance. If the order of the keys in the JSON was changed, Snowflake might have to re-parse the data and re-organize the internal storage, which could result in slower query performance.
There were variations in string lengths for the JSON values in the recent data imports. Non-native values, such as dates and timestamps, are stored as strings when loaded into a VARIANT column. Operations on these values could be slower and also consume more space than when stored in a relational column with the corresponding data type. If there were variations in string lengths for the JSON values in the recent data imports, Snowflake might have to allocate more space and perform more conversions, which could also result in slower query performance.
The other options are not valid causes for poor query performance:
There were JSON nulls in the recent data imports. Snowflake supports two types of null values in semi-structured data: SQL NULL and JSON null. SQL NULL means the value is missing or unknown, while JSON null means the value is explicitly set to null. Snowflake can distinguish between these two types of null values and handle them accordingly. Having JSON nulls in the recent data imports should not affect the query performance significantly.
The recent data imports contained fewer fields than usual. Snowflake can handle semi-structured data with varying schemas and fields. Having fewer fields than usual in the recent data imports should not affect the query performance significantly, as Snowflake can still optimize the data ingestion and query execution based on the existing fields.
Considerations for Semi-structured Data Stored in VARIANT
Snowflake Architect Training
Snowflake query performance on unique element in variant column
Snowflake variant performance

**QUESTION 20**
What step will improve the performance of queries executed against an external table?

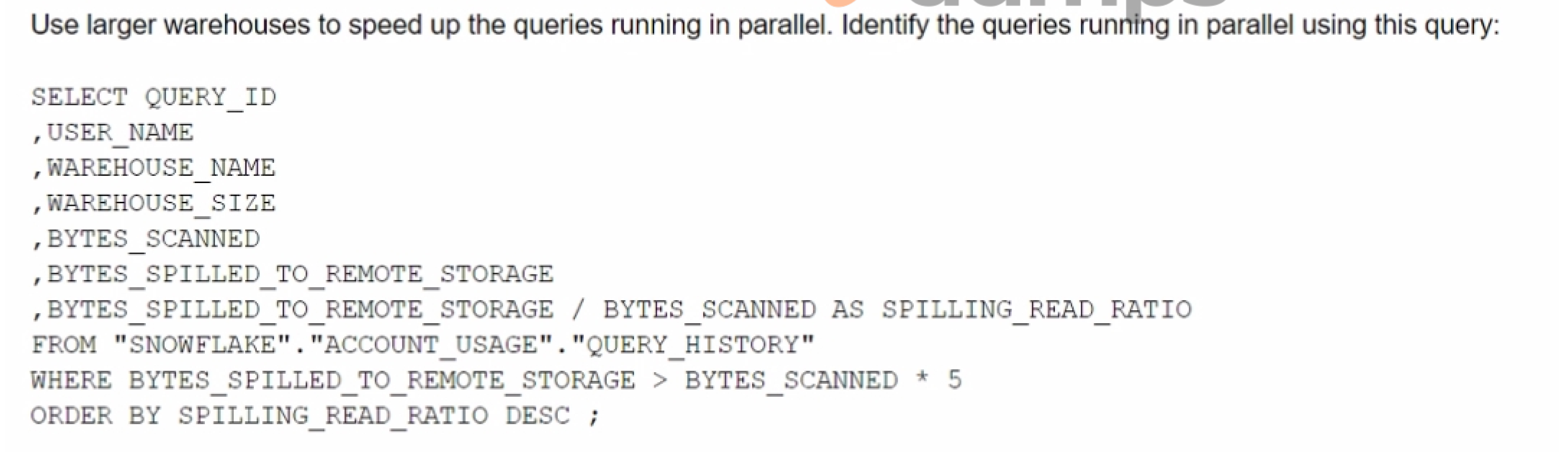
A. Partition the external table.
B. Shorten the names of the source files.
C. Convert the source files' character encoding to UTF-8.
D. Use an internal stage instead of an external stage to store the source files.

**Correct Answer: A**
**Section:**
**Explanation:**
Partitioning an external table is a technique that improves the performance of queries executed against the table by reducing the amount of data scanned. Partitioning an external table involves creating one or more partition

columns that define how the table is logically divided into subsets of data based on the values in those columns. The partition columns can be derived from the file metadata (such as file name, path, size, or modification time) or from the file content (such as a column value or a JSON attribute).Partitioning an external table allows the query optimizer to prune the files that do not match the query predicates, thus avoiding unnecessary data scanning and processing2
The other options are not effective steps for improving the performance of queries executed against an external table:
Shorten the names of the source files. This option does not have any impact on the query performance, as the file names are not used for query processing.The file names are only used for creating the external table and displaying the query results3
Convert the source files' character encoding to UTF-8. This option does not affect the query performance, as Snowflake supports various character encodings for external table files, such as UTF-8, UTF-16, UTF-32, ISO-8859-1, and Windows-1252.Snowflake automatically detects the character encoding of the files and converts them to UTF-8 internally for query processing4
Use an internal stage instead of an external stage to store the source files. This option is not applicable, as external tables can only reference files stored in external stages, such as Amazon S3, Google Cloud Storage, or Azure Blob Storage.Internal stages are used for loading data into internal tables, not external tables5Reference:
1: SnowPro Advanced: Architect | Study Guide
2: Snowflake Documentation | Partitioning External Tables
3: Snowflake Documentation | Creating External Tables
4: Snowflake Documentation | Supported File Formats and Compression for Staged Data Files
5: Snowflake Documentation | Overview of Stages
:SnowPro Advanced: Architect | Study Guide
:Partitioning External Tables
:Creating External Tables
:Supported File Formats and Compression for Staged Data Files
:Overview of Stages

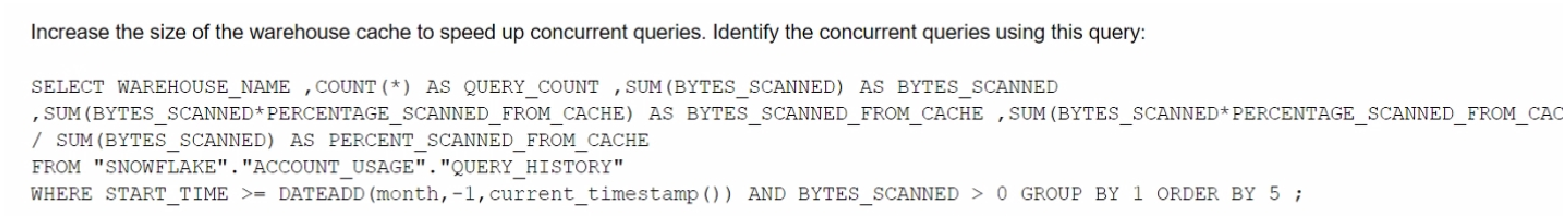
**QUESTION 21**
The Business Intelligence team reports that when some team members run queries for their dashboards in parallel with others, the query response time is getting significantly slower What can a Snowflake Architect do to identify what is occurring and troubleshoot this issue?

A.


Use larger warehouses to speed up the queries running in parallel. Identify the queries running in parallel using this query:

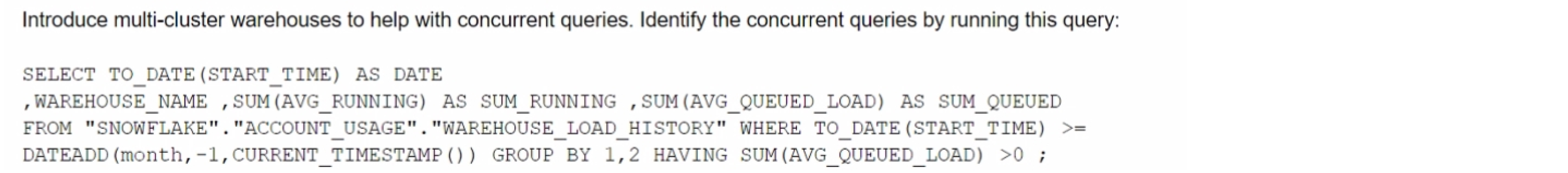
```
SELECT QUERY_ID
,USER_NAME
,WAREHOUSE_NAME
,WAREHOUSE_SIZE
,BYTES_SCANNED
,BYTES_SPILLED_TO_REMOTE_STORAGE
,BYTES_SPILLED_TO_REMOTE_STORAGE / BYTES_SCANNED AS SPILLING_READ_RATIO
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."QUERY_HISTORY"
WHERE BYTES_SPILLED_TO_REMOTE_STORAGE > BYTES_SCANNED * 5
ORDER BY SPILLING_READ_RATIO DESC ;
```

B.


Increase the size of the warehouse cache to speed up concurrent queries. Identify the concurrent queries using this query:

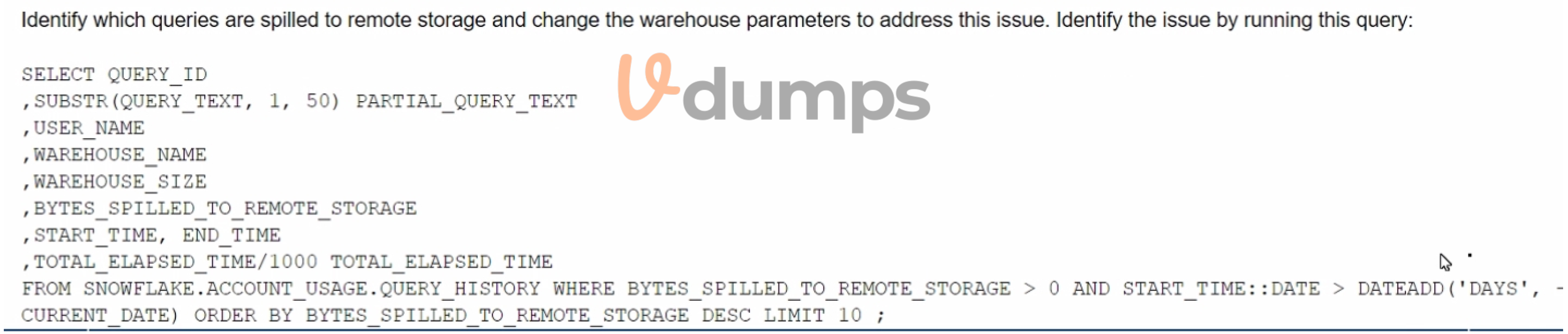
```
SELECT WAREHOUSE_NAME ,COUNT(*) AS QUERY_COUNT ,SUM(BYTES_SCANNED) AS BYTES_SCANNED
,SUM(BYTES_SCANNED*PERCENTAGE_SCANNED_FROM_CACHE) AS BYTES_SCANNED_FROM_CACHE ,SUM(BYTES_SCANNED*PERCENTAGE_SCANNED_FROM_CAC
/ SUM(BYTES_SCANNED) AS PERCENT_SCANNED_FROM_CACHE
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."QUERY_HISTORY"
WHERE START_TIME >= DATEADD(month,-1,current_timestamp()) AND BYTES_SCANNED > 0 GROUP BY 1 ORDER BY 5 ;
```

C.


Introduce multi-cluster warehouses to help with concurrent queries. Identify the concurrent queries by running this query:

```
SELECT TO_DATE(START_TIME) AS DATE
,WAREHOUSE_NAME ,SUM(AVG_RUNNING) AS SUM_RUNNING ,SUM(AVG_QUEUED_LOAD) AS SUM_QUEUED
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."WAREHOUSE_LOAD_HISTORY" WHERE TO_DATE(START_TIME) >=
DATEADD(month,-1,CURRENT_TIMESTAMP()) GROUP BY 1,2 HAVING SUM(AVG_QUEUED_LOAD) >0 ;
```

D.


Identify which queries are spilled to remote storage and change the warehouse parameters to address this issue. Identify the issue by running this query:

```
SELECT QUERY_ID
,SUBSTR(QUERY_TEXT, 1, 50) PARTIAL_QUERY_TEXT
,USER_NAME
,WAREHOUSE_NAME
,WAREHOUSE_SIZE
,BYTES_SPILLED_TO_REMOTE_STORAGE
,START_TIME, END_TIME
,TOTAL_ELAPSED_TIME/1000 TOTAL_ELAPSED_TIME
FROM SNOWFLAKE.ACCOUNT_USAGE.QUERY_HISTORY WHERE BYTES_SPILLED_TO_REMOTE_STORAGE > 0 AND START_TIME::DATE > DATEADD('DAYS', -
CURRENT_DATE) ORDER BY BYTES_SPILLED_TO_REMOTE_STORAGE DESC LIMIT 10 ;
```

**Correct Answer: A**
**Section:**
**Explanation:**
The image shows a SQL query that can be used to identify which queries are spilled to remote storage and suggests changing the warehouse parameters to address this issue. Spilling to remote storage occurs when the memory allocated to a warehouse is insufficient to process a query, and Snowflake uses disk or cloud storage as a temporary cache. This can significantly slow down the query performance and increase the cost. To troubleshoot this issue, a Snowflake Architect can run the query shown in the image to find out which queries are spilling, how much data they are spilling, and which warehouses they are using.Then, the architect can adjust the warehouse size, type, or scaling policy to provide enough memory for the queries and avoid spilling12.Reference:
Recognizing Disk Spilling
Managing the Kafka Connector

**QUESTION 22**
What is a key consideration when setting up search optimization service for a table?

A. Search optimization service works best with a column that has a minimum of 100 K distinct values.
B. Search optimization service can significantly improve query performance on partitioned external tables.
C. Search optimization service can help to optimize storage usage by compressing the data into a GZIP format.
D. The table must be clustered with a key having multiple columns for effective search optimization.

**Correct Answer: A**
**Section:**
**Explanation:**
Search optimization service is a feature of Snowflake that can significantly improve the performance of certain types of lookup and analytical queries on tables.Search optimization service creates and maintains a persistent data structure called a search access path, which keeps track of which values of the table's columns might be found in each of its micro-partitions, allowing some micro-partitions to be skipped when scanning the table1.
Search optimization service can significantly improve query performance on partitioned external tables, which are tables that store data in external locations such as Amazon S3 or Google Cloud Storage.Partitioned external tables can leverage the search access path to prune the partitions that do not contain the relevant data, reducing the amount of data that needs to be scanned and transferred from the external location2.
The other options are not correct because:
A) Search optimization service works best with a column that has a high cardinality, which means that the column has many distinct values. However, there is no specific minimum number of distinct values required for search optimization service to work effectively.The actual performance improvement depends on the selectivity of the queries and the distribution of the data1.
C) Search optimization service does not help to optimize storage usage by compressing the data into a GZIP format. Search optimization service does not affect the storage format or compression of the data, which is determined by the file format options of the table.Search optimization service only creates an additional data structure that is stored separately from the table data1.
D) The table does not need to be clustered with a key having multiple columns for effective search optimization. Clustering is a feature of Snowflake that allows ordering the data in a table or a partitioned external table based on one or more clustering keys. Clustering can improve the performance of queries that filter on the clustering keys, as it reduces the number of micro-partitions that need to be scanned.However, clustering is not required for search optimization service to work, as search optimization service can skip micro-partitions based on any column that has a search access path, regardless of the clustering key3.
1:Search Optimization Service | Snowflake Documentation
2: Partitioned External Tables | Snowflake Documentation
3: Clustering Keys | Snowflake Documentation

**QUESTION 23**
A retail company has 2000+ stores spread across the country. Store Managers report that they are having trouble running key reports related to inventory management, sales targets, payroll, and staffing during business hours. The Managers report that performance is poor and time-outs occur frequently.
Currently all reports share the same Snowflake virtual warehouse.
How should this situation be addressed? (Select TWO).

A. Use a Business Intelligence tool for in-memory computation to improve performance.
B. Configure a dedicated virtual warehouse for the Store Manager team.
C. Configure the virtual warehouse to be multi-clustered.
D. Configure the virtual warehouse to size 4-XL
E. Advise the Store Manager team to defer report execution to off-business hours.

**Correct Answer: B, C**
**Section:**
**Explanation:**
The best way to address the performance issues and time-outs faced by the Store Manager team is to configure a dedicated virtual warehouse for them and make it multi-clustered. This will allow them to run their reports independently from other workloads and scale up or down the compute resources as needed. A dedicated virtual warehouse will also enable them to apply specific security and access policies for their data. A multi-clustered virtual warehouse will provide high availability and concurrency for their queries and avoid queuing or throttling.
Using a Business Intelligence tool for in-memory computation may improve performance, but it will not solve the underlying issue of insufficient compute resources in the shared virtual warehouse. It will also introduce additional costs and complexity for the data architecture.
Configuring the virtual warehouse to size 4-XL may increase the performance, but it will also increase the cost and may not be optimal for the workload. It will also not address the concurrency and availability issues that may arise from sharing the virtual warehouse with other workloads.
Advising the Store Manager team to defer report execution to off-business hours may reduce the load on the shared virtual warehouse, but it will also reduce the timeliness and usefulness of the reports for the business. It will also not guarantee that the performance issues and time-outs will not occur at other times.

Snowflake Architect Training
Snowflake SnowPro Advanced Architect Certification - Preparation Guide
SnowPro Advanced: Architect Exam Study Guide

**QUESTION 24**
A company needs to have the following features available in its Snowflake account:
1. Support for Multi-Factor Authentication (MFA)
2. A minimum of 2 months of Time Travel availability
3. Database replication in between different regions
4. Native support for JDBC and ODBC
5. Customer-managed encryption keys using Tri-Secret Secure
6. Support for Payment Card Industry Data Security Standards (PCI DSS)
In order to provide all the listed services, what is the MINIMUM Snowflake edition that should be selected during account creation?

A. Standard
B. Enterprise
C. Business Critical
D. Virtual Private Snowflake (VPS)

**Correct Answer: C**
**Section:**
**Explanation:**
According to the Snowflake documentation1, the Business Critical edition offers the following features that are relevant to the question:
Support for Multi-Factor Authentication (MFA): This is a standard feature available in all Snowflake editions
Support for Multi-Factor Authentication (MFA): This is a standard feature available in all Snowflake editions1.
A minimum of 2 months of Time Travel availability: This is an enterprise feature that allows users to access historical data for up to 90 days1.
Database replication in between different regions: This is an enterprise feature that enables users to replicate databases across different regions or cloud platforms1.
Native support for JDBC and ODBC: This is a standard feature available in all Snowflake editions1.
Customer-managed encryption keys using Tri-Secret Secure: This is a business critical feature that provides enhanced security and data protection by allowing customers to manage their own encryption keys1.
Support for Payment Card Industry Data Security Standards (PCI DSS): This is a business critical feature that ensures compliance with PCI DSS regulations for handling sensitive cardholder data1.
Therefore, the minimum Snowflake edition that should be selected during account creation to provide all the listed services is the Business Critical edition.
Snowflake Editions | Snowflake Documentation

**QUESTION 25**
A media company needs a data pipeline that will ingest customer review data into a Snowflake table, and apply some transformations. The company also needs to use Amazon Comprehend to do sentiment analysis and make the de-identified final data set available publicly for advertising companies who use different cloud providers in different regions.
The data pipeline needs to run continuously and efficiently as new records arrive in the object storage leveraging event notifications. Also, the operational complexity, maintenance of the infrastructure, including platform upgrades and security, and the development effort should be minimal.
Which design will meet these requirements?

A. Ingest the data using copy into and use streams and tasks to orchestrate transformations. Export the data into Amazon S3 to do model inference with Amazon Comprehend and ingest the data back into a Snowflake table. Then create a listing in the Snowflake Marketplace to make the data available to other companies.
B. Ingest the data using Snowpipe and use streams and tasks to orchestrate transformations. Create an external function to do model inference with Amazon Comprehend and write the final records to a Snowflake table. Then create a listing in the Snowflake Marketplace to make the data available to other companies.
C. Ingest the data into Snowflake using Amazon EMR and PySpark using the Snowflake Spark connector. Apply transformations using another Spark job. Develop a python program to do model inference by leveraging the Amazon Comprehend text analysis API. Then write the results to a Snowflake table and create a listing in the Snowflake Marketplace to make the data available to other companies.
D. Ingest the data using Snowpipe and use streams and tasks to orchestrate transformations. Export the data into Amazon S3 to do model inference with Amazon Comprehend and ingest the data back into a Snowflake table. Then create a listing in the Snowflake Marketplace to make the data available to other companies.

**Correct Answer: B**
**Section:**
**Explanation:**
Option B is the best design to meet the requirements because it uses Snowpipe to ingest the data continuously and efficiently as new records arrive in the object storage, leveraging event notifications.Snowpipe is a service that automates the loading of data from external sources into Snowflake tables1. It also uses streams and tasks to orchestrate transformations on the ingested data.Streams are objects that store the change history of a table, and tasks are objects that execute SQL statements on a schedule or when triggered by another task2. Option B also uses an external function to do model inference with Amazon Comprehend and write the final records to a Snowflake table.An external function is a user-defined function that calls an external API, such as Amazon Comprehend, to perform computations that are not natively supported by Snowflake3. Finally, option B uses the Snowflake Marketplace to make the de-identified final data set available publicly for advertising companies who use different cloud providers in different regions.The Snowflake Marketplace is a platform that enables data providers to list and share their data sets with data consumers, regardless of the cloud platform or region they use4.
Option A is not the best design because it uses copy into to ingest the data, which is not as efficient and continuous as Snowpipe. Copy into is a SQL command that loads data from files into a table in a single transaction. It also exports the data into Amazon S3 to do model inference with Amazon Comprehend, which adds an extra step and increases the operational complexity and maintenance of the infrastructure.
Option C is not the best design because it uses Amazon EMR and PySpark to ingest and transform the data, which also increases the operational complexity and maintenance of the infrastructure. Amazon EMR is a cloud service that provides a managed Hadoop framework to process and analyze large-scale data sets. PySpark is a Python API for Spark, a distributed computing framework that can run on Hadoop. Option C also develops a python program to do model inference by leveraging the Amazon Comprehend text analysis API, which increases the development effort.
Option D is not the best design because it is identical to option A, except for the ingestion method. It still exports the data into Amazon S3 to do model inference with Amazon Comprehend, which adds an extra step and increases the operational complexity and maintenance of the infrastructure.

**QUESTION 26**
When using the copy into <table> command with the CSV file format, how does the match_by_column_name parameter behave?

A. It expects a header to be present in the CSV file, which is matched to a case-sensitive table column name.
B. The parameter will be ignored.
C. The command will return an error.
D. The command will return a warning stating that the file has unmatched columns.

**Correct Answer: B**
**Section:**
**Explanation:**
Option B is the best design to meet the requirements because it uses Snowpipe to ingest the data continuously and efficiently as new records arrive in the object storage, leveraging event notifications.Snowpipe is a service that automates the loading of data from external sources into Snowflake tables1. It also uses streams and tasks to orchestrate transformations on the ingested data.Streams are objects that store the change history of a table, and tasks are objects that execute SQL statements on a schedule or when triggered by another task2. Option B also uses an external function to do model inference with Amazon Comprehend and write the final records to a Snowflake table.An external function is a user-defined function that calls an external API, such as Amazon Comprehend, to perform computations that are not natively supported by Snowflake3. Finally, option B uses the Snowflake Marketplace to make the de-identified final data set available publicly for advertising companies who use different cloud providers in different regions.The Snowflake Marketplace is a platform that enables data providers to list and share their data sets with data consumers, regardless of the cloud platform or region they use4.
Option A is not the best design because it uses copy into to ingest the data, which is not as efficient and continuous as Snowpipe. Copy into is a SQL command that loads data from files into a table in a single transaction. It also exports the data into Amazon S3 to do model inference with Amazon Comprehend, which adds an extra step and increases the operational complexity and maintenance of the infrastructure.
Option C is not the best design because it uses Amazon EMR and PySpark to ingest and transform the data, which also increases the operational complexity and maintenance of the infrastructure. Amazon EMR is a cloud service that provides a managed Hadoop framework to process and analyze large-scale data sets. PySpark is a Python API for Spark, a distributed computing framework that can run on Hadoop. Option C also develops a python program to do model inference by leveraging the Amazon Comprehend text analysis API, which increases the development effort.
Option D is not the best design because it is identical to option A, except for the ingestion method. It still exports the data into Amazon S3 to do model inference with Amazon Comprehend, which adds an extra step and increases the operational complexity and maintenance of the infrastructure.
The copy into <table> command is used to load data from staged files into an existing table in Snowflake.The command supports various file formats, such as CSV, JSON, AVRO, ORC, PARQUET, and XML1.
The match_by_column_name parameter is a copy option that enables loading semi-structured data into separate columns in the target table that match corresponding columns represented in the source data.The parameter can have one of the following values2:
CASE_SENSITIVE: The column names in the source data must match the column names in the target table exactly, including the case. This is the default value.
CASE_INSENSITIVE: The column names in the source data must match the column names in the target table, but the case is ignored.
NONE: The column names in the source data are ignored, and the data is loaded based on the order of the columns in the target table.
The match_by_column_name parameter only applies to semi-structured data, such as JSON, AVRO, ORC, PARQUET, and XML.It does not apply to CSV data, which is considered structured data2.
When using the copy into <table> command with the CSV file format, the match_by_column_name parameter behaves as follows2:

It expects a header to be present in the CSV file, which is matched to a case-sensitive table column name. This means that the first row of the CSV file must contain the column names, and they must match the column names in the target table exactly, including the case. If the header is missing or does not match, the command will return an error.
The parameter will not be ignored, even if it is set to NONE. The command will still try to match the column names in the CSV file with the column names in the target table, and will return an error if they do not match.
The command will not return a warning stating that the file has unmatched columns. It will either load the data successfully if the column names match, or return an error if they do not match.
1: COPY INTO <table> | Snowflake Documentation
2: MATCH_BY_COLUMN_NAME | Snowflake Documentation

**QUESTION 27**
What are characteristics of Dynamic Data Masking? (Select TWO).

A. A masking policy that Is currently set on a table can be dropped.
B. A single masking policy can be applied to columns in different tables.
C. A masking policy can be applied to the value column of an external table.
D. The role that creates the masking policy will always see unmasked data In query results
E. A masking policy can be applied to a column with the GEOGRAPHY data type.

**Correct Answer: A, B**
**Section:**
**Explanation:**
Dynamic Data Masking is a feature that allows masking sensitive data in query results based on the role of the user who executes the query. A masking policy is a user-defined function that specifies the masking logic and can be applied to one or more columns in one or more tables. A masking policy that is currently set on a table can be dropped using the ALTER TABLE command. A single masking policy can be applied to columns in different tables using the ALTER TABLE command with the SET MASKING POLICY clause. The other options are either incorrect or not supported by Snowflake. A masking policy cannot be applied to the value column of an external table, as external tables do not support column-level security. The role that creates the masking policy will not always see unmasked data in query results, as the masking policy can be applied to the owner role as well. A masking policy cannot be applied to a column with the GEOGRAPHY data type, as Snowflake only supports masking policies for scalar data types.Reference:Snowflake Documentation: Dynamic Data Masking,Snowflake Documentation: ALTER TABLE

**QUESTION 28**
An Architect needs to allow a user to create a database from an inbound share.
To meet this requirement, the user's role must have which privileges? (Choose two.)

A. IMPORT SHARE;
B. IMPORT PRIVILEGES;
C. CREATE DATABASE;
D. CREATE SHARE;
E. IMPORT DATABASE;

**Correct Answer: C, E**
**Section:**
**Explanation:**
According to the Snowflake documentation, to create a database from an inbound share, the user's role must have the following privileges:
The CREATE DATABASE privilege on the current account.This privilege allows the user to create a new database in the account1.
The IMPORT DATABASE privilege on the share.This privilege allows the user to import a database from the share into the account2. The other privileges listed are not relevant for this requirement.The IMPORT SHARE privilege is used to import a share into the account, not a database3.The IMPORT PRIVILEGES privilege is used to import the privileges granted on the shared objects, not the objects themselves2.The CREATE SHARE privilege is used to create a share to provide data to other accounts, not to consume data from other accounts4.
CREATE DATABASE | Snowflake Documentation
Importing Data from a Share | Snowflake Documentation
Importing a Share | Snowflake Documentation
CREATE SHARE | Snowflake Documentation

**QUESTION 29**
Files arrive in an external stage every 10 seconds from a proprietary system. The files range in size from 500 K to 3 MB. The data must be accessible by dashboards as soon as it arrives.
How can a Snowflake Architect meet this requirement with the LEAST amount of coding? (Choose two.)

A. Use Snowpipe with auto-ingest.
B. Use a COPY command with a task.
C. Use a materialized view on an external table.
D. Use the COPY INTO command.
E. Use a combination of a task and a stream.

**Correct Answer: A, C**
**Section:**
**Explanation:**
These two options are the best ways to meet the requirement of loading data from an external stage and making it accessible by dashboards with the least amount of coding.
Snowpipe with auto-ingest is a feature that enables continuous and automated data loading from an external stage into a Snowflake table. Snowpipe uses event notifications from the cloud storage service to detect new or modified files in the stage and triggers a COPY INTO command to load the data into the table. Snowpipe is efficient, scalable, and serverless, meaning it does not require any infrastructure or maintenance from the user.Snowpipe also supports loading data from files of any size, as long as they are in a supported format1.
A materialized view on an external table is a feature that enables creating a pre-computed result set from an external table and storing it in Snowflake. A materialized view can improve the performance and efficiency of querying data from an external table, especially for complex queries or dashboards. A materialized view can also support aggregations, joins, and filters on the external table data.A materialized view on an external table is automatically refreshed when the underlying data in the external stage changes, as long as the AUTO_REFRESH parameter is set to true2.
Snowpipe Overview | Snowflake Documentation
Materialized Views on External Tables | Snowflake Documentation

**QUESTION 30**
A company is storing large numbers of small JSON files (ranging from 1-4 bytes) that are received from IoT devices and sent to a cloud provider. In any given hour, 100,000 files are added to the cloud provider.
What is the MOST cost-effective way to bring this data into a Snowflake table?

A. An external table
B. A pipe
C. A stream
D. A copy command at regular intervals

**Correct Answer: B**
**Section:**
**Explanation:**
A pipe is a Snowflake object that continuously loads data from files in a stage (internal or external) into a table.A pipe can be configured to use auto-ingest, which means that Snowflake automatically detects new or modified files in the stage and loads them into the table without any manual intervention1.
A pipe is the most cost-effective way to bring large numbers of small JSON files into a Snowflake table, because it minimizes the number of COPY commands executed and the number of micro-partitions created. A pipe can use file aggregation, which means that it can combine multiple small files into a single larger file before loading them into the table.This reduces the load time and the storage cost of the data2.
An external table is a Snowflake object that references data files stored in an external location, such as Amazon S3, Google Cloud Storage, or Microsoft Azure Blob Storage. An external table does not store the data in Snowflake, but only provides a view of the data for querying.An external table is not a cost-effective way to bring data into a Snowflake table, because it does not support file aggregation, and it requires additional network bandwidth and compute resources to query the external data3.
A stream is a Snowflake object that records the history of changes (inserts, updates, and deletes) made to a table. A stream can be used to consume the changes from a table and apply them to another table or a task.A stream is not a way to bring data into a Snowflake table, but a way to process the data after it is loaded into a table4.
A copy command is a Snowflake command that loads data from files in a stage into a table. A copy command can be executed manually or scheduled using a task.A copy command is not a cost-effective way to bring large numbers of small JSON files into a Snowflake table, because it does not support file aggregation, and it may create many micro-partitions that increase the storage cost of the data5.

**QUESTION 31**

A company has a Snowflake account named ACCOUNTA in AWS us-east-1 region. The company stores its marketing data in a Snowflake database named MARKET_DB. One of the company's business partners has an account named PARTNERB in Azure East US 2 region. For marketing purposes the company has agreed to share the database MARKET_DB with the partner account.
Which of the following steps MUST be performed for the account PARTNERB to consume data from the MARKET_DB database?

A. Create a new account (called AZABC123) in Azure East US 2 region. From account ACCOUNTA create a share of database MARKET_DB, create a new database out of this share locally in AWS us-east-1 region, and replicate this new database to AZABC123 account. Then set up data sharing to the PARTNERB account.
B. From account ACCOUNTA create a share of database MARKET_DB, and create a new database out of this share locally in AWS us-east-1 region. Then make this database the provider and share it with the PARTNERB account.
C. Create a new account (called AZABC123) in Azure East US 2 region. From account ACCOUNTA replicate the database MARKET_DB to AZABC123 and from this account set up the data sharing to the PARTNERB account.
D. Create a share of database MARKET_DB, and create a new database out of this share locally in AWS us-east-1 region. Then replicate this database to the partner's account PARTNERB.

**Correct Answer: C**
**Section:**
**Explanation:**
Snowflake supports data sharing across regions and cloud platforms using account replication and share replication features. Account replication enables the replication of objects from a source account to one or more target accounts in the same organization.Share replication enables the replication of shares from a source account to one or more target accounts in the same organization1.
To share data from the MARKET_DB database in the ACCOUNTA account in AWS us-east-1 region with the PARTNERB account in Azure East US 2 region, the following steps must be performed:
Create a new account (called AZABC123) in Azure East US 2 region. This account will act as a bridge between the source and the target accounts.The new account must be linked to the ACCOUNTA account using an organization2.
From the ACCOUNTA account, replicate the MARKET_DB database to the AZABC123 account using the account replication feature.This will create a secondary database in the AZABC123 account that is a replica of the primary database in the ACCOUNTA account3.
From the AZABC123 account, set up the data sharing to the PARTNERB account using the share replication feature. This will create a share of the secondary database in the AZABC123 account and grant access to the PARTNERB account.The PARTNERB account can then create a database from the share and query the data4.
Therefore, option C is the correct answer.

**QUESTION 32**
You are a snowflake architect in an organization. The business team came to to deploy an use case which requires you to load some data which they can visualize through tableau. Everyday new data comes in and the old data is no longer required.
What type of table you will use in this case to optimize cost

A. TRANSIENT
B. TEMPORARY
C. PERMANENT

**Correct Answer: A**
**Section:**
**Explanation:**
A transient table is a type of table in Snowflake that does not have a Fail-safe period and can have a Time Travel retention period of either 0 or 1 day.Transient tables are suitable for temporary or intermediate data that can be easily reproduced or replicated1.
A temporary table is a type of table in Snowflake that is automatically dropped when the session ends or the current user logs out.Temporary tables do not incur any storage costs, but they are not visible to other users or sessions2.
A permanent table is a type of table in Snowflake that has a Fail-safe period and a Time Travel retention period of up to 90 days.Permanent tables are suitable for persistent and durable data that needs to be protected from accidental or malicious deletion3.
In this case, the use case requires loading some data that can be visualized through Tableau. The data is updated every day and the old data is no longer required. Therefore, the best type of table to use in this case to optimize cost is a transient table, because it does not incur any Fail-safe costs and it can have a short Time Travel retention period of 0 or 1 day. This way, the data can be loaded and queried by Tableau, and then deleted or overwritten without incurring any unnecessary storage costs.

**QUESTION 33**
Following objects can be cloned in snowflake

A. Permanent table
B. Transient table
C. Temporary table
D. External tables
E. Internal stages

**Correct Answer: A, B, D**
**Section:**
**Explanation:**
Snowflake supports cloning of various objects, such as databases, schemas, tables, stages, file formats, sequences, streams, tasks, and roles. Cloning creates a copy of an existing object in the system without copying the data or metadata.Cloning is also known as zero-copy cloning1.
Among the objects listed in the question, the following ones can be cloned in Snowflake:
Permanent table: A permanent table is a type of table that has a Fail-safe period and a Time Travel retention period of up to 90 days.A permanent table can be cloned using the CREATE TABLE ... CLONE command2. Therefore, option A is correct.
Transient table: A transient table is a type of table that does not have a Fail-safe period and can have a Time Travel retention period of either 0 or 1 day.A transient table can also be cloned using the CREATE TABLE ... CLONE command2. Therefore, option B is correct.
External table: An external table is a type of table that references data files stored in an external location, such as Amazon S3, Google Cloud Storage, or Microsoft Azure Blob Storage.An external table can be cloned using the CREATE EXTERNAL TABLE ... CLONE command3. Therefore, option D is correct.
The following objects listed in the question cannot be cloned in Snowflake:
Temporary table: A temporary table is a type of table that is automatically dropped when the session ends or the current user logs out.Temporary tables do not support cloning4. Therefore, option C is incorrect.
Internal stage: An internal stage is a type of stage that is managed by Snowflake and stores files in Snowflake's internal cloud storage.Internal stages do not support cloning5. Therefore, option E is incorrect.

**QUESTION 34**
When loading data from stage using COPY INTO, what options can you specify for the ON_ERROR clause?

A. CONTINUE
B. SKIP_FILE
C. ABORT_STATEMENT
D. FAIL

**Correct Answer: A, B, C**
**Section:**
**Explanation:**
The ON_ERROR clause is an optional parameter for the COPY INTO command that specifies the behavior of the command when it encounters errors in the files.The ON_ERROR clause can have one of the following values1:
CONTINUE: This value instructs the command to continue loading the file and return an error message for a maximum of one error encountered per data file. The difference between the ROWS_PARSED and ROWS_LOADED column values represents the number of rows that include detected errors.To view all errors in the data files, use the VALIDATION_MODE parameter or query the VALIDATE function1.
SKIP_FILE: This value instructs the command to skip the file when it encounters a data error on any of the records in the file. The command moves on to the next file in the stage and continues loading.The skipped file is not loaded and no error message is returned for the file1.
ABORT_STATEMENT: This value instructs the command to stop loading data when the first error is encountered. The command returns an error message for the file and aborts the load operation.This is the default value for the ON_ERROR clause1.
Therefore, options A, B, and C are correct.

**QUESTION 35**
Which of the below commands will use warehouse credits?

A. SHOW TABLES LIKE 'SNOWFL%';
B. SELECT MAX(FLAKE_ID) FROM SNOWFLAKE;

C. SELECT COUNT(*) FROM SNOWFLAKE;
D. SELECT COUNT(FLAKE_ID) FROM SNOWFLAKE GROUP BY FLAKE_ID;

**Correct Answer: B, C, D**
**Section:**
**Explanation:**
Warehouse credits are used to pay for the processing time used by each virtual warehouse in Snowflake. A virtual warehouse is a cluster of compute resources that enables executing queries, loading data, and performing other DML operations.Warehouse credits are charged based on the number of virtual warehouses you use, how long they run, and their size1.
Among the commands listed in the question, the following ones will use warehouse credits:
SELECT MAX(FLAKE_ID) FROM SNOWFLAKE: This command will use warehouse credits because it is a query that requires a virtual warehouse to execute.The query will scan the SNOWFLAKE table and return the maximum value of the FLAKE_ID column2. Therefore, option B is correct.
SELECT COUNT(*) FROM SNOWFLAKE: This command will also use warehouse credits because it is a query that requires a virtual warehouse to execute.The query will scan the SNOWFLAKE table and return the number of rows in the table3. Therefore, option C is correct.
SELECT COUNT(FLAKE_ID) FROM SNOWFLAKE GROUP BY FLAKE_ID: This command will also use warehouse credits because it is a query that requires a virtual warehouse to execute.The query will scan the SNOWFLAKE table and return the number of rows for each distinct value of the FLAKE_ID column4. Therefore, option D is correct.
The command that will not use warehouse credits is:
SHOW TABLES LIKE 'SNOWFL%': This command will not use warehouse credits because it is a metadata operation that does not require a virtual warehouse to execute.The command will return the names of the tables that match the pattern 'SNOWFL%' in the current database and schema5. Therefore, option A is incorrect.

**QUESTION 36**
What does a Snowflake Architect need to consider when implementing a Snowflake Connector for Kafka?

A. Every Kafka message is in JSON or Avro format.
B. The default retention time for Kafka topics is 14 days.
C. The Kafka connector supports key pair authentication, OAUTH. and basic authentication (for example, username and password).
D. The Kafka connector will create one table and one pipe to ingest data for each topic. If the connector cannot create the table or the pipe it will result in an exception.

**Correct Answer: D**
**Section:**
**Explanation:**
The Snowflake Connector for Kafka is a Kafka Connect sink connector that reads data from one or more Apache Kafka topics and loads the data into a Snowflake table. The connector supports different authentication methods to connect to Snowflake, such as key pair authentication, OAUTH, and basic authentication (for example, username and password).The connector also supports different encryption methods, such as HTTPS and SSL1.The connector does not require that every Kafka message is in JSON or Avro format, as it can handle other formats such as CSV, XML, and Parquet2. The default retention time for Kafka topics is not relevant for the connector, as it only consumes the messages that are available in the topics and does not store them in Kafka.The connector will create one table and one pipe to ingest data for each topic by default, but this behavior can be customized by using the snowflake.topic2table.map configuration property3.If the connector cannot create the table or the pipe, it will log an error and retry the operation until it succeeds or the connector is stopped4.Reference:
Installing and Configuring the Kafka Connector
Overview of the Kafka Connector
Managing the Kafka Connector
Troubleshooting the Kafka Connector

**QUESTION 37**
A group of Data Analysts have been granted the role analyst role. They need a Snowflake database where they can create and modify tables, views, and other objects to load with their own data. The Analysts should not have the ability to give other Snowflake users outside of their role access to this data.
How should these requirements be met?

A. Grant ANALYST_R0LE OWNERSHIP on the database, but make sure that ANALYST_ROLE does not have the MANAGE GRANTS privilege on the account.
B. Grant SYSADMIN ownership of the database, but grant the create schema privilege on the database to the ANALYST_ROLE.

C. Make every schema in the database a managed access schema, owned by SYSADMIN, and grant create privileges on each schema to the ANALYST_ROLE for each type of object that needs to be created.
D. Grant ANALYST_ROLE ownership on the database, but grant the ownership on future [object type] s in database privilege to SYSADMIN.

**Correct Answer: A**
**Section:**
**Explanation:**
Granting ANALYST_ROLE OWNERSHIP on the database allows the analysts to create and modify tables, views, and other objects within the database. However, to prevent the analysts from giving other Snowflake users outside of their role access to this data, the ANALYST_ROLE should not have the MANAGE GRANTS privilege on the account.The MANAGE GRANTS privilege enables a role to grant or revoke privileges on any object in the account, regardless of the ownership of the object1.Therefore, by removing this privilege from the ANALYST_ROLE, the analysts can only grant or revoke privileges on the objects that they own within the database, and not on any other objects in the account2.
The other options are not correct because:
B) Granting SYSADMIN ownership of the database and granting the create schema privilege on the database to the ANALYST_ROLE would allow the analysts to create schemas within the database, but not to create or modify tables, views, or other objects within those schemas.The analysts would need to have the create [object type] privilege on each schema to create or modify objects within the schema3.
C) Making every schema in the database a managed access schema, owned by SYSADMIN, and granting create privileges on each schema to the ANALYST_ROLE for each type of object that needs to be created would allow the analysts to create and modify objects within the schemas, but not to grant or revoke privileges on those objects.A managed access schema is a schema that requires explicit grants for any access to the objects within the schema, regardless of the ownership of the objects4. Therefore, the analysts would need to have the grant privilege on each schema to grant or revoke privileges on the objects within the schema.
D) Granting ANALYST_ROLE ownership on the database and granting the ownership on future [object type] s in database privilege to SYSADMIN would allow the analysts to create and modify objects within the database, but also to grant or revoke privileges on those objects. The ownership on future [object type] s in database privilege enables a role to automatically become the owner of any new object of the specified type that is created in the database. Therefore, by granting this privilege to SYSADMIN, the analysts would not be able to prevent SYSADMIN from accessing or modifying the objects that they create within the database.
1:MANAGE GRANTS Privilege | Snowflake Documentation
2:Access Control Privileges | Snowflake Documentation
3: CREATE SCHEMA | Snowflake Documentation
4: Managed Access | Snowflake Documentation
: GRANT | Snowflake Documentation
: Ownership on Future Objects | Snowflake Documentation
: Ownership and Revoking Privileges | Snowflake Documentation

**QUESTION 38**
What considerations need to be taken when using database cloning as a tool for data lifecycle management in a development environment? (Select TWO).

A. Any pipes in the source are not cloned.
B. Any pipes in the source referring to internal stages are not cloned.
C. Any pipes in the source referring to external stages are not cloned.
D. The clone inherits all granted privileges of all child objects in the source object, including the database.
E. The clone inherits all granted privileges of all child objects in the source object, excluding the database.

**Correct Answer: A, D**
**Section:**
**Explanation:**
Database cloning is a feature of Snowflake that allows creating a copy of a database, schema, table, or view without consuming any additional storage space.Database cloning can be used as a tool for data lifecycle management in a development environment, where developers and testers can work on isolated copies of production data without affecting the original data or each other1.
However, there are some considerations that need to be taken when using database cloning in a development environment, such as:
Any pipes in the source are not cloned. Pipes are objects that load data from a stage into a table continuously.Pipes are not cloned because they are associated with a specific stage and table, and cloning them would create duplicate data loading and potential conflicts2.
The clone inherits all granted privileges of all child objects in the source object, including the database. Privileges are the permissions that control the access and actions that can be performed on an object. When a database is cloned, the clone inherits all the privileges that were granted on the source database and its child objects, such as schemas, tables, and views.This means that the same roles that can access and modify the source database can also access and modify the clone, unless the privileges are explicitly revoked or modified3.
The other options are not correct because:
B) Any pipes in the source referring to internal stages are not cloned. This is a subset of option A, which states that any pipes in the source are not cloned, regardless of the type of stage they refer to.

C) Any pipes in the source referring to external stages are not cloned. This is also a subset of option A, which states that any pipes in the source are not cloned, regardless of the type of stage they refer to.
E) The clone inherits all granted privileges of all child objects in the source object, excluding the database. This is incorrect, as the clone inherits all granted privileges of the source object, including the database.
1:Database Cloning | Snowflake Documentation
2: Pipes | Snowflake Documentation
3:Access Control Privileges | Snowflake Documentation

**QUESTION 39**
Which columns can be included in an external table schema? (Select THREE).

A. VALUE
B. METADATASROW_ID
C. METADATASISUPDATE
D. METADAT A$ FILENAME
E. METADATAS FILE_ROW_NUMBER
F. METADATASEXTERNAL TABLE PARTITION

**Correct Answer: A, D, E**
**Section:**
**Explanation:**
An external table schema defines the columns and data types of the data stored in an external stage. All external tables include the following columns by default:
VALUE: A VARIANT type column that represents a single row in the external file.
METADATA$FILENAME: A pseudocolumn that identifies the name of each staged data file included in the external table, including its path in the stage.
METADATA$FILE_ROW_NUMBER: A pseudocolumn that shows the row number for each record in a staged data file.
You can also create additional virtual columns as expressions using the VALUE column and/or the pseudocolumns. However, the following columns are not valid for external tables and cannot be included in the schema:
METADATASROW_ID: This column is only available for internal tables and shows the unique identifier for each row in the table.
METADATASISUPDATE: This column is only available for internal tables and shows whether the row was inserted or updated by a merge operation.
METADATASEXTERNAL TABLE PARTITION: This column is not a valid column name and does not exist in Snowflake.

**QUESTION 40**
Which SQL alter command will MAXIMIZE memory and compute resources for a Snowpark stored procedure when executed on the snowpark_opt_wh warehouse?

A.
```
alter warehouse snowpark_opt_wh set max_concurrency_level = 1;
```
B.
```
alter warehouse snowpark_opt_wh set max_concurrency_level = 2;
```
C.
```
alter warehouse snowpark_opt_wh set max_concurrency_level = 8;
```
D.
```
alter warehouse snowpark_opt_wh set max_concurrency_level = 16;
```

**Correct Answer: A**
**Section:**
**Explanation:**

To maximize memory and compute resources for a Snowpark stored procedure, you need to set the MAX_CONCURRENCY_LEVEL parameter for the warehouse that executes the stored procedure. This parameter determines the maximum number of concurrent queries that can run on a single warehouse. By setting it to 16, you ensure that the warehouse can use all the available CPU cores and memory on a single node, which is the optimal configuration for Snowpark-optimized warehouses. This will improve the performance and efficiency of the stored procedure, as it will not have to share resources with other queries or nodes. The other options are incorrect because they either do not change the MAX_CONCURRENCY_LEVEL parameter, or they set it to a lower value than 16, which will reduce the memory and compute resources for the stored procedure.Reference:
[Snowpark-optimized Warehouses]1
[Training Machine Learning Models with Snowpark Python]2
[Snowflake Shorts: Snowpark Optimized Warehouses]3

**QUESTION 41**
An Architect clones a database and all of its objects, including tasks. After the cloning, the tasks stop running.
Why is this occurring?

A. Tasks cannot be cloned.
B. The objects that the tasks reference are not fully qualified.
C. Cloned tasks are suspended by default and must be manually resumed.
D. The Architect has insufficient privileges to alter tasks on the cloned database.

**Correct Answer: C**
**Section:**
**Explanation:**
When a database is cloned, all of its objects, including tasks, are also cloned. However, cloned tasks are suspended by default and must be manually resumed by using the ALTER TASK command. This is to prevent the cloned tasks from running unexpectedly or interfering with the original tasks. Therefore, the reason why the tasks stop running after the cloning is because they are suspended by default (Option C). Options A, B, and D are not correct because tasks can be cloned, the objects that the tasks reference are also cloned and do not need to be fully qualified, and the Architect does not need to alter the tasks on the cloned database, only resume them.Reference: The answer can be verified from Snowflake's official documentation on cloning and tasks available on their website. Here are some relevant links:
Cloning Objects | Snowflake Documentation
Tasks | Snowflake Documentation
ALTER TASK | Snowflake Documentation

**QUESTION 42**
What are characteristics of the use of transactions in Snowflake? (Select TWO).

A. Explicit transactions can contain DDL, DML, and query statements.
B. The autocommit setting can be changed inside a stored procedure.
C. A transaction can be started explicitly by executing a begin work statement and end explicitly by executing a commit work statement.
D. A transaction can be started explicitly by executing a begin transaction statement and end explicitly by executing an end transaction statement.
E. Explicit transactions should contain only DML statements and query statements. All DDL statements implicitly commit active transactions.

**Correct Answer: A, D**
**Section:**
**Explanation:**
In Snowflake, a transaction is a sequence of SQL statements that are processed as an atomic unit. All statements in the transaction are either applied (i.e. committed) or undone (i.e. rolled back) together. Snowflake transactions guarantee ACID properties.A transaction can include both reads and writes1.
Explicit transactions are transactions that are started and ended explicitly by using the BEGIN TRANSACTION, COMMIT, and ROLLBACK statements. Snowflake supports the synonyms BEGIN WORK and BEGIN TRANSACTION, and COMMIT WORK and ROLLBACK WORK. Explicit transactions can contain DDL, DML, and query statements. However, explicit transactions should contain only DML statements and query statements, because DDL statements implicitly commit active transactions.This means that any changes made by the previous statements in the transaction are applied, and any changes made by the subsequent statements in the transaction are not part of the same transaction1.
The other options are not correct because:
B) The autocommit setting can be changed inside a stored procedure, but this does not affect the use of transactions in Snowflake. The autocommit setting determines whether each statement is executed in its own implicit

transaction or not. If autocommit is enabled, each statement is committed automatically. If autocommit is disabled, each statement is executed in an implicit transaction until an explicit COMMIT or ROLLBACK is issued.Changing the autocommit setting inside a stored procedure only affects the statements within the stored procedure, and does not affect the statements outside the stored procedure2.
C) A transaction can be started explicitly by executing a BEGIN WORK statement and end explicitly by executing a COMMIT WORK statement, but this is not a characteristic of the use of transactions in Snowflake. This is just one way of writing the statements that start and end an explicit transaction.Snowflake also supports the synonyms BEGIN TRANSACTION and COMMIT, which are recommended over BEGIN WORK and COMMIT WORK1.
D) A transaction can be started explicitly by executing a BEGIN TRANSACTION statement and end explicitly by executing an END TRANSACTION statement, but this is not a valid syntax in Snowflake. Snowflake does not support the END TRANSACTION statement.The correct way to end an explicit transaction is to use the COMMIT or ROLLBACK statement1.
1:Transactions | Snowflake Documentation
2: AUTOCOMMIT | Snowflake Documentation

**QUESTION 43**
Which query will identify the specific days and virtual warehouses that would benefit from a multi-cluster warehouse to improve the performance of a particular workload?

A.

```
SELECT TO_DATE(START_TIME) AS DATE,
WAREHOUSE_NAME,
BYTES_SCANNED,
BYTES_SPILLED
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."QUERY_HISTORY"
HAVING BYTES_SPILLED>BYTES_SCANNED;
```

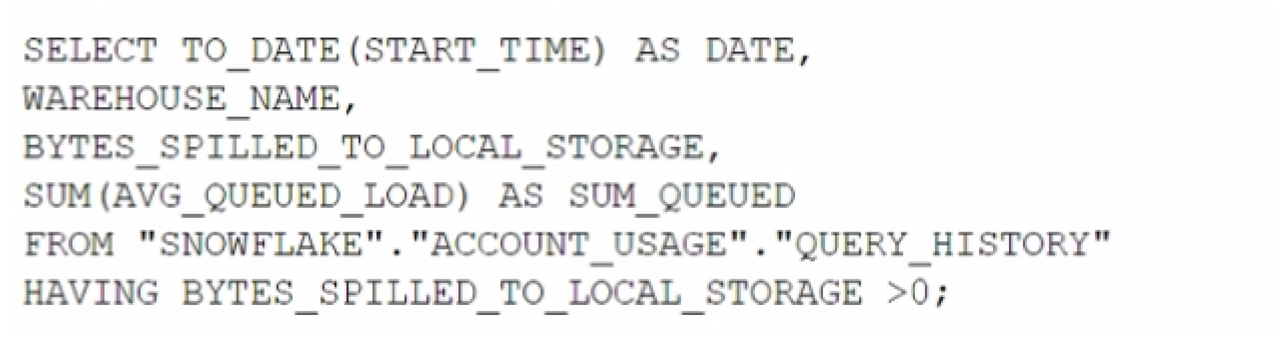
B.

```
SELECT TO_DATE(START_TIME) AS DATE,
WAREHOUSE_NAME,
SUM(AVG_RUNNING) AS SUM_RUNNING,
SUM(AVG_QUEUED_LOAD) AS SUM_QUEUED
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."WAREHOUSE_LOAD_HISTORY"
GROUP BY 1,2
HAVING SUM(AVG_QUEUED_LOAD) > 0;
```

C.

```
SELECT TO_DATE(START_TIME) AS DATE,
WAREHOUSE_NAME,
BYTES_SCANNED,
BYTES_SPILLED
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."WAREHOUSE_LOAD_HISTORY"
HAVING BYTES_SPILLED>BYTES_SCANNED;
```

D.



```
SELECT TO_DATE(START_TIME) AS DATE,
WAREHOUSE_NAME,
BYTES_SPILLED_TO_LOCAL_STORAGE,
SUM(AVG_QUEUED_LOAD) AS SUM_QUEUED
FROM "SNOWFLAKE"."ACCOUNT_USAGE"."QUERY_HISTORY"
HAVING BYTES_SPILLED_TO_LOCAL_STORAGE >0;
```

**Correct Answer: C**
**Section:**
**Explanation:**
A multi-cluster warehouse is a virtual warehouse that can scale compute resources by adding or removing clusters based on the workload demand. A multi-cluster warehouse can improve the performance of a particular workload by reducing the query queue time and the data spillage to local storage. To identify the specific days and virtual warehouses that would benefit from a multi-cluster warehouse, you need to analyze the query history and look for the following indicators:
High average queued load: This metric shows the average number of queries waiting in the queue for each warehouse cluster. A high value indicates that the warehouse is overloaded and cannot handle the concurrency demand.
High bytes spilled to local storage: This metric shows the amount of data that was spilled from memory to local disk during query processing. A high value indicates that the warehouse size is too small and cannot fit the data in memory.
High variation in workload: This metric shows the fluctuation in the number of queries submitted to the warehouse over time. A high variation indicates that the workload is unpredictable and dynamic, and requires a flexible scaling policy.
The query in option C is the best one to identify these indicators, as it selects the date, warehouse name, bytes spilled to local storage, and sum of average queued load from the query history table, and filters the results where bytes spilled to local storage is greater than zero. This query will show the days and warehouses that experienced data spillage and high queue time, and could benefit from a multi-cluster warehouse with auto-scale mode.
The query in option A is not correct, as it only selects the date and warehouse name, and does not include any metrics to measure the performance of the workload. The query in option B is not correct, as it selects the date, warehouse name, and average execution time, which is not a good indicator of the need for a multi-cluster warehouse. The query in option D is not correct, as it selects the date, warehouse name, and average credits used, which is not a good indicator of the need for a multi-cluster warehouse either.

**QUESTION 44**
When loading data into a table that captures the load time in a column with a default value of either CURRENT_TIME () or CURRENT_TIMESTAMP() what will occur?

A. All rows loaded using a specific COPY statement will have varying timestamps based on when the rows were inserted.
B. Any rows loaded using a specific COPY statement will have varying timestamps based on when the rows were read from the source.
C. Any rows loaded using a specific COPY statement will have varying timestamps based on when the rows were created in the source.
D. All rows loaded using a specific COPY statement will have the same timestamp value.

**Correct Answer: D**
**Section:**
**Explanation:**
According to the Snowflake documentation, when loading data into a table that captures the load time in a column with a default value of either CURRENT_TIME () or CURRENT_TIMESTAMP(), the default value is evaluated once per COPY statement, not once per row. Therefore, all rows loaded using a specific COPY statement will have the same timestamp value. This behavior ensures that the timestamp value reflects the time when the data was loaded into the table, not when the data was read from the source or created in the source.Reference:
Snowflake Documentation: Loading Data into Tables with Default Values
Snowflake Documentation: COPY INTO table

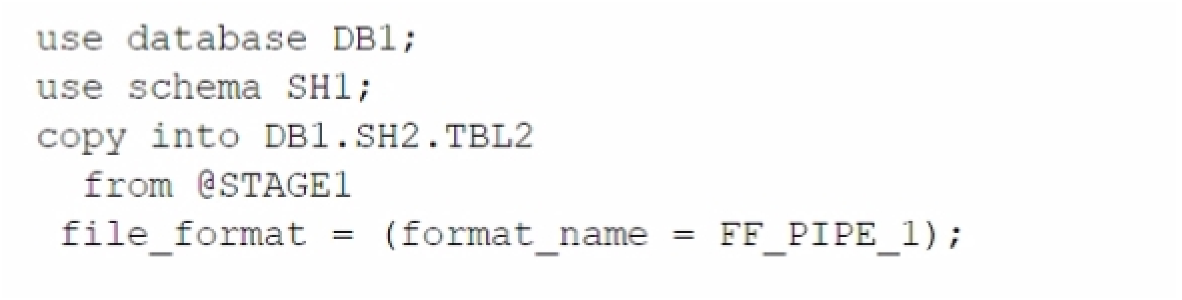
**QUESTION 45**
A company's Architect needs to find an efficient way to get data from an external partner, who is also a Snowflake user. The current solution is based on daily JSON extracts that are placed on an FTP server and uploaded to Snowflake manually. The files are changed several times each month, and the ingestion process needs to be adapted to accommodate these changes.
What would be the MOST efficient solution?

A. Ask the partner to create a share and add the company's account.
B. Ask the partner to use the data lake export feature and place the data into cloud storage where Snowflake can natively ingest it (schema-on-read).
C. Keep the current structure but request that the partner stop changing files, instead only appending new files.
D. Ask the partner to set up a Snowflake reader account and use that account to get the data for ingestion.

**Correct Answer: A**
**Section:**
**Explanation:**
The most efficient solution is to ask the partner to create a share and add the company's account (Option A). This way, the company can access the live data from the partner without any data movement or manual intervention. Snowflake's secure data sharing feature allows data providers to share selected objects in a database with other Snowflake accounts. The shared data is read-only and does not incur any storage or compute costs for the data consumers. The data consumers can query the shared data directly or create local copies of the shared objects in their own databases. Option B is not efficient because it involves using the data lake export feature, which is intended for exporting data from Snowflake to an external data lake, not for importing data from another Snowflake account. The data lake export feature also requires the data provider to create an external stage on cloud storage and use the COPY INTO <location> command to export the data into parquet files. The data consumer then needs to create an external table or a file format to load the data from the cloud storage into Snowflake. This process can be complex and costly, especially if the data changes frequently. Option C is not efficient because it does not solve the problem of manual data ingestion and adaptation. Keeping the current structure of daily JSON extracts on an FTP server and requesting the partner to stop changing files, instead only appending new files, does not improve the efficiency or reliability of the data ingestion process. The company still needs to upload the data to Snowflake manually and deal with any schema changes or data quality issues. Option D is not efficient because it requires the partner to set up a Snowflake reader account and use that account to get the data for ingestion. A reader account is a special type of account that can only consume data from the provider account that created it. It is intended for data consumers who are not Snowflake customers and do not have a licensing agreement with Snowflake. A reader account is not suitable for data ingestion from another Snowflake account, as it does not allow uploading, modifying, or unloading data. The company would need to use external tools or interfaces to access the data from the reader account and load it into their own account, which can be slow and expensive.Reference: The answer can be verified from Snowflake's official documentation on secure data sharing, data lake export, and reader accounts available on their website. Here are some relevant links:
Introduction to Secure Data Sharing | Snowflake Documentation
Data Lake Export Public Preview Is Now Available on Snowflake | Snowflake Blog
Managing Reader Accounts | Snowflake Documentation

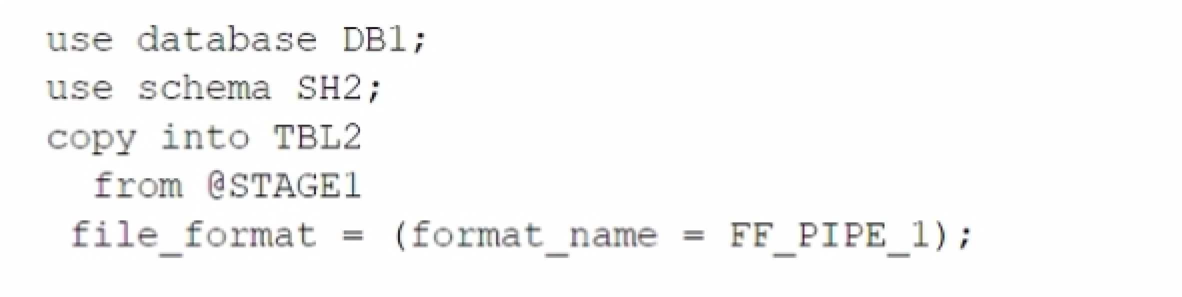
**QUESTION 46**
Based on the architecture in the image, how can the data from DB1 be copied into TBL2? (Select TWO).

A.



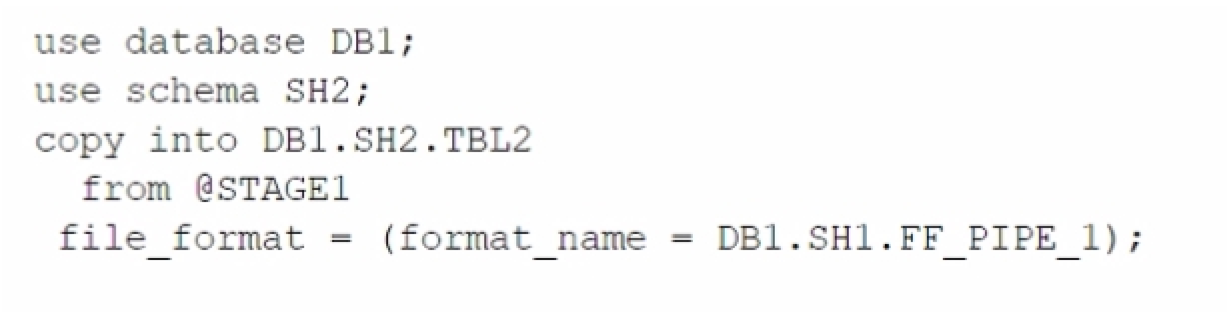
```
use database DB1;
use schema SH1;
copy into DB1.SH2.TBL2
  from @STAGE1
 file_format = (format_name = FF_PIPE_1);
```

B.



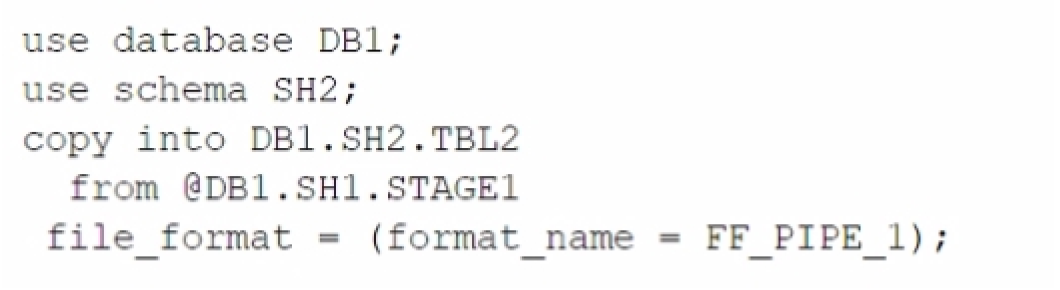
```
use database DB1;
use schema SH2;
copy into TBL2
  from @STAGE1
 file_format = (format_name = FF_PIPE_1);
```

C.



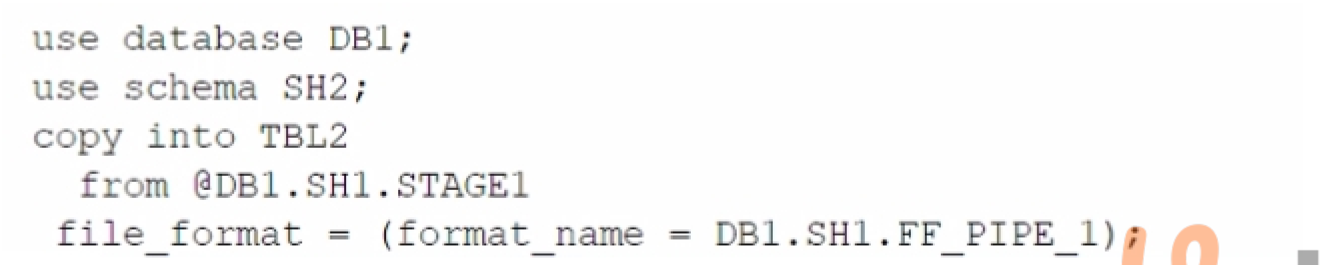
```
use database DB1;
use schema SH2;
copy into DB1.SH2.TBL2
  from @STAGE1
 file_format = (format_name = DB1.SH1.FF_PIPE_1);
```

D.



```
use database DB1;
use schema SH2;
copy into DB1.SH2.TBL2
  from @DB1.SH1.STAGE1
 file_format = (format_name = FF_PIPE_1);
```

E.



```
use database DB1;
use schema SH2;
copy into TBL2
  from @DB1.SH1.STAGE1
 file_format = (format_name = DB1.SH1.FF_PIPE_1);
```

**Correct Answer: B, E**
**Section:**
**Explanation:**
The architecture in the image shows a Snowflake data platform with two databases, DB1 and DB2, and two schemas, SH1 and SH2. DB1 contains a table TBL1 and a stage STAGE1. DB2 contains a table TBL2. The image also shows a snippet of code written in SQL language that copies data from STAGE1 to TBL2 using a file format FF PIPE 1.
To copy data from DB1 to TBL2, there are two possible options among the choices given:
Option B: Use a named external stage that references STAGE1. This option requires creating an external stage object in DB2.SH2 that points to the same location as STAGE1 in DB1.SH1.The external stage can be created using theCREATE STAGEcommand with theURLparameter specifying the location of STAGE11. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
use database DB2;
use schema SH2;
create stage EXT_STAGE1
url = @DB1.SH1.STAGE1;
Then, the data can be copied from the external stage to TBL2 using theCOPY INTOcommand with theFROMparameter specifying the external stage name and theFILE FORMATparameter specifying the file format name2. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
copy into TBL2
from @EXT_STAGE1
file format = (format name = DB1.SH1.FF PIPE 1);
Option E: Use a cross-database query to select data from TBL1 and insert into TBL2. This option requires using theINSERT INTOcommand with theSELECTclause to query data from TBL1 in DB1.SH1 and insert it into TBL2 in DB2.SH2.The query must use the fully-qualified names of the tables, including the database and schema names3. For example:
SQLAI-generated code. Review and use carefully.More info on FAQ.
use database DB2;
use schema SH2;
insert into TBL2

select * from DB1.SH1.TBL1;
The other options are not valid because:
Option A: It uses an invalid syntax for theCOPY INTOcommand.TheFROMparameter cannot specify a table name, only a stage name or a file location2.
Option C: It uses an invalid syntax for theCOPY INTOcommand.TheFILE FORMATparameter cannot specify a stage name, only a file format name or options2.
Option D: It uses an invalid syntax for theCREATE STAGEcommand.TheURLparameter cannot specify a table name, only a file location1.
1: CREATE STAGE | Snowflake Documentation
2: COPY INTO table | Snowflake Documentation
3: Cross-database Queries | Snowflake Documentation

**QUESTION 47**
Why might a Snowflake Architect use a star schema model rather than a 3NF model when designing a data architecture to run in Snowflake? (Select TWO).

A. Snowflake cannot handle the joins implied in a 3NF data model.
B. The Architect wants to remove data duplication from the data stored in Snowflake.
C. The Architect is designing a landing zone to receive raw data into Snowflake.
D. The Bl tool needs a data model that allows users to summarize facts across different dimensions, or to drill down from the summaries.
E. The Architect wants to present a simple flattened single view of the data to a particular group of end users.

**Correct Answer: D, E**
**Section:**
**Explanation:**
A star schema model is a type of dimensional data model that consists of a single fact table and multiple dimension tables. A 3NF model is a type of relational data model that follows the third normal form, which eliminates data redundancy and ensures referential integrity. A Snowflake Architect might use a star schema model rather than a 3NF model when designing a data architecture to run in Snowflake for the following reasons:
A star schema model is more suitable for analytical queries that require aggregating and slicing data across different dimensions, such as those performed by a BI tool. A 3NF model is more suitable for transactional queries that require inserting, updating, and deleting individual records.
A star schema model is simpler and faster to query than a 3NF model, as it involves fewer joins and less complex SQL statements. A 3NF model is more complex and slower to query, as it involves more joins and more complex SQL statements.
A star schema model can provide a simple flattened single view of the data to a particular group of end users, such as business analysts or data scientists, who need to explore and visualize the data. A 3NF model can provide a more detailed and normalized view of the data to a different group of end users, such as application developers or data engineers, who need to maintain and update the data.
The other options are not valid reasons for choosing a star schema model over a 3NF model in Snowflake:
Snowflake can handle the joins implied in a 3NF data model, as it supports ANSI SQL and has a powerful query engine that can optimize and execute complex queries efficiently.
The Architect can use both star schema and 3NF models to remove data duplication from the data stored in Snowflake, as both models can enforce data integrity and avoid data anomalies. However, the trade-off is that a star schema model may have more data redundancy than a 3NF model, as it denormalizes the data for faster query performance, while a 3NF model may have less data redundancy than a star schema model, as it normalizes the data for easier data maintenance.
The Architect can use both star schema and 3NF models to design a landing zone to receive raw data into Snowflake, as both models can accommodate different types of data sources and formats. However, the choice of the model may depend on the purpose and scope of the landing zone, such as whether it is a temporary or permanent storage, whether it is a staging area or a data lake, and whether it is a single source or a multi-source integration.
Snowflake Architect Training
Data Modeling: Understanding the Star and Snowflake Schemas
Data Vault vs Star Schema vs Third Normal Form: Which Data Model to Use?
Star Schema vs Snowflake Schema: 5 Key Differences
Dimensional Data Modeling - Snowflake schema
Star schema vs Snowflake Schema

**QUESTION 48**
An Architect is troubleshooting a query with poor performance using the QUERY_HIST0RY function. The Architect observes that the COMPILATIONJHME is greater than the EXECUTIONJTIME.
What is the reason for this?

A. The query is processing a very large dataset.

B. The query has overly complex logic.
C. The query is queued for execution.
D. The query is reading from remote storage.

**Correct Answer: B**
**Section:**
**Explanation:**
Compilation time is the time it takes for the optimizer to create an optimal query plan for the efficient execution of the query.It also involves some pruning of partition files, making the query execution efficient2
If the compilation time is greater than the execution time, it means that the optimizer spent more time analyzing the query than actually running it. This could indicate that the query has overly complex logic, such as multiple joins, subqueries, aggregations, or expressions.The complexity of the query could also affect the size and quality of the query plan, which could impact the performance of the query3
To reduce the compilation time, the Architect can try to simplify the query logic, use views or common table expressions (CTEs) to break down the query into smaller parts, or use hints to guide the optimizer.The Architect can also use the EXPLAIN command to examine the query plan and identify potential bottlenecks or inefficiencies4Reference:
1: SnowPro Advanced: Architect | Study Guide5
2: Snowflake Documentation | Query Profile Overview6
3: Understanding Why Compilation Time in Snowflake Can Be Higher than Execution Time7
4: Snowflake Documentation | Optimizing Query Performance8
:SnowPro Advanced: Architect | Study Guide
:Query Profile Overview
:Understanding Why Compilation Time in Snowflake Can Be Higher than Execution Time
:Optimizing Query Performance

**QUESTION 49**
A Snowflake Architect is designing a multiple-account design strategy.
This strategy will be MOST cost-effective with which scenarios? (Select TWO).

A. The company wants to clone a production database that resides on AWS to a development database that resides on Azure.
B. The company needs to share data between two databases, where one must support Payment Card Industry Data Security Standard (PCI DSS) compliance but the other one does not.
C. The company needs to support different role-based access control features for the development, test, and production environments.
D. The company security policy mandates the use of different Active Directory instances for the development, test, and production environments.
E. The company must use a specific network policy for certain users to allow and block given IP addresses.

**Correct Answer: B, C**
**Section:**
**Explanation:**
A multiple-account design strategy is a way of organizing Snowflake accounts into logical groups based on different criteria, such as cloud provider, region, environment, or business unit.A multiple-account design strategy can help achieve various goals, such as cost optimization, performance isolation, security compliance, and data sharing1. In this question, the scenarios that would be most cost-effective with a multiple-account design strategy are:
The company wants to clone a production database that resides on AWS to a development database that resides on Azure. This scenario would benefit from a multiple-account design strategy because it would allow the company to leverage the cross-cloud replication feature of Snowflake, which enables replicating databases across different cloud platforms and regions.This feature can help reduce the data transfer costs and latency, as well as provide high availability and disaster recovery2.
The company security policy mandates the use of different Active Directory instances for the development, test, and production environments. This scenario would benefit from a multiple-account design strategy because it would allow the company to use different federated authentication methods for each environment, and integrate them with different Active Directory instances.This can help improve the security and governance of the access to the Snowflake accounts, as well as simplify the user management and provisioning3.
The other scenarios would not be most cost-effective with a multiple-account design strategy, because:
The company needs to share data between two databases, where one must support Payment Card Industry Data Security Standard (PCI DSS) compliance but the other one does not. This scenario can be handled within a single Snowflake account, by using secure views and secure UDFs to mask or filter the sensitive data, and applying the appropriate roles and privileges to the users who access the data.This can help achieve the PCI DSS compliance without incurring the additional costs of managing multiple accounts4.
The company needs to support different role-based access control features for the development, test, and production environments. This scenario can also be handled within a single Snowflake account, by using the native role-based access control (RBAC) features of Snowflake, such as roles, grants, and privileges, to define different access levels and permissions for each environment. This can help ensure the security and integrity of the data

and the objects, as well as the separation of duties and responsibilities among the users.
The company must use a specific network policy for certain users to allow and block given IP addresses. This scenario can also be handled within a single Snowflake account, by using the network policy feature of Snowflake, which enables creating and applying network policies to restrict the IP addresses that can access the Snowflake account. This can help prevent unauthorized access and protect the data from malicious attacks.
Designing Your Snowflake Topology
Cross-Cloud Replication
Configuring Federated Authentication and SSO
Using Secure Views and Secure UDFs to Comply with PCI DSS
[Understanding Access Control in Snowflake]
[Network Policies]

**QUESTION 50**
The following table exists in the production database:
A regulatory requirement states that the company must mask the username for events that are older than six months based on the current date when the data is queried.
How can the requirement be met without duplicating the event data and making sure it is applied when creating views using the table or cloning the table?

A. Use a masking policy on the username column using a entitlement table with valid dates.
B. Use a row level policy on the user_events table using a entitlement table with valid dates.
C. Use a masking policy on the username column with event_timestamp as a conditional column.
D. Use a secure view on the user_events table using a case statement on the username column.

**Correct Answer: C**
**Section:**
**Explanation:**
A masking policy is a feature of Snowflake that allows masking sensitive data in query results based on the role of the user and the condition of the data. A masking policy can be applied to a column in a table or a view, and it can use another column in the same table or view as a conditional column.A conditional column is a column that determines whether the masking policy is applied or not based on its value1.
In this case, the requirement can be met by using a masking policy on the username column with event_timestamp as a conditional column. The masking policy can use a function that masks the username if the event_timestamp is older than six months based on the current date, and returns the original username otherwise.The masking policy can be applied to the user_events table, and it will also be applied when creating views using the table or cloning the table2.
The other options are not correct because:
A) Using a masking policy on the username column using an entitlement table with valid dates would require creating another table that stores the valid dates for each username, and joining it with the user_events table in the masking policy function. This would add complexity and overhead to the masking policy, and it would not use the event_timestamp column as the condition for masking.
B) Using a row level policy on the user_events table using an entitlement table with valid dates would require creating another table that stores the valid dates for each username, and joining it with the user_events table in the row access policy function. This would filter out the rows that have event_timestamp older than six months based on the valid dates, instead of masking the username column. This would not meet the requirement of masking the username, and it would also reduce the visibility of the event data.
D) Using a secure view on the user_events table using a case statement on the username column would require creating a view that uses a case expression to mask the username column based on the event_timestamp column. This would meet the requirement of masking the username, but it would not be applied when cloning the table. A secure view is a view that prevents the underlying data from being exposed by queries on the view.However, a secure view does not prevent the underlying data from being exposed by cloning the table3.
1:Masking Policies | Snowflake Documentation
2: Using Conditional Columns in Masking Policies | Snowflake Documentation
3: Secure Views | Snowflake Documentation

**QUESTION 51**
What Snowflake system functions are used to view and or monitor the clustering metadata for a table? (Select TWO).

A. SYSTEMSCLUSTERING
B. SYSTEMSTABLE_CLUSTERING
C. SYSTEMSCLUSTERING_DEPTH
D. SYSTEMSCLUSTERING_RATIO

E. SYSTEMSCLUSTERING_INFORMATION

**Correct Answer: C, E**
**Section:**
**Explanation:**
The Snowflake system functions used to view and monitor the clustering metadata for a table are:
SYSTEM$CLUSTERING_INFORMATION
SYSTEM$CLUSTERING_DEPTH
Comprehensive But Short Explanation:
The SYSTEM$CLUSTERING_INFORMATION function in Snowflake returns a variety of clustering information for a specified table. This information includes the average clustering depth, total number of micro-partitions, total constant partition count, average overlaps, average depth, and a partition depth histogram. This function allows you to specify either one or multiple columns for which the clustering information is returned, and it returns this data in JSON format.
The SYSTEM$CLUSTERING_DEPTH function computes the average depth of a table based on specified columns or the clustering key defined for the table. A lower average depth indicates that the table is better clustered with respect to the specified columns. This function also allows specifying columns to calculate the depth, and the values need to be enclosed in single quotes.
SYSTEM$CLUSTERING_INFORMATION: Snowflake Documentation
SYSTEM$CLUSTERING_DEPTH: Snowflake Documentation

**QUESTION 52**
What is a characteristic of event notifications in Snowpipe?

A. The load history is stored In the metadata of the target table.
B. Notifications identify the cloud storage event and the actual data in the files.
C. Snowflake can process all older notifications when a paused pipe Is resumed.
D. When a pipe Is paused, event messages received for the pipe enter a limited retention period.

**Correct Answer: D**
**Section:**
**Explanation:**
Event notifications in Snowpipe are messages sent by cloud storage providers to notify Snowflake of new or modified files in a stage. Snowpipe uses these notifications to trigger data loading from the stage to the target table. When a pipe is paused, event messages received for the pipe enter a limited retention period, which varies depending on the cloud storage provider. If the pipe is not resumed within the retention period, the event messages will be discarded and the data will not be loaded automatically. To load the data, the pipe must be resumed and the COPY command must be executed manually. This is a characteristic of event notifications in Snowpipe that distinguishes them from other options.Reference:Snowflake Documentation: Using Snowpipe,Snowflake Documentation: Pausing and Resuming a Pipe

**QUESTION 53**
An Architect needs to design a Snowflake account and database strategy to store and analyze large amounts of structured and semi-structured data. There are many business units and departments within the company. The requirements are scalability, security, and cost efficiency.
What design should be used?

A. Create a single Snowflake account and database for all data storage and analysis needs, regardless of data volume or complexity.
B. Set up separate Snowflake accounts and databases for each department or business unit, to ensure data isolation and security.
C. Use Snowflake's data lake functionality to store and analyze all data in a central location, without the need for structured schemas or indexes
D. Use a centralized Snowflake database for core business data, and use separate databases for departmental or project-specific data.

**Correct Answer: D**
**Section:**
**Explanation:**
The best design to store and analyze large amounts of structured and semi-structured data for different business units and departments is to use a centralized Snowflake database for core business data, and use separate databases for departmental or project-specific data. This design allows for scalability, security, and cost efficiency by leveraging Snowflake's features such as:
Database cloning:Cloning a database creates a zero-copy clone that shares the same data files as the original database, but can be modified independently. This reduces storage costs and enables fast and consistent data

replication for different purposes.
Database sharing:Sharing a database allows granting secure and governed access to a subset of data in a database to other Snowflake accounts or consumers. This enables data collaboration and monetization across different business units or external partners.
Warehouse scaling:Scaling a warehouse allows adjusting the size and concurrency of a warehouse to match the performance and cost requirements of different workloads. This enables optimal resource utilization and flexibility for different data analysis needs.Reference:Snowflake Documentation: Database Cloning,Snowflake Documentation: Database Sharing, [Snowflake Documentation: Warehouse Scaling]

**QUESTION 54**
How can the Snowpipe REST API be used to keep a log of data load history?

A. Call insertReport every 20 minutes, fetching the last 10,000 entries.
B. Call loadHistoryScan every minute for the maximum time range.
C. Call insertReport every 8 minutes for a 10-minute time range.
D. Call loadHistoryScan every 10 minutes for a 15-minutes range.

**Correct Answer: D**
**Section:**
**Explanation:**
The Snowpipe REST API provides two endpoints for retrieving the data load history: insertReport and loadHistoryScan. The insertReport endpoint returns the status of the files that were submitted to the insertFiles endpoint, while the loadHistoryScan endpoint returns the history of the files that were actually loaded into the table by Snowpipe. To keep a log of data load history, it is recommended to use the loadHistoryScan endpoint, which provides more accurate and complete information about the data ingestion process. The loadHistoryScan endpoint accepts a start time and an end time as parameters, and returns the files that were loaded within that time range. The maximum time range that can be specified is 15 minutes, and the maximum number of files that can be returned is 10,000. Therefore, to keep a log of data load history, the best option is to call the loadHistoryScan endpoint every 10 minutes for a 15-minute time range, and store the results in a log file or a table. This way, the log will capture all the files that were loaded by Snowpipe, and avoid any gaps or overlaps in the time range.
The other options are incorrect because:
Calling insertReport every 20 minutes, fetching the last 10,000 entries, will not provide a complete log of data load history, as some files may be missed or duplicated due to the asynchronous nature of Snowpipe. Moreover, insertReport only returns the status of the files that were submitted, not the files that were loaded.
Calling loadHistoryScan every minute for the maximum time range will result in too many API calls and unnecessary overhead, as the same files will be returned multiple times. Moreover, the maximum time range is 15 minutes, not 1 minute.
Calling insertReport every 8 minutes for a 10-minute time range will suffer from the same problems as option A, and also create gaps or overlaps in the time range.
Snowpipe REST API
Option 1: Loading Data Using the Snowpipe REST API
PIPE_USAGE_HISTORY

**QUESTION 55**
Database DB1 has schema S1 which has one table, T1.
DB1 --> S1 --> T1
The retention period of EG1 is set to 10 days.
The retention period of s: is set to 20 days.
The retention period of t: Is set to 30 days.
The user runs the following command:
Drop Database DB1;
What will the Time Travel retention period be for T1?

A. 10 days
B. 20 days
C. 30 days
D. 37 days

**Correct Answer: C**
**Section:**

**Explanation:**
The Time Travel retention period for T1 will be 30 days, which is the retention period set at the table level. The Time Travel retention period determines how long the historical data is preserved and accessible for an object after it is modified or dropped. The Time Travel retention period can be set at the account level, the database level, the schema level, or the table level. The retention period set at the lowest level of the hierarchy takes precedence over the higher levels. Therefore, the retention period set at the table level overrides the retention periods set at the schema level, the database level, or the account level. When the user drops the database DB1, the table T1 is also dropped, but the historical data is still preserved for 30 days, which is the retention period set at the table level. The user can use the UNDROP command to restore the table T1 within the 30-day period.
The other options are incorrect because:
10 days is the retention period set at the database level, which is overridden by the table level.
20 days is the retention period set at the schema level, which is also overridden by the table level.
37 days is not a valid option, as it is not the retention period set at any level.
Understanding & Using Time Travel
AT | BEFORE
Snowflake Time Travel & Fail-safe

**QUESTION 56**
A global company needs to securely share its sales and Inventory data with a vendor using a Snowflake account.
The company has its Snowflake account In the AWS eu-west 2 Europe (London) region. The vendor's Snowflake account Is on the Azure platform in the West Europe region. How should the company's Architect configure the data share?

A. 1. Create a share. 2. Add objects to the share. 3. Add a consumer account to the share for the vendor to access.
B. 1. Create a share. 2. Create a reader account for the vendor to use. 3. Add the reader account to the share.
C. 1. Create a new role called db_share. 2. Grant the db_share role privileges to read data from the company database and schema. 3. Create a user for the vendor. 4. Grant the ds_share role to the vendor's users.
D. 1. Promote an existing database in the company's local account to primary. 2. Replicate the database to Snowflake on Azure in the West-Europe region. 3. Create a share and add objects to the share. 4. Add a consumer account to the share for the vendor to access.

**Correct Answer: A**
**Section:**
**Explanation:**
The correct way to securely share data with a vendor using a Snowflake account on a different cloud platform and region is to create a share, add objects to the share, and add a consumer account to the share for the vendor to access. This way, the company can control what data is shared, who can access it, and how long the share is valid. The vendor can then query the shared data without copying or moving it to their own account. The other options are either incorrect or inefficient, as they involve creating unnecessary reader accounts, users, roles, or database replication.
https://learn.snowflake.com/en/certifications/snowpro-advanced-architect/

**QUESTION 57**
A company wants to Integrate its main enterprise identity provider with federated authentication with Snowflake.
The authentication integration has been configured and roles have been created in Snowflake. However, the users are not automatically appearing in Snowflake when created and their group membership is not reflected in their assigned rotes.
How can the missing functionality be enabled with the LEAST amount of operational overhead?

A. OAuth must be configured between the identity provider and Snowflake. Then the authorization server must be configured with the right mapping of users and roles.
B. OAuth must be configured between the identity provider and Snowflake. Then the authorization server must be configured with the right mapping of users, and the resource server must be configured with the right mapping of role assignment.
C. SCIM must be enabled between the identity provider and Snowflake. Once both are synchronized through SCIM, their groups will get created as group accounts in Snowflake and the proper roles can be granted.
D. SCIM must be enabled between the identity provider and Snowflake. Once both are synchronized through SCIM. users will automatically get created and their group membership will be reflected as roles In Snowflake.

**Correct Answer: D**
**Section:**
**Explanation:**
The best way to integrate an enterprise identity provider with federated authentication and enable automatic user creation and role assignment in Snowflake is to use SCIM (System for Cross-domain Identity Management). SCIM allows Snowflake to synchronize with the identity provider and create users and groups based on the information provided by the identity provider. The groups are mapped to roles in Snowflake, and the users are

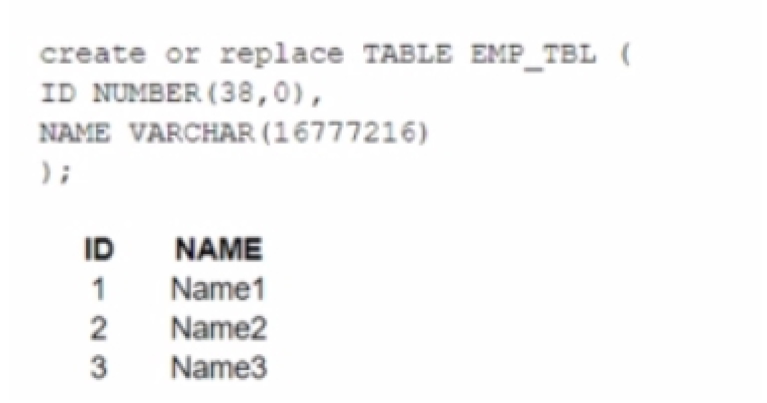
assigned the roles based on their group membership. This way, the identity provider remains the source of truth for user and group management, and Snowflake automatically reflects the changes without manual intervention. The other options are either incorrect or incomplete, as they involve using OAuth, which is a protocol for authorization, not authentication or user provisioning, and require additional configuration of authorization and resource servers.

**QUESTION 58**
An Architect has designed a data pipeline that Is receiving small CSV files from multiple sources. All of the files are landing in one location. Specific files are filtered for loading into Snowflake tables using the copy command.
The loading performance is poor.
What changes can be made to Improve the data loading performance?

A. Increase the size of the virtual warehouse.
B. Create a multi-cluster warehouse and merge smaller files to create bigger files.
C. Create a specific storage landing bucket to avoid file scanning.
D. Change the file format from CSV to JSON.

**Correct Answer: B**
**Section:**
**Explanation:**
According to the Snowflake documentation, the data loading performance can be improved by following some best practices and guidelines for preparing and staging the data files. One of the recommendations is to aim for data files that are roughly 100-250 MB (or larger) in size compressed, as this will optimize the number of parallel operations for a load. Smaller files should be aggregated and larger files should be split to achieve this size range. Another recommendation is to use a multi-cluster warehouse for loading, as this will allow for scaling up or out the compute resources depending on the load demand. A single-cluster warehouse may not be able to handle the load concurrency and throughput efficiently. Therefore, by creating a multi-cluster warehouse and merging smaller files to create bigger files, the data loading performance can be improved.Reference:
Data Loading Considerations
Preparing Your Data Files
Planning a Data Load

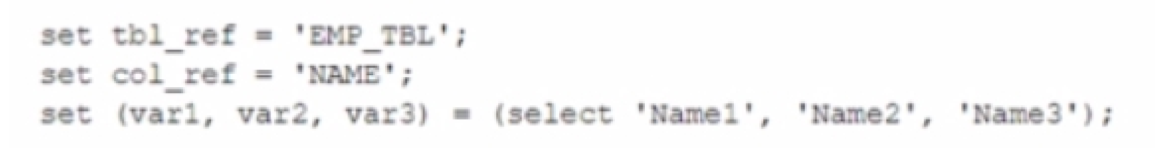
**QUESTION 59**
A table, EMP_ TBL has three records as shown:



```
create or replace TABLE EMP_TBL (
ID NUMBER(38,0),
NAME VARCHAR(16777216)
);
```

| ID | NAME |
|---|---|
| 1 | Name1 |
| 2 | Name2 |
| 3 | Name3 |

The following variables are set for the session:



```
set tbl_ref = 'EMP_TBL';
set col_ref = 'NAME';
set (var1, var2, var3) = (select 'Name1', 'Name2', 'Name3');
```

Which SELECT statements will retrieve all three records? (Select TWO).

A. Select * FROM Stbl_ref WHERE Scol_ref IN ('Name1','Nam2','Name3');
B. SELECT * FROM EMP_TBL WHERE identifier(Scol_ref) IN ('Namel','Name2', 'Name3');
C. SELECT * FROM identifier<Stbl_ref> WHERE NAME IN ($var1, $var2, $var3);
D. SELECT * FROM identifier($tbl_ref) WHERE ID IN Cvarl','var2','var3');

E. SELECT * FROM $tb1_ref WHERE $col_ref IN ($var1, Svar2, Svar3);

**Correct Answer: B, E**
**Section:**
**Explanation:**
The correct answer is B and E because they use the correct syntax and values for the identifier function and the session variables.
The identifier function allows you to use a variable or expression as an identifier (such as a table name or column name) in a SQL statement. It takes a single argument and returns it as an identifier. For example, identifier($tbl_ref) returns EMP_TBL as an identifier.
The session variables are set using the SET command and can be referenced using the $ sign. For example, $var1 returns Name1 as a value.
Option A is incorrect because it uses Stbl_ref and Scol_ref, which are not valid session variables or identifiers. They should be $tbl_ref and $col_ref instead.
Option C is incorrect because it uses identifier<Stbl_ref>, which is not a valid syntax for the identifier function. It should be identifier($tbl_ref) instead.
Option D is incorrect because it uses Cvarl, var2, and var3, which are not valid session variables or values. They should be $var1, $var2, and $var3 instead.Reference:
Snowflake Documentation: Identifier Function
Snowflake Documentation: Session Variables
Snowflake Learning: SnowPro Advanced: Architect Exam Study Guide

**QUESTION 60**
A data platform team creates two multi-cluster virtual warehouses with the AUTO_SUSPEND value set to NULL on one. and '0' on the other. What would be the execution behavior of these virtual warehouses?

A. Setting a '0' or NULL value means the warehouses will never suspend.
B. Setting a '0' or NULL value means the warehouses will suspend immediately.
C. Setting a '0' or NULL value means the warehouses will suspend after the default of 600 seconds.
D. Setting a '0' value means the warehouses will suspend immediately, and NULL means the warehouses will never suspend.

**Correct Answer: D**
**Section:**
**Explanation:**
The AUTO_SUSPEND parameter controls the amount of time, in seconds, of inactivity after which a warehouse is automatically suspended. If the parameter is set to NULL, the warehouse never suspends. If the parameter is set to '0', the warehouse suspends immediately after executing a query. Therefore, the execution behavior of the two virtual warehouses will be different depending on the AUTO_SUSPEND value. The warehouse with NULL value will keep running until it is manually suspended or the resource monitor limits are reached. The warehouse with '0' value will suspend as soon as it finishes a query and release the compute resources.Reference:
ALTER WAREHOUSE
Parameters

**QUESTION 61**
A user named USER_01 needs access to create a materialized view on a schema EDW. STG_SCHEM

A. How can this access be provided?
B. GRANT CREATE MATERIALIZED VIEW ON SCHEMA EDW.STG_SCHEMA TO USER USER_01;
C. GRANT CREATE MATERIALIZED VIEW ON DATABASE EDW TO USER USERJD1;
D. GRANT ROLE NEW_ROLE TO USER USER_01; GRANT CREATE MATERIALIZED VIEW ON SCHEMA ECW.STG_SCHEKA TO NEW_ROLE;
E. GRANT ROLE NEW_ROLE TO USER_01; GRANT CREATE MATERIALIZED VIEW ON EDW.STG_SCHEMA TO NEW_ROLE;

**Correct Answer: A**
**Section:**
**Explanation:**
The correct answer is A because it grants the specific privilege to create a materialized view on the schema EDW.STG_SCHEMA to the user USER_01 directly.
Option B is incorrect because it grants the privilege to create a materialized view on the entire database EDW, which is too broad and unnecessary. Also, there is a typo in the user name (USERJD1 instead of USER_01).
Option C is incorrect because it grants the privilege to create a materialized view on a different schema (ECW.STG_SCHEKA instead of EDW.STG_SCHEMA). Also, there is no need to create a new role for this purpose.

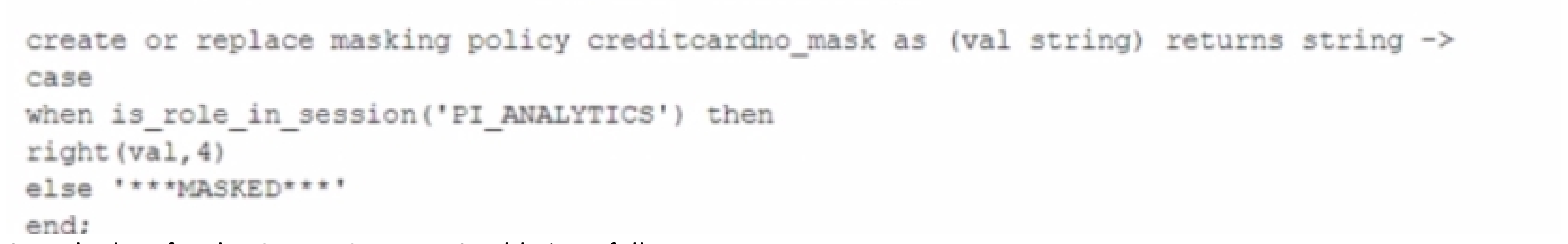
Option D is incorrect because it grants the privilege to create a materialized view on an invalid object (EDW.STG_SCHEMA is not a valid schema name, it should be EDW.STG_SCHEMA). Also, there is no need to create a new role for this purpose.Reference:
Snowflake Documentation: CREATE MATERIALIZED VIEW
Snowflake Documentation: Working with Materialized Views
[Snowflake Documentation: GRANT Privileges on a Schema]

**QUESTION 62**
An Architect Is designing a data lake with Snowflake. The company has structured, semi-structured, and unstructured data. The company wants to save the data inside the data lake within the Snowflake system. The company is planning on sharing data among Its corporate branches using Snowflake data sharing.
What should be considered when sharing the unstructured data within Snowflake?

A. A pre-signed URL should be used to save the unstructured data into Snowflake in order to share data over secure views, with no time limit for the URL.
B. A scoped URL should be used to save the unstructured data into Snowflake in order to share data over secure views, with a 24-hour time limit for the URL.
C. A file URL should be used to save the unstructured data into Snowflake in order to share data over secure views, with a 7-day time limit for the URL.
D. A file URL should be used to save the unstructured data into Snowflake in order to share data over secure views, with the 'expiration_time' argument defined for the URL time limit.

**Correct Answer: D**
**Section:**
**Explanation:**
According to the Snowflake documentation, unstructured data files can be shared by using a secure view and Secure Data Sharing. A secure view allows the result of a query to be accessed like a table, and a secure view is specifically designated for data privacy. A scoped URL is an encoded URL that permits temporary access to a staged file without granting privileges to the stage. The URL expires when the persisted query result period ends, which is currently 24 hours. A scoped URL is recommended for file administrators to give scoped access to data files to specific roles in the same account. Snowflake records information in the query history about who uses a scoped URL to access a file, and when. Therefore, a scoped URL is the best option to share unstructured data within Snowflake, as it provides security, accountability, and control over the data access.Reference:
Sharing unstructured Data with a secure view
Introduction to Loading Unstructured Data

**QUESTION 63**
Consider the following scenario where a masking policy is applied on the CREDICARDND column of the CREDITCARDINFO table. The masking policy definition Is as follows:



```
create or replace masking policy creditcardno_mask as (val string) returns string ->
case
when is_role_in_session('PI_ANALYTICS') then
right(val,4)
else '***MASKED***'
end;
```

Sample data for the CREDITCARDINFO table is as follows:
NAME EXPIRYDATE CREDITCARDNO
JOHN DOE 2022-07-23 4321 5678 9012 1234
if the Snowflake system rotes have not been granted any additional roles, what will be the result?

A. The sysadmin can see the CREDICARDND column data in clear text.
B. The owner of the table will see the CREDICARDND column data in clear text.
C. Anyone with the PI_ANALYTICS role will see the last 4 characters of the CREDICARDND column data in dear text.
D. Anyone with the PI_ANALYTICS role will see the CREDICARDND column as*** 'MASKED* **'.

**Correct Answer: D**
**Section:**
**Explanation:**
The masking policy defined in the image indicates that if a user has the PI_ANALYTICS role, they will be able to see the last 4 characters of the CREDITCARDNO column data in clear text. Otherwise, they will see 'MASKED'.

Since Snowflake system roles have not been granted any additional roles, they won't have the PI_ANALYTICS role and therefore cannot view the last 4 characters of credit card numbers.
To apply a masking policy on a column in Snowflake, you need to use the ALTER TABLE ... ALTER COLUMN command or the ALTER VIEW command and specify the policy name. For example, to apply the creditcardno_mask policy on the CREDITCARDNO column of the CREDITCARDINFO table, you can use the following command:
ALTER TABLE CREDITCARDINFO ALTER COLUMN CREDITCARDNO SET MASKING POLICY creditcardno_mask;
For more information on how to create and use masking policies in Snowflake, you can refer to the following resources:
CREATE MASKING POLICY: This document explains the syntax and usage of the CREATE MASKING POLICY command, which allows you to create a new masking policy or replace an existing one.
Using Dynamic Data Masking: This guide provides instructions on how to configure and use dynamic data masking in Snowflake, which is a feature that allows you to mask sensitive data based on the execution context of the user.
ALTER MASKING POLICY: This document explains the syntax and usage of the ALTER MASKING POLICY command, which allows you to modify the properties of an existing masking policy.

**QUESTION 64**
A company is trying to Ingest 10 TB of CSV data into a Snowflake table using Snowpipe as part of Its migration from a legacy database platform. The records need to be ingested in the MOST performant and cost-effective way.
How can these requirements be met?

A. Use ON_ERROR = continue in the copy into command.
B. Use purge = TRUE in the copy into command.
C. Use FURGE = FALSE in the copy into command.
D. Use on error = SKIP_FILE in the copy into command.

**Correct Answer: D**
**Section:**
**Explanation:**
For ingesting a large volume of CSV data into Snowflake using Snowpipe, especially for a substantial amount like 10 TB, the on error = SKIP_FILE option in the COPY INTO command can be highly effective. This approach allows Snowpipe to skip over files that cause errors during the ingestion process, thereby not halting or significantly slowing down the overall data load. It helps in maintaining performance and cost-effectiveness by avoiding the reprocessing of problematic files and continuing with the ingestion of other data.

**QUESTION 65**
An Architect is troubleshooting a query with poor performance using the QUERY function. The Architect observes that the COMPILATION_TIME Is greater than the EXECUTION_TIME.
What is the reason for this?

A. The query is processing a very large dataset.
B. The query has overly complex logic.
C. The query Is queued for execution.
D. The query Is reading from remote storage

**Correct Answer: B**
**Section:**
**Explanation:**
The correct answer is B because the compilation time is the time it takes for the optimizer to create an optimal query plan for the efficient execution of the query. The compilation time depends on the complexity of the query, such as the number of tables, columns, joins, filters, aggregations, subqueries, etc. The more complex the query, the longer it takes to compile.
Option A is incorrect because the query processing time is not affected by the size of the dataset, but by the size of the virtual warehouse. Snowflake automatically scales the compute resources to match the data volume and parallelizes the query execution. The size of the dataset may affect the execution time, but not the compilation time.
Option C is incorrect because the query queue time is not part of the compilation time or the execution time. It is a separate metric that indicates how long the query waits for a warehouse slot before it starts running. The query queue time depends on the warehouse load, concurrency, and priority settings.
Option D is incorrect because the query remote IO time is not part of the compilation time or the execution time. It is a separate metric that indicates how long the query spends reading data from remote storage, such as S3 or Azure Blob Storage. The query remote IO time depends on the network latency, bandwidth, and caching efficiency.Reference:
Understanding Why Compilation Time in Snowflake Can Be Higher than Execution Time: This article explains why the total duration (compilation + execution) time is an essential metric to measure query performance in Snowflake. It discusses the reasons for the long compilation time, including query complexity and the number of tables and columns.
Exploring Execution Times: This document explains how to examine the past performance of queries and tasks using Snowsight or by writing queries against views in the ACCOUNT_USAGE schema. It also describes the

different metrics and dimensions that affect query performance, such as duration, compilation, execution, queue, and remote IO time.
What is the ''compilation time'' and how to optimize it?: This community post provides some tips and best practices on how to reduce the compilation time, such as simplifying the query logic, using views or common table expressions, and avoiding unnecessary columns or joins.

**QUESTION 66**
How can the Snowflake context functions be used to help determine whether a user is authorized to see data that has column-level security enforced? (Select TWO).

A. Set masking policy conditions using current_role targeting the role in use for the current session.
B. Set masking policy conditions using is_role_in_session targeting the role in use for the current account.
C. Set masking policy conditions using invoker_role targeting the executing role in a SQL statement.
D. Determine if there are ownership privileges on the masking policy that would allow the use of any function.
E. Assign the accountadmin role to the user who is executing the object.

**Correct Answer: A, C**
**Section:**
**Explanation:**
Snowflake context functions are functions that return information about the current session, user, role, warehouse, database, schema, or object. They can be used to help determine whether a user is authorized to see data that has column-level security enforced by setting masking policy conditions based on the context functions. The following context functions are relevant for column-level security:
current_role: This function returns the name of the role in use for the current session. It can be used to set masking policy conditions that target the current session and are not affected by the execution context of the SQL statement. For example, a masking policy condition using current_role can allow or deny access to a column based on the role that the user activated in the session.
invoker_role: This function returns the name of the executing role in a SQL statement. It can be used to set masking policy conditions that target the executing role and are affected by the execution context of the SQL statement. For example, a masking policy condition using invoker_role can allow or deny access to a column based on the role that the user specified in the SQL statement, such as using the AS ROLE clause or a stored procedure.
is_role_in_session: This function returns TRUE if the user's current role in the session (i.e. the role returned by current_role) inherits the privileges of the specified role. It can be used to set masking policy conditions that involve role hierarchy and privilege inheritance. For example, a masking policy condition using is_role_in_session can allow or deny access to a column based on whether the user's current role is a lower privilege role in the specified role hierarchy.
The other options are not valid ways to use the Snowflake context functions for column-level security:
Set masking policy conditions using is_role_in_session targeting the role in use for the current account. This option is incorrect because is_role_in_session does not target the role in use for the current account, but rather the role in use for the current session. Also, the current account is not a role, but rather a logical entity that contains users, roles, warehouses, databases, and other objects.
Determine if there are ownership privileges on the masking policy that would allow the use of any function. This option is incorrect because ownership privileges on the masking policy do not affect the use of any function, but rather the ability to create, alter, or drop the masking policy. Also, this is not a way to use the Snowflake context functions, but rather a way to check the privileges on the masking policy object.
Assign the accountadmin role to the user who is executing the object. This option is incorrect because assigning the accountadmin role to the user who is executing the object does not involve using the Snowflake context functions, but rather granting the highest-level role to the user. Also, this is not a recommended practice for column-level security, as it would give the user full access to all objects and data in the account, which could compromise data security and governance.
Context Functions
Advanced Column-level Security topics
Snowflake Data Governance: Column Level Security Overview
Data Security Snowflake Part 2 - Column Level Security

**QUESTION 67**
A retail company has over 3000 stores all using the same Point of Sale (POS) system. The company wants to deliver near real-time sales results to category managers. The stores operate in a variety of time zones and exhibit a dynamic range of transactions each minute, with some stores having higher sales volumes than others.
Sales results are provided in a uniform fashion using data engineered fields that will be calculated in a complex data pipeline. Calculations include exceptions, aggregations, and scoring using external functions interfaced to scoring algorithms. The source data for aggregations has over 100M rows.
Every minute, the POS sends all sales transactions files to a cloud storage location with a naming convention that includes store numbers and timestamps to identify the set of transactions contained in the files. The files are typically less than 10MB in size.
How can the near real-time results be provided to the category managers? (Select TWO).

A. All files should be concatenated before ingestion into Snowflake to avoid micro-ingestion.

B. A Snowpipe should be created and configured with AUTO_INGEST = true. A stream should be created to process INSERTS into a single target table using the stream metadata to inform the store number and timestamps.
C. A stream should be created to accumulate the near real-time data and a task should be created that runs at a frequency that matches the real-time analytics needs.
D. An external scheduler should examine the contents of the cloud storage location and issue SnowSQL commands to process the data at a frequency that matches the real-time analytics needs.
E. The copy into command with a task scheduled to run every second should be used to achieve the near-real time requirement.

**Correct Answer: B, C**
**Section:**
**Explanation:**
To provide near real-time sales results to category managers, the Architect can use the following steps:
Create an external stage that references the cloud storage location where the POS sends the sales transactions files.The external stage should use the file format and encryption settings that match the source files2
Create a Snowpipe that loads the files from the external stage into a target table in Snowflake. The Snowpipe should be configured with AUTO_INGEST = true, which means that it will automatically detect and ingest new files as they arrive in the external stage.The Snowpipe should also use a copy option to purge the files from the external stage after loading, to avoid duplicate ingestion3
Create a stream on the target table that captures the INSERTS made by the Snowpipe. The stream should include the metadata columns that provide information about the file name, path, size, and last modified time.The stream should also have a retention period that matches the real-time analytics needs4
Create a task that runs a query on the stream to process the near real-time data. The query should use the stream metadata to extract the store number and timestamps from the file name and path, and perform the calculations for exceptions, aggregations, and scoring using external functions. The query should also output the results to another table or view that can be accessed by the category managers. The task should be scheduled to run at a frequency that matches the real-time analytics needs, such as every minute or every 5 minutes.
The other options are not optimal or feasible for providing near real-time results:
All files should be concatenated before ingestion into Snowflake to avoid micro-ingestion. This option is not recommended because it would introduce additional latency and complexity in the data pipeline. Concatenating files would require an external process or service that monitors the cloud storage location and performs the file merging operation. This would delay the ingestion of new files into Snowflake and increase the risk of data loss or corruption. Moreover, concatenating files would not avoid micro-ingestion, as Snowpipe would still ingest each concatenated file as a separate load.
An external scheduler should examine the contents of the cloud storage location and issue SnowSQL commands to process the data at a frequency that matches the real-time analytics needs. This option is not necessary because Snowpipe can automatically ingest new files from the external stage without requiring an external trigger or scheduler. Using an external scheduler would add more overhead and dependency to the data pipeline, and it would not guarantee near real-time ingestion, as it would depend on the polling interval and the availability of the external scheduler.
The copy into command with a task scheduled to run every second should be used to achieve the near-real time requirement. This option is not feasible because tasks cannot be scheduled to run every second in Snowflake. The minimum interval for tasks is one minute, and even that is not guaranteed, as tasks are subject to scheduling delays and concurrency limits. Moreover, using the copy into command with a task would not leverage the benefits of Snowpipe, such as automatic file detection, load balancing, and micro-partition optimization.Reference:
1: SnowPro Advanced: Architect | Study Guide
2: Snowflake Documentation | Creating Stages
3: Snowflake Documentation | Loading Data Using Snowpipe
4: Snowflake Documentation | Using Streams and Tasks for ELT
: Snowflake Documentation | Creating Tasks
: Snowflake Documentation | Best Practices for Loading Data
: Snowflake Documentation | Using the Snowpipe REST API
: Snowflake Documentation | Scheduling Tasks
:SnowPro Advanced: Architect | Study Guide
:Creating Stages
:Loading Data Using Snowpipe
:Using Streams and Tasks for ELT
: [Creating Tasks]
: [Best Practices for Loading Data]
: [Using the Snowpipe REST API]
: [Scheduling Tasks]

**QUESTION 68**
A company needs to share its product catalog data with one of its partners. The product catalog data is stored in two database tables: product_category, and product_details. Both tables can be joined by the product_id column. Data access should be governed, and only the partner should have access to the records.
The partner is not a Snowflake customer. The partner uses Amazon S3 for cloud storage.
Which design will be the MOST cost-effective and secure, while using the required Snowflake features?

A. Use Secure Data Sharing with an S3 bucket as a destination.
B. Publish product_category and product_details data sets on the Snowflake Marketplace.
C. Create a database user for the partner and give them access to the required data sets.
D. Create a reader account for the partner and share the data sets as secure views.

**Correct Answer: D**
**Section:**
**Explanation:**
A reader account is a type of Snowflake account that allows external users to access data shared by a provider account without being a Snowflake customer. A reader account can be created and managed by the provider account, and can use the Snowflake web interface or JDBC/ODBC drivers to query the shared data.A reader account is billed to the provider account based on the credits consumed by the queries1. A secure view is a type of view that applies row-level security filters to the underlying tables, and masks the data that is not accessible to the user.A secure view can be shared with a reader account to provide granular and governed access to the data2. In this scenario, creating a reader account for the partner and sharing the data sets as secure views would be the most cost-effective and secure design, while using the required Snowflake features, because:
It would avoid the data transfer and storage costs of using an S3 bucket as a destination, and the potential security risks of exposing the data to unauthorized access or modification.
It would avoid the complexity and overhead of publishing the data sets on the Snowflake Marketplace, and the potential loss of control over the data ownership and pricing.
It would avoid the need to create a database user for the partner and grant them access to the required data sets, which would require the partner to have a Snowflake account and consume the provider's resources.
Reader Accounts
Secure Views

**QUESTION 69**
A company has a Snowflake environment running in AWS us-west-2 (Oregon). The company needs to share data privately with a customer who is running their Snowflake environment in Azure East US 2 (Virginia).
What is the recommended sequence of operations that must be followed to meet this requirement?

A. 1. Create a share and add the database privileges to the share 2. Create a new listing on the Snowflake Marketplace 3. Alter the listing and add the share 4. Instruct the customer to subscribe to the listing on the Snowflake Marketplace
B. 1. Ask the customer to create a new Snowflake account in Azure EAST US 2 (Virginia) 2. Create a share and add the database privileges to the share 3. Alter the share and add the customer's Snowflake account to the share
C. 1. Create a new Snowflake account in Azure East US 2 (Virginia) 2. Set up replication between AWS us-west-2 (Oregon) and Azure East US 2 (Virginia) for the database objects to be shared 3. Create a share and add the database privileges to the share 4. Alter the share and add the customer's Snowflake account to the share
D. 1. Create a reader account in Azure East US 2 (Virginia) 2. Create a share and add the database privileges to the share 3. Add the reader account to the share 4.

**Correct Answer: C**
**Section:**
**Explanation:**
Share the reader account's URL and credentials with the customer Option C is the correct answer because it allows the company to share data privately with the customer across different cloud platforms and regions. The company can create a new Snowflake account in Azure East US 2 (Virginia) and set up replication between AWS us-west-2 (Oregon) and Azure East US 2 (Virginia) for the database objects to be shared. This way, the company can ensure that the data is always up to date and consistent in both accounts. The company can then create a share and add the database privileges to the share, and alter the share and add the customer's Snowflake account to the share. The customer can then access the shared data from their own Snowflake account in Azure East US 2 (Virginia). Option A is incorrect because the Snowflake Marketplace is not a private way of sharing data. The Snowflake Marketplace is a public data exchange platform that allows anyone to browse and subscribe to data sets from various providers. The company would not be able to control who can access their data if they use the Snowflake Marketplace. Option B is incorrect because it requires the customer to create a new Snowflake account in Azure East US 2 (Virginia), which may not be feasible or desirable for the customer. The customer may already have an existing Snowflake account in a different cloud platform or region, and may not want to incur additional costs or complexity by creating a new account. Option D is incorrect because it involves creating a reader account in Azure East US 2 (Virginia), which is a limited and temporary way of sharing data. A reader account is a special type of Snowflake account that can only access data from a single share, and has a fixed duration of 30 days. The company would have to manage the reader account's URL and credentials, and renew the account every 30 days. The customer would not be able to use their own Snowflake account to access the shared data, and would have to rely on the company's reader account.

Snowflake Replication
Secure Data Sharing Overview
Snowflake Marketplace Overview
Reader Account Overview

**QUESTION 70**
Company A has recently acquired company B. The Snowflake deployment for company B is located in the Azure West Europe region.
As part of the integration process, an Architect has been asked to consolidate company B's sales data into company A's Snowflake account which is located in the AWS us-east-1 region.
How can this requirement be met?

A. Replicate the sales data from company B's Snowflake account into company A's Snowflake account using cross-region data replication within Snowflake. Configure a direct share from company B's account to company A's account.
B. Export the sales data from company B's Snowflake account as CSV files, and transfer the files to company A's Snowflake account. Import the data using Snowflake's data loading capabilities.
C. Migrate company B's Snowflake deployment to the same region as company A's Snowflake deployment, ensuring data locality. Then perform a direct database-to-database merge of the sales data.
D. Build a custom data pipeline using Azure Data Factory or a similar tool to extract the sales data from company B's Snowflake account. Transform the data, then load it into company A's Snowflake account.

**Correct Answer: A**
**Section:**
**Explanation:**
The best way to meet the requirement of consolidating company B's sales data into company A's Snowflake account is to use cross-region data replication within Snowflake. This feature allows data providers to securely share data with data consumers across different regions and cloud platforms. By replicating the sales data from company B's account in Azure West Europe region to company A's account in AWS us-east-1 region, the data will be synchronized and available for consumption. To enable data replication, the accounts must be linked and replication must be enabled by a user with the ORGADMIN role. Then, a replication group must be created and the sales database must be added to the group. Finally, a direct share must be configured from company B's account to company A's account to grant access to the replicated data. This option is more efficient and secure than exporting and importing data using CSV files or migrating the entire Snowflake deployment to another region or cloud platform. It also does not require building a custom data pipeline using external tools.
Sharing data securely across regions and cloud platforms
Introduction to replication and failover
Replication considerations
Replicating account objects

**QUESTION 71**
A Snowflake Architect created a new data share and would like to verify that only specific records in secure views are visible within the data share by the consumers.
What is the recommended way to validate data accessibility by the consumers?

A. Create reader accounts as shown below and impersonate the consumers by logging in with their credentials. create managed account reader_acctl admin_name = userl , adroin_password 'Sdfed43da!44T , type = reader;
B. Create a row access policy as shown below and assign it to the data share. create or replace row access policy rap_acct as (acct_id varchar) returns boolean -> case when 'acctl_role' = current_role() then true else false end;
C. Set the session parameter called SIMULATED_DATA_SHARING_C0NSUMER as shown below in order to impersonate the consumer accounts. alter session set simulated_data_sharing_consumer - 'Consumer Acctl*
D. Alter the share settings as shown below, in order to impersonate a specific consumer account. alter share sales share set accounts = 'Consumerl' share restrictions = true

**Correct Answer: C**
**Section:**
**Explanation:**
The SIMULATED_DATA_SHARING_CONSUMER session parameter allows a data provider to simulate the data access of a consumer account without creating a reader account or logging in with the consumer credentials. This parameter can be used to validate the data accessibility by the consumers in a data share, especially when using secure views or secure UDFs that filter data based on the current account or role. By setting this parameter to the name of a consumer account, the data provider can see the same data as the consumer would see when querying the shared database. This is a convenient and efficient way to test the data sharing functionality and ensure that only the intended data is visible to the consumers.
Using the SIMULATED_DATA_SHARING_CONSUMER Session Parameter
SnowPro Advanced: Architect Exam Study Guide

**QUESTION 72**
A company is using Snowflake in Azure in the Netherlands. The company analyst team also has data in JSON format that is stored in an Amazon S3 bucket in the AWS Singapore region that the team wants to analyze.
The Architect has been given the following requirements:
1. Provide access to frequently changing data
2. Keep egress costs to a minimum

3. Maintain low latency
How can these requirements be met with the LEAST amount of operational overhead?

A. Use a materialized view on top of an external table against the S3 bucket in AWS Singapore.
B. Use an external table against the S3 bucket in AWS Singapore and copy the data into transient tables.
C. Copy the data between providers from S3 to Azure Blob storage to collocate, then use Snowpipe for data ingestion.
D. Use AWS Transfer Family to replicate data between the S3 bucket in AWS Singapore and an Azure Netherlands Blob storage, then use an external table against the Blob storage.

**Correct Answer: B**
**Section:**
**Explanation:**
:Option A is the best design to meet the requirements because it uses a materialized view on top of an external table against the S3 bucket in AWS Singapore.A materialized view is a database object that contains the results of a query and can be refreshed periodically to reflect changes in the underlying data1.An external table is a table that references data files stored in a cloud storage service, such as Amazon S32. By using a materialized view on top of an external table, the company can provide access to frequently changing data, keep egress costs to a minimum, and maintain low latency. This is because the materialized view will cache the query results in Snowflake, reducing the need to access the external data files and incur network charges. The materialized view will also improve the query performance by avoiding scanning the external data files every time.The materialized view can be refreshed on a schedule or on demand to capture the changes in the external data files1.
Option B is not the best design because it uses an external table against the S3 bucket in AWS Singapore and copies the data into transient tables.A transient table is a table that is not subject to the Time Travel and Fail-safe features of Snowflake, and is automatically purged after a period of time3. By using an external table and copying the data into transient tables, the company will incur more egress costs and operational overhead than using a materialized view. This is because the external table will access the external data files every time a query is executed, and the copy operation will also transfer data from S3 to Snowflake. The transient tables will also consume more storage space in Snowflake and require manual maintenance to ensure they are up to date.
Option C is not the best design because it copies the data between providers from S3 to Azure Blob storage to collocate, then uses Snowpipe for data ingestion.Snowpipe is a service that automates the loading of data from external sources into Snowflake tables4. By copying the data between providers, the company will incur high egress costs and latency, as well as operational complexity and maintenance of the infrastructure. Snowpipe will also add another layer of processing and storage in Snowflake, which may not be necessary if the external data files are already in a queryable format.
Option D is not the best design because it uses AWS Transfer Family to replicate data between the S3 bucket in AWS Singapore and an Azure Netherlands Blob storage, then uses an external table against the Blob storage.AWS Transfer Family is a service that enables secure and seamless transfer of files over SFTP, FTPS, and FTP to and from Amazon S3 or Amazon EFS5. By using AWS Transfer Family, the company will incur high egress costs and latency, as well as operational complexity and maintenance of the infrastructure. The external table will also access the external data files every time a query is executed, which may affect the query performance.

**QUESTION 73**
A company has an external vendor who puts data into Google Cloud Storage. The company's Snowflake account is set up in Azure.
What would be the MOST efficient way to load data from the vendor into Snowflake?

A. Ask the vendor to create a Snowflake account, load the data into Snowflake and create a data share.
B. Create an external stage on Google Cloud Storage and use the external table to load the data into Snowflake.
C. Copy the data from Google Cloud Storage to Azure Blob storage using external tools and load data from Blob storage to Snowflake.
D. Create a Snowflake Account in the Google Cloud Platform (GCP), ingest data into this account and use data replication to move the data from GCP to Azure.

**Correct Answer: B**
**Section:**
**Explanation:**
The most efficient way to load data from the vendor into Snowflake is to create an external stage on Google Cloud Storage and use the external table to load the data into Snowflake (Option B). This way, you can avoid copying or moving the data across different cloud platforms, which can incur additional costs and latency. You can also leverage the external table feature to query the data directly from Google Cloud Storage without loading it into Snowflake tables, which can save storage space and improve performance. Option A is not efficient because it requires the vendor to create a Snowflake account and a data share, which can be complicated and costly. Option C is not efficient because it involves copying the data from Google Cloud Storage to Azure Blob storage using external tools, which can be slow and expensive. Option D is not efficient because it requires creating a Snowflake account in the Google Cloud Platform (GCP), ingesting data into this account, and using data replication to move the data from GCP to Azure, which can be complex and time-consuming.Reference: The answer can be verified from Snowflake's official documentation on external stages and external tables available on their website. Here are some relevant links:
Using External Stages | Snowflake Documentation
Using External Tables | Snowflake Documentation
Loading Data from a Stage | Snowflake Documentation

**QUESTION 74**
How can the Snowpipe REST API be used to keep a log of data load history?

A. Call insertReport every 20 minutes, fetching the last 10,000 entries.
B. Call loadHistoryScan every minute for the maximum time range.
C. Call insertReport every 8 minutes for a 10-minute time range.
D. Call loadHistoryScan every 10 minutes for a 15-minute time range.

**Correct Answer: D**
**Section:**
**Explanation:**
Snowpipe is a service that automates and optimizes the loading of data from external stages into Snowflake tables. Snowpipe uses a queue to ingest files as they become available in the stage.Snowpipe also provides REST endpoints to load data and retrieve load history reports1. The loadHistoryScan endpoint returns the history of files that have been ingested by Snowpipe within a specified time range.The endpoint accepts the following parameters2: pipe: The fully-qualified name of the pipe to query. startTimeInclusive: The start of the time range to query, in ISO 8601 format. The value must be within the past 14 days. endTimeExclusive: The end of the time range to query, in ISO 8601 format. The value must be later than the start time and within the past 14 days. recentFirst: A boolean flag that indicates whether to return the most recent files first or last. The default value is false, which means the oldest files are returned first. showSkippedFiles: A boolean flag that indicates whether to include files that were skipped by Snowpipe in the response. The default value is false, which means only files that were loaded are returned. The loadHistoryScan endpoint can be used to keep a log of data load history by calling it periodically with a suitable time range. The best option among the choices is D, which is to call loadHistoryScan every 10 minutes for a 15-minute time range. This option ensures that the endpoint is called frequently enough to capture the latest files that have been ingested, and that the time range is wide enough to avoid missing any files that may have been delayed or retried by Snowpipe.The other options are either too infrequent, too narrow, or use the wrong endpoint3.
1: Introduction to Snowpipe | Snowflake Documentation
2: loadHistoryScan | Snowflake Documentation
3: Monitoring Snowpipe Load History | Snowflake Documentation

**QUESTION 75**
Which Snowflake architecture recommendation needs multiple Snowflake accounts for implementation?

A. Enable a disaster recovery strategy across multiple cloud providers.
B. Create external stages pointing to cloud providers and regions other than the region hosting the Snowflake account.
C. Enable zero-copy cloning among the development, test, and production environments.
D. Enable separation of the development, test, and production environments.

**Correct Answer: D**
**Section:**
**Explanation:**
The Snowflake architecture recommendation that necessitates multiple Snowflake accounts for implementation is the separation of development, test, and production environments. This approach, known as Account per Tenant (APT), isolates tenants into separate Snowflake accounts, ensuring dedicated resources and security isolation12.
* Snowflake's white paper on ''Design Patterns for Building Multi-Tenant Applications on Snowflake'' discusses the APT model and its requirement for separate Snowflake accounts for each tenant1.
* Snowflake Documentation on Secure Data Sharing, which mentions the possibility of sharing data across multiple accounts3.

**QUESTION 76**
A company is designing its serving layer for data that is in cloud storage. Multiple terabytes of the data will be used for reporting. Some data does not have a clear use case but could be useful for experimental analysis. This experimentation data changes frequently and is sometimes wiped out and replaced completely in a few days.
The company wants to centralize access control, provide a single point of connection for the end-users, and maintain data governance.
What solution meets these requirements while MINIMIZING costs, administrative effort, and development overhead?

A. Import the data used for reporting into a Snowflake schema with native tables. Then create external tables pointing to the cloud storage folders used for the experimentation data. Then create two different roles with grants to the different datasets to match the different user personas, and grant these roles to the corresponding users.
B. Import all the data in cloud storage to be used for reporting into a Snowflake schema with native tables. Then create a role that has access to this schema and manage access to the data through that role.

C. Import all the data in cloud storage to be used for reporting into a Snowflake schema with native tables. Then create two different roles with grants to the different datasets to match the different user personas, and grant these roles to the corresponding users.
D. Import the data used for reporting into a Snowflake schema with native tables. Then create views that have SELECT commands pointing to the cloud storage files for the experimentation data. Then create two different roles to match the different user personas, and grant these roles to the corresponding users.

**Correct Answer: A**
**Section:**
**Explanation:**
The most cost-effective and administratively efficient solution is to use a combination of native and external tables. Native tables for reporting data ensure performance and governance, while external tables allow for flexibility with frequently changing experimental data. Creating roles with specific grants to datasets aligns with the principle of least privilege, centralizing access control and simplifying user management12.
* Snowflake Documentation on Optimizing Cost1.
* Snowflake Documentation on Controlling Cost2.

**QUESTION 77**
What is the MOST efficient way to design an environment where data retention is not considered critical, and customization needs are to be kept to a minimum?

A. Use a transient database.
B. Use a transient schema.
C. Use a transient table.
D. Use a temporary table.

**Correct Answer: A**
**Section:**

**QUESTION 78**
A company has built a data pipeline using Snowpipe to ingest files from an Amazon S3 bucket. Snowpipe is configured to load data into staging database tables. Then a task runs to load the data from the staging database tables into the reporting database tables.
The company is satisfied with the availability of the data in the reporting database tables, but the reporting tables are not pruning effectively. Currently, a size 4X-Large virtual warehouse is being used to query all of the tables in the reporting database.
What step can be taken to improve the pruning of the reporting tables?

A. Eliminate the use of Snowpipe and load the files into internal stages using PUT commands.
B. Increase the size of the virtual warehouse to a size 5X-Large.
C. Use an ORDER BY <cluster_key (s) > command to load the reporting tables.
D. Create larger files for Snowpipe to ingest and ensure the staging frequency does not exceed 1 minute.

**Correct Answer: C**
**Section:**
**Explanation:**
Effective pruning in Snowflake relies on the organization of data within micro-partitions. By using an ORDER BY clause with clustering keys when loading data into the reporting tables, Snowflake can better organize the data within micro-partitions. This organization allows Snowflake to skip over irrelevant micro-partitions during a query, thus improving query performance and reducing the amount of data scanned12.
* Snowflake Documentation on micro-partitions and data clustering2
* Community article on recognizing unsatisfactory pruning and improving it1

**QUESTION 79**
What is a characteristic of Role-Based Access Control (RBAC) as used in Snowflake?

A. Privileges can be granted at the database level and can be inherited by all underlying objects.
B. A user can use a 'super-user' access along with securityadmin to bypass authorization checks and access all databases, schemas, and underlying objects.
C. A user can create managed access schemas to support future grants and ensure only schema owners can grant privileges to other roles.
D. A user can create managed access schemas to support current and future grants and ensure only object owners can grant privileges to other roles.

**Correct Answer: A, C**
**Section:**
**Explanation:**
Role-Based Access Control (RBAC) is the Snowflake Access Control Framework that allows privileges to be granted by object owners to roles, and roles, in turn, can be assigned to users to restrict or allow actions to be performed on objects. A characteristic of RBAC as used in Snowflake is:
Privileges can be granted at the database level and can be inherited by all underlying objects. This means that a role that has a certain privilege on a database, such as CREATE SCHEMA or USAGE, can also perform the same action on any schema, table, view, or other object within that database, unless explicitly revoked. This simplifies the access control management and reduces the number of grants required.
A user can create managed access schemas to support future grants and ensure only schema owners can grant privileges to other roles. This means that a user can create a schema with the MANAGED ACCESS option, which changes the default behavior of object ownership and privilege granting within the schema. In a managed access schema, object owners lose the ability to grant privileges on their objects to other roles, and only the schema owner or a role with the MANAGE GRANTS privilege can do so. This enhances the security and governance of the schema and its objects.
The other options are not characteristics of RBAC as used in Snowflake:
A user can use a ''super-user'' access along with securityadmin to bypass authorization checks and access all databases, schemas, and underlying objects. This is not true, as there is no such thing as a ''super-user'' access in Snowflake. The securityadmin role is a predefined role that can manage users and roles, but it does not have any privileges on any database objects by default. To access any object, the securityadmin role must be explicitly granted the appropriate privilege by the object owner or another role with the grant option.
A user can create managed access schemas to support current and future grants and ensure only object owners can grant privileges to other roles. This is not true, as this contradicts the definition of a managed access schema. In a managed access schema, object owners cannot grant privileges on their objects to other roles, and only the schema owner or a role with the MANAGE GRANTS privilege can do so.
Overview of Access Control
A Functional Approach For Snowflake's Role-Based Access Controls
Snowflake Role-Based Access Control simplified
Snowflake RBAC security prefers role inheritance to role composition
Overview of Snowflake Role Based Access Control

**QUESTION 80**
Assuming all Snowflake accounts are using an Enterprise edition or higher, in which development and testing scenarios would be copying of data be required, and zero-copy cloning not be suitable? (Select TWO).

A. Developers create their own datasets to work against transformed versions of the live data.
B. Production and development run in different databases in the same account, and Developers need to see production-like data but with specific columns masked.
C. Data is in a production Snowflake account that needs to be provided to Developers in a separate development/testing Snowflake account in the same cloud region.
D. Developers create their own copies of a standard test database previously created for them in the development account, for their initial development and unit testing.
E. The release process requires pre-production testing of changes with data of production scale and complexity. For security reasons, pre-production also runs in the production account.

**Correct Answer: A, C**
**Section:**
**Explanation:**
Zero-copy cloning is a feature that allows creating a clone of a table, schema, or database without physically copying the data. Zero-copy cloning is suitable for scenarios where the cloned object needs to have the same data and metadata as the original object, and where the cloned object does not need to be modified or updated frequently.Zero-copy cloning is also suitable for scenarios where the cloned object needs to be shared within the same Snowflake account or across different accounts in the same cloud region2
However, zero-copy cloning is not suitable for scenarios where the cloned object needs to have different data or metadata than the original object, or where the cloned object needs to be modified or updated frequently. Zero-copy cloning is also not suitable for scenarios where the cloned object needs to be shared across different accounts in different cloud regions.In these scenarios, copying of data would be required, either by using the COPY INTO command or by using data sharing with secure views3
The following are examples of development and testing scenarios where copying of data would be required, and zero-copy cloning would not be suitable:
Developers create their own datasets to work against transformed versions of the live data. This scenario requires copying of data because the developers need to modify the data or metadata of the cloned object to perform transformations, such as adding, deleting, or updating columns, rows, or values.Zero-copy cloning would not be suitable because it would create a read-only clone that shares the same data and metadata as the original

object, and any changes made to the clone would affect the original object as well4
Data is in a production Snowflake account that needs to be provided to Developers in a separate development/testing Snowflake account in the same cloud region. This scenario requires copying of data because the data needs to be shared across different accounts in the same cloud region. Zero-copy cloning would not be suitable because it would create a clone within the same account as the original object, and it would not allow sharing the clone with another account.To share data across different accounts in the same cloud region, data sharing with secure views or COPY INTO command can be used5
The following are examples of development and testing scenarios where zero-copy cloning would be suitable, and copying of data would not be required:
Production and development run in different databases in the same account, and Developers need to see production-like data but with specific columns masked. This scenario can use zero-copy cloning because the data needs to be shared within the same account, and the cloned object does not need to have different data or metadata than the original object. Zero-copy cloning can create a clone of the production database in the development database, and the clone can have the same data and metadata as the original database.To mask specific columns, secure views can be created on top of the clone, and the developers can access the secure views instead of the clone directly6
Developers create their own copies of a standard test database previously created for them in the development account, for their initial development and unit testing. This scenario can use zero-copy cloning because the data needs to be shared within the same account, and the cloned object does not need to have different data or metadata than the original object. Zero-copy cloning can create a clone of the standard test database for each developer, and the clone can have the same data and metadata as the original database.The developers can use the clone for their initial development and unit testing, and any changes made to the clone would not affect the original database or other clones7
The release process requires pre-production testing of changes with data of production scale and complexity. For security reasons, pre-production also runs in the production account. This scenario can use zero-copy cloning because the data needs to be shared within the same account, and the cloned object does not need to have different data or metadata than the original object. Zero-copy cloning can create a clone of the production database in the pre-production database, and the clone can have the same data and metadata as the original database.The pre-production testing can use the clone to test the changes with data of production scale and complexity, and any changes made to the clone would not affect the original database or the production environment8Reference:
1: SnowPro Advanced: Architect | Study Guide9
2: Snowflake Documentation | Cloning Overview
3: Snowflake Documentation | Loading Data Using COPY into a Table
4: Snowflake Documentation | Transforming Data During a Load
5: Snowflake Documentation | Data Sharing Overview
6: Snowflake Documentation | Secure Views
7: Snowflake Documentation | Cloning Databases, Schemas, and Tables
8: Snowflake Documentation | Cloning for Testing and Development
:SnowPro Advanced: Architect | Study Guide
:Cloning Overview
:Loading Data Using COPY into a Table
:Transforming Data During a Load
:Data Sharing Overview
:Secure Views
:Cloning Databases, Schemas, and Tables
:Cloning for Testing and Development

**QUESTION 81**
Is it possible for a data provider account with a Snowflake Business Critical edition to share data with an Enterprise edition data consumer account?

A. A Business Critical account cannot be a data sharing provider to an Enterprise consumer. Any consumer accounts must also be Business Critical.
B. If a user in the provider account with role authority to create or alter share adds an Enterprise account as a consumer, it can import the share.
C. If a user in the provider account with a share owning role sets share_restrictions to False when adding an Enterprise consumer account, it can import the share.
D. If a user in the provider account with a share owning role which also has override share restrictions privilege share_restrictions set to False when adding an Enterprise consumer account, it can import the share.

**Correct Answer: D**
**Section:**
**Explanation:**
Data sharing is a feature that allows Snowflake accounts to share data with each other without the need for data movement or copying1.Data sharing is enabled by creating shares, which are collections of database objects (tables, views, secure views, and secure UDFs) that can be accessed by other accounts, called consumers2.
By default, Snowflake does not allow sharing data from a Business Critical edition account to a non-Business Critical edition account.This is because Business Critical edition offers higher levels of data protection and encryption than other editions, and sharing data with lower editions may compromise the security and compliance of the data3.

However, Snowflake provides the OVERRIDE SHARE RESTRICTIONS global privilege, which allows a user to override the default restriction and share data from a Business Critical edition account to a non-Business Critical edition account.This privilege is granted to the ACCOUNTADMIN role by default, and can be granted to other roles as well4.
To enable data sharing from a Business Critical edition account to an Enterprise edition account, the following steps are required34:
A user in the provider account with the OVERRIDE SHARE RESTRICTIONS privilege must create or alter a share and add the Enterprise edition account as a consumer. The user must also set the share_restrictions parameter to False when adding the consumer. This parameter indicates whether the share is restricted to Business Critical edition accounts only. Setting it to False allows the share to be imported by lower edition accounts.
A user in the consumer account with the IMPORT SHARE privilege must import the share and grant access to the share objects to other roles in the account. The user must also set the share_restrictions parameter to False when importing the share. This parameter indicates whether the consumer account accepts shares from Business Critical edition accounts only. Setting it to False allows the consumer account to import shares from lower edition accounts.
1: Introduction to Secure Data Sharing | Snowflake Documentation
2: Creating Secure Data Shares | Snowflake Documentation
3: Enable Data Share:Business Critical Account to Lower Edition | Medium
4: Enabling sharing from a Business critical account to a non-business ... | Snowflake Documentation

**QUESTION 82**
An Architect is using SnowCD to investigate a connectivity issue.
Which system function will provide a list of endpoints that the network must be able to access to use a specific Snowflake account, leveraging private connectivity?

A. SYSTEMSALLOWLIST ()
B. SYSTEMSGET_PRIVATELINK
C. SYSTEMSAUTHORIZE_PRIVATELINK
D. SYSTEMSALLOWLIST_PRIVATELINK ()

**Correct Answer: D**
**Section:**

**QUESTION 83**
An Architect with the ORGADMIN role wants to change a Snowflake account from an Enterprise edition to a Business Critical edition.
How should this be accomplished?

A. Run an ALTER ACCOUNT command and create a tag of EDITION and set the tag to Business Critical.
B. Use the account's ACCOUNTADMIN role to change the edition.
C. Failover to a new account in the same region and specify the new account's edition upon creation.
D. Contact Snowflake Support and request that the account's edition be changed.

**Correct Answer: D**
**Section:**
**Explanation:**
To change the edition of a Snowflake account, an organization administrator (ORGADMIN) cannot directly alter the account settings through SQL commands or the Snowflake interface. The proper procedure is to contact Snowflake Support to request an edition change for the account. This ensures that the change is managed correctly and aligns with Snowflake's operational protocols.