



Google

Exam Questions Professional-Data-Engineer

Google Professional Data Engineer Exam

NEW QUESTION 1

- (Exam Topic 1)

Your startup has never implemented a formal security policy. Currently, everyone in the company has access to the datasets stored in Google BigQuery. Teams have freedom to use the service as they see fit, and they have not documented their use cases. You have been asked to secure the data warehouse. You need to discover what everyone is doing. What should you do first?

- A. Use Google Stackdriver Audit Logs to review data access.
- B. Get the identity and access management (IAM) policy of each table
- C. Use Stackdriver Monitoring to see the usage of BigQuery query slots.
- D. Use the Google Cloud Billing API to see what account the warehouse is being billed to.

Answer: C

NEW QUESTION 2

- (Exam Topic 1)

You are designing a basket abandonment system for an ecommerce company. The system will send a message to a user based on these rules:

- No interaction by the user on the site for 1 hour
- Has added more than \$30 worth of products to the basket
- Has not completed a transaction

You use Google Cloud Dataflow to process the data and decide if a message should be sent. How should you design the pipeline?

- A. Use a fixed-time window with a duration of 60 minutes.
- B. Use a sliding time window with a duration of 60 minutes.
- C. Use a session window with a gap time duration of 60 minutes.
- D. Use a global window with a time based trigger with a delay of 60 minutes.

Answer: D

NEW QUESTION 3

- (Exam Topic 1)

You have spent a few days loading data from comma-separated values (CSV) files into the Google BigQuery table CLICK_STREAM. The column DT stores the epoch time of click events. For convenience, you chose a simple schema where every field is treated as the STRING type. Now, you want to compute web session durations of users who visit your site, and you want to change its data type to the TIMESTAMP. You want to minimize the migration effort without making future queries computationally expensive. What should you do?

- A. Delete the table CLICK_STREAM, and then re-create it such that the column DT is of the TIMESTAMP type
- B. Reload the data.
- C. Add a column TS of the TIMESTAMP type to the table CLICK_STREAM, and populate the numeric values from the column TS for each row
- D. Reference the column TS instead of the column DT from now on.
- E. Create a view CLICK_STREAM_V, where strings from the column DT are cast into TIMESTAMP values
- F. Reference the view CLICK_STREAM_V instead of the table CLICK_STREAM from now on.
- G. Add two columns to the table CLICK_STREAM: TS of the TIMESTAMP type and IS_NEW of the BOOLEAN type
- H. Reload all data in append mode
- I. For each appended row, set the value of IS_NEW to true
- J. For future queries, reference the column TS instead of the column DT, with the WHERE clause ensuring that the value of IS_NEW must be true.
- K. Construct a query to return every row of the table CLICK_STREAM, while using the built-in function to cast strings from the column DT into TIMESTAMP values
- L. Run the query into a destination table NEW_CLICK_STREAM, in which the column TS is the TIMESTAMP type
- M. Reference the table NEW_CLICK_STREAM instead of the table CLICK_STREAM from now on
- N. In the future, new data is loaded into the table NEW_CLICK_STREAM.

Answer: D

NEW QUESTION 4

- (Exam Topic 1)

Your software uses a simple JSON format for all messages. These messages are published to Google Cloud Pub/Sub, then processed with Google Cloud Dataflow to create a real-time dashboard for the CFO. During testing, you notice that some messages are missing in the dashboard. You check the logs, and all messages are being published to Cloud Pub/Sub successfully. What should you do next?

- A. Check the dashboard application to see if it is not displaying correctly.
- B. Run a fixed dataset through the Cloud Dataflow pipeline and analyze the output.
- C. Use Google Stackdriver Monitoring on Cloud Pub/Sub to find the missing messages.
- D. Switch Cloud Dataflow to pull messages from Cloud Pub/Sub instead of Cloud Pub/Sub pushing messages to Cloud Dataflow.

Answer: B

NEW QUESTION 5

- (Exam Topic 1)

You want to process payment transactions in a point-of-sale application that will run on Google Cloud Platform. Your user base could grow exponentially, but you do not want to manage infrastructure scaling.

Which Google database service should you use?

- A. Cloud SQL
- B. BigQuery
- C. Cloud Bigtable
- D. Cloud Datastore

Answer: A

NEW QUESTION 6

- (Exam Topic 1)

You work for a car manufacturer and have set up a data pipeline using Google Cloud Pub/Sub to capture anomalous sensor events. You are using a push subscription in Cloud Pub/Sub that calls a custom HTTPS endpoint that you have created to take action of these anomalous events as they occur. Your custom HTTPS endpoint keeps getting an inordinate amount of duplicate messages. What is the most likely cause of these duplicate messages?

- A. The message body for the sensor event is too large.
- B. Your custom endpoint has an out-of-date SSL certificate.
- C. The Cloud Pub/Sub topic has too many messages published to it.
- D. Your custom endpoint is not acknowledging messages within the acknowledgement deadline.

Answer: B

NEW QUESTION 7

- (Exam Topic 1)

Your company is in a highly regulated industry. One of your requirements is to ensure individual users have access only to the minimum amount of information required to do their jobs. You want to enforce this requirement with Google BigQuery. Which three approaches can you take? (Choose three.)

- A. Disable writes to certain tables.
- B. Restrict access to tables by role.
- C. Ensure that the data is encrypted at all times.
- D. Restrict BigQuery API access to approved users.
- E. Segregate data across multiple tables or databases.
- F. Use Google Stackdriver Audit Logging to determine policy violations.

Answer: BDF

NEW QUESTION 8

- (Exam Topic 1)

Your company has hired a new data scientist who wants to perform complicated analyses across very large datasets stored in Google Cloud Storage and in a Cassandra cluster on Google Compute Engine. The scientist primarily wants to create labelled data sets for machine learning projects, along with some visualization tasks. She reports that her laptop is not powerful enough to perform her tasks and it is slowing her down. You want to help her perform her tasks. What should you do?

- A. Run a local version of Jupiter on the laptop.
- B. Grant the user access to Google Cloud Shell.
- C. Host a visualization tool on a VM on Google Compute Engine.
- D. Deploy Google Cloud Datalab to a virtual machine (VM) on Google Compute Engine.

Answer: B

NEW QUESTION 9

- (Exam Topic 1)

Your company built a TensorFlow neural-network model with a large number of neurons and layers. The model fits well for the training data. However, when tested against new data, it performs poorly. What method can you employ to address this?

- A. Threading
- B. Serialization
- C. Dropout Methods
- D. Dimensionality Reduction

Answer: C

Explanation:

Reference

<https://medium.com/mlreview/a-simple-deep-learning-model-for-stock-price-prediction-using-tensorflow-30505>

NEW QUESTION 10

- (Exam Topic 1)

You designed a database for patient records as a pilot project to cover a few hundred patients in three clinics. Your design used a single database table to represent all patients and their visits, and you used self-joins to generate reports. The server resource utilization was at 50%. Since then, the scope of the project has expanded. The database must now store 100 times more patient records. You can no longer run the reports, because they either take too long or they encounter errors with insufficient compute resources. How should you adjust the database design?

- A. Add capacity (memory and disk space) to the database server by the order of 200.
- B. Shard the tables into smaller ones based on date ranges, and only generate reports with prespecified date ranges.
- C. Normalize the master patient-record table into the patient table and the visits table, and create other necessary tables to avoid self-join.
- D. Partition the table into smaller tables, with one for each clinic.
- E. Run queries against the smaller table pairs, and use unions for consolidated reports.

Answer: B

NEW QUESTION 10

- (Exam Topic 1)

You have Google Cloud Dataflow streaming pipeline running with a Google Cloud Pub/Sub subscription as the source. You need to make an update to the code

that will make the new Cloud Dataflow pipeline incompatible with the current version. You do not want to lose any data when making this update. What should you do?

- A. Update the current pipeline and use the drain flag.
- B. Update the current pipeline and provide the transform mapping JSON object.
- C. Create a new pipeline that has the same Cloud Pub/Sub subscription and cancel the old pipeline.
- D. Create a new pipeline that has a new Cloud Pub/Sub subscription and cancel the old pipeline.

Answer: D

NEW QUESTION 14

- (Exam Topic 1)

Your company is performing data preprocessing for a learning algorithm in Google Cloud Dataflow. Numerous data logs are being generated during this step, and the team wants to analyze them. Due to the dynamic nature of the campaign, the data is growing exponentially every hour.

The data scientists have written the following code to read the data for a new key features in the logs. `BigQueryIO.Read`
`.named("ReadLogData")`

`.from("clouddataflow-readonly:samples.log_data")`

You want to improve the performance of this data read. What should you do?

- A. Specify the `TableReference` object in the code.
- B. Use `.fromQuery` operation to read specific fields from the table.
- C. Use of both the Google BigQuery `TableSchema` and `TableFieldSchema` classes.
- D. Call a transform that returns `TableRow` objects, where each element in the `PCollection` represents a single row in the table.

Answer: D

NEW QUESTION 19

- (Exam Topic 1)

Your company is running their first dynamic campaign, serving different offers by analyzing real-time data during the holiday season. The data scientists are collecting terabytes of data that rapidly grows every hour during their 30-day campaign. They are using Google Cloud Dataflow to preprocess the data and collect the feature (signals) data that is needed for the machine learning model in Google Cloud Bigtable. The team is observing suboptimal performance with reads and writes of their initial load of 10 TB of data. They want to improve this performance while minimizing cost. What should they do?

- A. Redefine the schema by evenly distributing reads and writes across the row space of the table.
- B. The performance issue should be resolved over time as the size of the Bigtable cluster is increased.
- C. Redesign the schema to use a single row key to identify values that need to be updated frequently in the cluster.
- D. Redesign the schema to use row keys based on numeric IDs that increase sequentially per user viewing the offers.

Answer: A

NEW QUESTION 23

- (Exam Topic 1)

Your company's on-premises Apache Hadoop servers are approaching end-of-life, and IT has decided to migrate the cluster to Google Cloud Dataproc. A like-for-like migration of the cluster would require 50 TB of Google Persistent Disk per node. The CIO is concerned about the cost of using that much block storage. You want to minimize the storage cost of the migration. What should you do?

- A. Put the data into Google Cloud Storage.
- B. Use preemptible virtual machines (VMs) for the Cloud Dataproc cluster.
- C. Tune the Cloud Dataproc cluster so that there is just enough disk for all data.
- D. Migrate some of the cold data into Google Cloud Storage, and keep only the hot data in Persistent Disk.

Answer: B

NEW QUESTION 26

- (Exam Topic 1)

An external customer provides you with a daily dump of data from their database. The data flows into Google Cloud Storage GCS as comma-separated values (CSV) files. You want to analyze this data in Google BigQuery, but the data could have rows that are formatted incorrectly or corrupted. How should you build this pipeline?

- A. Use federated data sources, and check data in the SQL query.
- B. Enable BigQuery monitoring in Google Stackdriver and create an alert.
- C. Import the data into BigQuery using the `gcloud` CLI and set `max_bad_records` to 0.
- D. Run a Google Cloud Dataflow batch pipeline to import the data into BigQuery, and push errors to another dead-letter table for analysis.

Answer: D

NEW QUESTION 29

- (Exam Topic 1)

You are building a model to predict whether or not it will rain on a given day. You have thousands of input features and want to see if you can improve training speed by removing some features while having a minimum effect on model accuracy. What can you do?

- A. Eliminate features that are highly correlated to the output labels.
- B. Combine highly co-dependent features into one representative feature.
- C. Instead of feeding in each feature individually, average their values in batches of 3.
- D. Remove the features that have null values for more than 50% of the training records.

Answer: B

NEW QUESTION 33

- (Exam Topic 1)

Your company is using WHILECARD tables to query data across multiple tables with similar names. The SQL statement is currently failing with the following error:

```
# Syntax error : Expected end of statement but got "-" at [4:11] SELECT age
FROM
bigquery-public-data.noaa_gsod.gsod WHERE
age != 99
AND_TABLE_SUFFIX = '1929' ORDER BY
age DESC
```

Which table name will make the SQL statement work correctly?

- A. 'bigquery-public-data.noaa_gsod.gsod'
- B. bigquery-public-data.noaa_gsod.gsod*
- C. 'bigquery-public-data.noaa_gsod.gsod'*
- D. 'bigquery-public-data.noaa_gsod.gsod'^

Answer: D

NEW QUESTION 36

- (Exam Topic 2)

Flowlogistic's CEO wants to gain rapid insight into their customer base so his sales team can be better informed in the field. This team is not very technical, so they've purchased a visualization tool to simplify the creation of BigQuery reports. However, they've been overwhelmed by all the data in the table, and are spending a lot of money on queries trying to find the data they need. You want to solve their problem in the most cost-effective way. What should you do?

- A. Export the data into a Google Sheet for virtualization.
- B. Create an additional table with only the necessary columns.
- C. Create a view on the table to present to the virtualization tool.
- D. Create identity and access management (IAM) roles on the appropriate columns, so only they appear in a query.

Answer: C

NEW QUESTION 37

- (Exam Topic 2)

Flowlogistic's management has determined that the current Apache Kafka servers cannot handle the data volume for their real-time inventory tracking system. You need to build a new system on Google Cloud Platform (GCP) that will feed the proprietary tracking software. The system must be able to ingest data from a variety of global sources, process and query in real-time, and store the data reliably. Which combination of GCP products should you choose?

- A. Cloud Pub/Sub, Cloud Dataflow, and Cloud Storage
- B. Cloud Pub/Sub, Cloud Dataflow, and Local SSD
- C. Cloud Pub/Sub, Cloud SQL, and Cloud Storage
- D. Cloud Load Balancing, Cloud Dataflow, and Cloud Storage

Answer: C

NEW QUESTION 39

- (Exam Topic 2)

Flowlogistic wants to use Google BigQuery as their primary analysis system, but they still have Apache Hadoop and Spark workloads that they cannot move to BigQuery. Flowlogistic does not know how to store the data that is common to both workloads. What should they do?

- A. Store the common data in BigQuery as partitioned tables.
- B. Store the common data in BigQuery and expose authorized views.
- C. Store the common data encoded as Avro in Google Cloud Storage.
- D. Store the common data in the HDFS storage for a Google Cloud Dataproc cluster.

Answer: B

NEW QUESTION 41

- (Exam Topic 3)

MJTelco's Google Cloud Dataflow pipeline is now ready to start receiving data from the 50,000 installations. You want to allow Cloud Dataflow to scale its compute power up as required. Which Cloud Dataflow pipeline configuration setting should you update?

- A. The zone
- B. The number of workers
- C. The disk size per worker
- D. The maximum number of workers

Answer: A

NEW QUESTION 45

- (Exam Topic 3)

You need to compose visualization for operations teams with the following requirements:

- Telemetry must include data from all 50,000 installations for the most recent 6 weeks (sampling once every minute)
- The report must not be more than 3 hours delayed from live data.
- The actionable report should only show suboptimal links.
- Most suboptimal links should be sorted to the top.
- Suboptimal links can be grouped and filtered by regional geography.

🔵 User response time to load the report must be <5 seconds.

You create a data source to store the last 6 weeks of data, and create visualizations that allow viewers to see multiple date ranges, distinct geographic regions, and unique installation types. You always show the latest data without any changes to your visualizations. You want to avoid creating and updating new visualizations each month. What should you do?

- A. Look through the current data and compose a series of charts and tables, one for each possible combination of criteria.
- B. Look through the current data and compose a small set of generalized charts and tables bound to criteria filters that allow value selection.
- C. Export the data to a spreadsheet, compose a series of charts and tables, one for each possible combination of criteria, and spread them across multiple tabs.
- D. Load the data into relational database tables, write a Google App Engine application that queries all rows, summarizes the data across each criteria, and then renders results using the Google Charts and visualization API.

Answer: B

NEW QUESTION 48

- (Exam Topic 3)

You create a new report for your large team in Google Data Studio 360. The report uses Google BigQuery as its data source. It is company policy to ensure employees can view only the data associated with their region, so you create and populate a table for each region. You need to enforce the regional access policy to the data.

Which two actions should you take? (Choose two.)

- A. Ensure all the tables are included in global dataset.
- B. Ensure each table is included in a dataset for a region.
- C. Adjust the settings for each table to allow a related region-based security group view access.
- D. Adjust the settings for each view to allow a related region-based security group view access.
- E. Adjust the settings for each dataset to allow a related region-based security group view access.

Answer: BD

NEW QUESTION 52

- (Exam Topic 4)

You are choosing a NoSQL database to handle telemetry data submitted from millions of Internet-of-Things (IoT) devices. The volume of data is growing at 100 TB per year, and each data entry has about 100 attributes. The data processing pipeline does not require atomicity, consistency, isolation, and durability (ACID). However, high availability and low latency are required.

You need to analyze the data by querying against individual fields. Which three databases meet your requirements? (Choose three.)

- A. Redis
- B. HBase
- C. MySQL
- D. MongoDB
- E. Cassandra
- F. HDFS with Hive

Answer: BDF

NEW QUESTION 57

- (Exam Topic 4)

Your company is loading comma-separated values (CSV) files into Google BigQuery. The data is fully imported successfully; however, the imported data is not matching byte-to-byte to the source file. What is the most likely cause of this problem?

- A. The CSV data loaded in BigQuery is not flagged as CSV.
- B. The CSV data has invalid rows that were skipped on import.
- C. The CSV data loaded in BigQuery is not using BigQuery's default encoding.
- D. The CSV data has not gone through an ETL phase before loading into BigQuery.

Answer: B

NEW QUESTION 62

- (Exam Topic 4)

You are deploying a new storage system for your mobile application, which is a media streaming service. You decide the best fit is Google Cloud Datastore. You have entities with multiple properties, some of which can take on multiple values. For example, in the entity 'Movie' the property 'actors' and the property 'tags' have multiple values but the property 'date released' does not. A typical query would ask for all movies with actor=<actorname> ordered by date_released or all movies with tag=Comedy ordered by date_released. How should you avoid a combinatorial explosion in the number of indexes?

A. Manually configure the index in your index config as follows:

Indexes:

```
-kind: Movie
  Properties:
    -name: actors
    name: date_released
-kind: Movie
  Properties:
    -name: tags
    name: date_released
```

B. Manually configure the index in your index config as follows:

Indexes:

```
-kind: Movie
  Properties:
    -name: actors
    -name: tags
-name: date_published
```

C. Set the following in your entity options: `exclude_from_indexes = 'actors, tags'`

D. Set the following in your entity options: `exclude_from_indexes = 'date_published'`

- A. Option A
- B. Option B.
- C. Option C
- D. Option D

Answer: A

NEW QUESTION 66

- (Exam Topic 5)

What is the HBase Shell for Cloud Bigtable?

- A. The HBase shell is a GUI based interface that performs administrative tasks, such as creating and deleting tables.
- B. The HBase shell is a command-line tool that performs administrative tasks, such as creating and deleting tables.
- C. The HBase shell is a hypervisor based shell that performs administrative tasks, such as creating and deleting new virtualized instances.
- D. The HBase shell is a command-line tool that performs only user account management functions to grant access to Cloud Bigtable instances.

Answer: B

Explanation:

The HBase shell is a command-line tool that performs administrative tasks, such as creating and deleting tables. The Cloud Bigtable HBase client for Java makes it possible to use the HBase shell to connect to Cloud Bigtable.

Reference: <https://cloud.google.com/bigtable/docs/installing-hbase-shell>

NEW QUESTION 68

- (Exam Topic 5)

When you design a Google Cloud Bigtable schema it is recommended that you .

- A. Avoid schema designs that are based on NoSQL concepts
- B. Create schema designs that are based on a relational database design
- C. Avoid schema designs that require atomicity across rows
- D. Create schema designs that require atomicity across rows

Answer: C

Explanation:

All operations are atomic at the row level. For example, if you update two rows in a table, it's possible that one row will be updated successfully and the other update will fail. Avoid schema designs that require atomicity across rows.

Reference: <https://cloud.google.com/bigtable/docs/schema-design#row-keys>

NEW QUESTION 70

- (Exam Topic 5)

Why do you need to split a machine learning dataset into training data and test data?

- A. So you can try two different sets of features
- B. To make sure your model is generalized for more than just the training data
- C. To allow you to create unit tests in your code
- D. So you can use one dataset for a wide model and one for a deep model

Answer: B

Explanation:

The flaw with evaluating a predictive model on training data is that it does not inform you on how well the model has generalized to new unseen data. A model that is selected for its accuracy on the training dataset rather than its accuracy on an unseen test dataset is very likely to have lower accuracy on an unseen test dataset. The reason is that the model is not as generalized. It has specialized to the structure in the training dataset. This is called overfitting. Reference: <https://machinelearningmastery.com/a-simple-intuition-for-overfitting/>

NEW QUESTION 75

- (Exam Topic 5)

When running a pipeline that has a BigQuery source, on your local machine, you continue to get permission denied errors. What could be the reason for that?

- A. Your gcloud does not have access to the BigQuery resources
- B. BigQuery cannot be accessed from local machines
- C. You are missing gcloud on your machine
- D. Pipelines cannot be run locally

Answer: A

Explanation:

When reading from a Dataflow source or writing to a Dataflow sink using DirectPipelineRunner, the Cloud Platform account that you configured with the gcloud executable will need access to the corresponding source/sink

Reference:

<https://cloud.google.com/dataflow/java-sdk/JavaDoc/com/google/cloud/dataflow/sdk/runners/DirectPipelineRun>

NEW QUESTION 79

- (Exam Topic 5)

Does Dataflow process batch data pipelines or streaming data pipelines?

- A. Only Batch Data Pipelines
- B. Both Batch and Streaming Data Pipelines
- C. Only Streaming Data Pipelines
- D. None of the above

Answer: B

Explanation:

Dataflow is a unified processing model, and can execute both streaming and batch data pipelines Reference: <https://cloud.google.com/dataflow/>

NEW QUESTION 80

- (Exam Topic 5)

Which Google Cloud Platform service is an alternative to Hadoop with Hive?

- A. Cloud Dataflow
- B. Cloud Bigtable
- C. BigQuery
- D. Cloud Datastore

Answer: C

Explanation:

Apache Hive is a data warehouse software project built on top of Apache Hadoop for providing data summarization, query, and analysis. Google BigQuery is an enterprise data warehouse. Reference: https://en.wikipedia.org/wiki/Apache_Hive

NEW QUESTION 81

- (Exam Topic 5)

Which of these statements about exporting data from BigQuery is false?

- A. To export more than 1 GB of data, you need to put a wildcard in the destination filename.
- B. The only supported export destination is Google Cloud Storage.
- C. Data can only be exported in JSON or Avro format.
- D. The only compression option available is GZIP.

Answer: C

Explanation:

Data can be exported in CSV, JSON, or Avro format. If you are exporting nested or repeated data, then CSV format is not supported.

Reference: <https://cloud.google.com/bigquery/docs/exporting-data>

NEW QUESTION 86

- (Exam Topic 5)

How can you get a neural network to learn about relationships between categories in a categorical feature?

- A. Create a multi-hot column
- B. Create a one-hot column
- C. Create a hash bucket
- D. Create an embedding column

Answer: D

Explanation:

There are two problems with one-hot encoding. First, it has high dimensionality, meaning that instead of having just one value, like a continuous feature, it has many values, or dimensions. This makes computation more time-consuming, especially if a feature has a very large number of categories. The second problem is that it doesn't encode any relationships between the categories. They are completely independent from each other, so the network has no way of knowing which ones are similar to each other.

Both of these problems can be solved by representing a categorical feature with an embedding

column. The idea is that each category has a smaller vector with, let's say, 5 values in it. But unlike a one-hot vector, the values are not usually 0. The values are weights, similar to the weights that are used for basic features in a neural network. The difference is that each category has a set of weights (5 of them in this case).

You can think of each value in the embedding vector as a feature of the category. So, if two categories are very similar to each other, then their embedding vectors should be very similar too.

Reference:

<https://cloudacademy.com/google/introduction-to-google-cloud-machine-learning-engine-course/a-wide-and-dee>

NEW QUESTION 91

- (Exam Topic 5)

Which role must be assigned to a service account used by the virtual machines in a Dataproc cluster so they can execute jobs?

- A. Dataproc Worker
- B. Dataproc Viewer
- C. Dataproc Runner
- D. Dataproc Editor

Answer: A

Explanation:

Service accounts used with Cloud Dataproc must have Dataproc/Dataproc Worker role (or have all the permissions granted by Dataproc Worker role).

Reference: https://cloud.google.com/dataproc/docs/concepts/service-accounts#important_notes

NEW QUESTION 96

- (Exam Topic 5)

What are two of the benefits of using denormalized data structures in BigQuery?

- A. Reduces the amount of data processed, reduces the amount of storage required
- B. Increases query speed, makes queries simpler
- C. Reduces the amount of storage required, increases query speed
- D. Reduces the amount of data processed, increases query speed

Answer: B

Explanation:

Denormalization increases query speed for tables with billions of rows because BigQuery's performance degrades when doing JOINS on large tables, but with a denormalized data

structure, you don't have to use JOINS, since all of the data has been combined into one table. Denormalization also makes queries simpler because you do not have to use JOIN clauses.

Denormalization increases the amount of data processed and the amount of storage required because it creates redundant data.

Reference:

https://cloud.google.com/solutions/bigquery-data-warehouse#denormalizing_data

NEW QUESTION 98

- (Exam Topic 5)

Google Cloud Bigtable indexes a single value in each row. This value is called the .

- A. primary key
- B. unique key
- C. row key
- D. master key

Answer: C

Explanation:

Cloud Bigtable is a sparsely populated table that can scale to billions of rows and thousands of columns, allowing you to store terabytes or even petabytes of data.

A single value in each row is indexed; this value is known as the row key.

Reference: <https://cloud.google.com/bigtable/docs/overview>

NEW QUESTION 99

- (Exam Topic 5)

Which row keys are likely to cause a disproportionate number of reads and/or writes on a particular node in a Bigtable cluster (select 2 answers)?

- A. A sequential numeric ID
- B. A timestamp followed by a stock symbol
- C. A non-sequential numeric ID

D. A stock symbol followed by a timestamp

Answer: AB

Explanation:

using a timestamp as the first element of a row key can cause a variety of problems.

In brief, when a row key for a time series includes a timestamp, all of your writes will target a single node; fill that node; and then move onto the next node in the cluster, resulting in hotspotting.

Suppose your system assigns a numeric ID to each of your application's users. You might be tempted to use the user's numeric ID as the row key for your table. However, since new users are more likely to be active users, this approach is likely to push most of your traffic to a small number of nodes.

[<https://cloud.google.com/bigtable/docs/schema-design>]

Reference:

https://cloud.google.com/bigtable/docs/schema-design-time-series#ensure_that_your_row_key_avoids_hotspotti

NEW QUESTION 101

- (Exam Topic 5)

Which of these statements about BigQuery caching is true?

- A. By default, a query's results are not cached.
- B. BigQuery caches query results for 48 hours.
- C. Query results are cached even if you specify a destination table.
- D. There is no charge for a query that retrieves its results from cache.

Answer: D

Explanation:

When query results are retrieved from a cached results table, you are not charged for the query. BigQuery caches query results for 24 hours, not 48 hours.

Query results are not cached if you specify a destination table.

A query's results are always cached except under certain conditions, such as if you specify a destination table. Reference:

<https://cloud.google.com/bigquery/querying-data#query-caching>

NEW QUESTION 102

- (Exam Topic 5)

Which is not a valid reason for poor Cloud Bigtable performance?

- A. The workload isn't appropriate for Cloud Bigtable.
- B. The table's schema is not designed correctly.
- C. The Cloud Bigtable cluster has too many nodes.
- D. There are issues with the network connection.

Answer: C

Explanation:

The Cloud Bigtable cluster doesn't have enough nodes. If your Cloud Bigtable cluster is overloaded, adding more nodes can improve performance. Use the monitoring tools to check whether the cluster is overloaded.

Reference: <https://cloud.google.com/bigtable/docs/performance>

NEW QUESTION 106

- (Exam Topic 5)

If you want to create a machine learning model that predicts the price of a particular stock based on its recent price history, what type of estimator should you use?

- A. Unsupervised learning
- B. Regressor
- C. Classifier
- D. Clustering estimator

Answer: B

Explanation:

Regression is the supervised learning task for modeling and predicting continuous, numeric variables. Examples include predicting real-estate prices, stock price movements, or student test scores.

Classification is the supervised learning task for modeling and predicting categorical variables. Examples include predicting employee churn, email spam, financial fraud, or student letter grades.

Clustering is an unsupervised learning task for finding natural groupings of observations (i.e. clusters) based on the inherent structure within your dataset.

Examples include customer segmentation, grouping similar items in e-commerce, and social network analysis.

Reference: <https://elitedatascience.com/machine-learning-algorithms>

NEW QUESTION 110

- (Exam Topic 5)

The Dataflow SDKs have been recently transitioned into which Apache service?

- A. Apache Spark
- B. Apache Hadoop
- C. Apache Kafka
- D. Apache Beam

Answer: D

Explanation:

Dataflow SDKs are being transitioned to Apache Beam, as per the latest Google directive Reference: <https://cloud.google.com/dataflow/docs/>

NEW QUESTION 115

- (Exam Topic 5)

In order to securely transfer web traffic data from your computer's web browser to the Cloud Dataproc cluster you should use a(n) .

- A. VPN connection
- B. Special browser
- C. SSH tunnel
- D. FTP connection

Answer: C

Explanation:

To connect to the web interfaces, it is recommended to use an SSH tunnel to create a secure connection to the master node.

Reference:

https://cloud.google.com/dataproc/docs/concepts/cluster-web-interfaces#connecting_to_the_web_interfaces

NEW QUESTION 116

- (Exam Topic 5)

Which of the following are feature engineering techniques? (Select 2 answers)

- A. Hidden feature layers
- B. Feature prioritization
- C. Crossed feature columns
- D. Bucketization of a continuous feature

Answer: CD

Explanation:

Selecting and crafting the right set of feature columns is key to learning an effective model. Bucketization is a process of dividing the entire range of a continuous feature into a set of consecutive

bins/buckets, and then converting the original numerical feature into a bucket ID (as a categorical feature) depending on which bucket that value falls into.

Using each base feature column separately may not be enough to explain the data. To learn the differences between different feature combinations, we can add crossed feature columns to the model.

Reference: https://www.tensorflow.org/tutorials/wide#selecting_and_engineering_features_for_the_model

NEW QUESTION 121

- (Exam Topic 5)

You have a job that you want to cancel. It is a streaming pipeline, and you want to ensure that any data that is in-flight is processed and written to the output.

Which of the following commands can you use on the Dataflow monitoring console to stop the pipeline job?

- A. Cancel
- B. Drain
- C. Stop
- D. Finish

Answer: B

Explanation:

Using the Drain option to stop your job tells the Dataflow service to finish your job in its current state. Your job will immediately stop ingesting new data from input sources, but the Dataflow

service will preserve any existing resources (such as worker instances) to finish processing and writing any buffered data in your pipeline.

Reference: <https://cloud.google.com/dataflow/pipelines/stopping-a-pipeline>

NEW QUESTION 125

- (Exam Topic 5)

Which of the following IAM roles does your Compute Engine account require to be able to run pipeline jobs?

- A. dataflow.worker
- B. dataflow.compute
- C. dataflow.developer
- D. dataflow.viewer

Answer: A

Explanation:

The dataflow.worker role provides the permissions necessary for a Compute Engine service account to execute work units for a Dataflow pipeline

Reference: <https://cloud.google.com/dataflow/access-control>

NEW QUESTION 128

- (Exam Topic 5)

If a dataset contains rows with individual people and columns for year of birth, country, and income, how many of the columns are continuous and how many are categorical?

- A. 1 continuous and 2 categorical
- B. 3 categorical
- C. 3 continuous

D. 2 continuous and 1 categorical

Answer: D

Explanation:

The columns can be grouped into two types—categorical and continuous columns:

A column is called categorical if its value can only be one of the categories in a finite set. For example, the native country of a person (U.S., India, Japan, etc.) or the education level (high school, college, etc.) are categorical columns.

A column is called continuous if its value can be any numerical value in a continuous range. For example, the capital gain of a person (e.g. \$14,084) is a continuous column.

Year of birth and income are continuous columns. Country is a categorical column.

You could use bucketization to turn year of birth and/or income into categorical features, but the raw columns are continuous.

Reference: https://www.tensorflow.org/tutorials/wide#reading_the_census_data

NEW QUESTION 130

- (Exam Topic 5)

By default, which of the following windowing behavior does Dataflow apply to unbounded data sets?

- A. Windows at every 100 MB of data
- B. Single, Global Window
- C. Windows at every 1 minute
- D. Windows at every 10 minutes

Answer: B

Explanation:

Dataflow's default windowing behavior is to assign all elements of a PCollection to a single, global window, even for unbounded PCollections

Reference: <https://cloud.google.com/dataflow/model/pcollection>

NEW QUESTION 131

- (Exam Topic 5)

Which of the following is NOT a valid use case to select HDD (hard disk drives) as the storage for Google Cloud Bigtable?

- A. You expect to store at least 10 TB of data.
- B. You will mostly run batch workloads with scans and writes, rather than frequently executing random reads of a small number of rows.
- C. You need to integrate with Google BigQuery.
- D. You will not use the data to back a user-facing or latency-sensitive application.

Answer: C

Explanation:

For example, if you plan to store extensive historical data for a large number of remote-sensing devices and then use the data to generate daily reports, the cost savings for HDD storage may justify the performance tradeoff. On the other hand, if you plan to use the data to display a real-time dashboard, it probably would not make sense to use HDD storage—reads would be much more frequent in this case, and reads are much slower with HDD storage.

Reference: <https://cloud.google.com/bigtable/docs/choosing-ssd-hdd>

NEW QUESTION 136

- (Exam Topic 5)

The YARN ResourceManager and the HDFS NameNode interfaces are available on a Cloud Dataproc cluster .

- A. application node
- B. conditional node
- C. master node
- D. worker node

Answer: C

Explanation:

The YARN ResourceManager and the HDFS NameNode interfaces are available on a Cloud Dataproc cluster master node. The cluster master-host-name is the name of your Cloud Dataproc cluster followed by an -m suffix—for example, if your cluster is named "my-cluster", the master-host-name would be "my-cluster-m".

Reference: <https://cloud.google.com/dataproc/docs/concepts/cluster-web-interfaces#interfaces>

NEW QUESTION 140

- (Exam Topic 5)

Which of these is not a supported method of putting data into a partitioned table?

- A. If you have existing data in a separate file for each day, then create a partitioned table and upload each file into the appropriate partition.
- B. Run a query to get the records for a specific day from an existing table and for the destination table, specify a partitioned table ending with the day in the format "\$YYYYMMDD".
- C. Create a partitioned table and stream new records to it every day.
- D. Use ORDER BY to put a table's rows into chronological order and then change the table's type to "Partitioned".

Answer: D

Explanation:

You cannot change an existing table into a partitioned table. You must create a partitioned table from scratch. Then you can either stream data into it every day and the data will automatically be put in the right partition, or you can load data into a specific partition by using "\$YYYYMMDD" at the end of the table name.

Reference: <https://cloud.google.com/bigquery/docs/partitioned-tables>

NEW QUESTION 143

- (Exam Topic 5)

Cloud Dataproc is a managed Apache Hadoop and Apache service.

- A. Blaze
- B. Spark
- C. Fire
- D. Ignite

Answer: B

Explanation:

Cloud Dataproc is a managed Apache Spark and Apache Hadoop service that lets you use open source data tools for batch processing, querying, streaming, and machine learning.

Reference: <https://cloud.google.com/dataproc/docs/>

NEW QUESTION 144

- (Exam Topic 5)

Which of the following statements about the Wide & Deep Learning model are true? (Select 2 answers.)

- A. The wide model is used for memorization, while the deep model is used for generalization.
- B. A good use for the wide and deep model is a recommender system.
- C. The wide model is used for generalization, while the deep model is used for memorization.
- D. A good use for the wide and deep model is a small-scale linear regression problem.

Answer: AB

Explanation:

Can we teach computers to learn like humans do, by combining the power of memorization and generalization? It's not an easy question to answer, but by jointly training a wide linear model (for memorization) alongside a deep neural network (for generalization), one can combine the strengths of both to bring us one step closer. At Google, we call it Wide & Deep Learning. It's useful for generic large-scale regression and classification problems with sparse inputs (categorical features with a large number of possible feature values), such as recommender systems, search, and ranking problems.

Reference: <https://research.googleblog.com/2016/06/wide-deep-learning-better-together-with.html>

NEW QUESTION 147

- (Exam Topic 5)

When creating a new Cloud Dataproc cluster with the `projects.regions.clusters.create` operation, these four values are required: project, region, name, and .

- A. zone
- B. node
- C. label
- D. type

Answer: A

Explanation:

At a minimum, you must specify four values when creating a new cluster with the `projects.regions.clusters.create` operation:

The project in which the cluster will be created

The region to use

The name of the cluster

The zone in which the cluster will be created

You can specify many more details beyond these minimum requirements. For example, you can also specify the number of workers, whether preemptible compute should be used, and the network settings.

Reference:

https://cloud.google.com/dataproc/docs/tutorials/python-library-example#create_a_new_cloud_dataproc_cluste

NEW QUESTION 148

- (Exam Topic 5)

Which Cloud Dataflow / Beam feature should you use to aggregate data in an unbounded data source every hour based on the time when the data entered the pipeline?

- A. An hourly watermark
- B. An event time trigger
- C. The with Allowed Lateness method
- D. A processing time trigger

Answer: D

Explanation:

When collecting and grouping data into windows, Beam uses triggers to determine when to emit the aggregated results of each window.

Processing time triggers. These triggers operate on the processing time – the time when the data element is processed at any given stage in the pipeline.

Event time triggers. These triggers operate on the event time, as indicated by the timestamp on each data element. Beam's default trigger is event time-based.

Reference: <https://beam.apache.org/documentation/programming-guide/#triggers>

NEW QUESTION 152

- (Exam Topic 5)

Which is the preferred method to use to avoid hotspotting in time series data in Bigtable?

- A. Field promotion
- B. Randomization
- C. Salting
- D. Hashing

Answer: A

Explanation:

By default, prefer field promotion. Field promotion avoids hotspotting in almost all cases, and it tends to make it easier to design a row key that facilitates queries.

Reference:

https://cloud.google.com/bigtable/docs/schema-design-time-series#ensure_that_your_row_key_avoids_hotspotti

NEW QUESTION 153

- (Exam Topic 5)

What are two of the characteristics of using online prediction rather than batch prediction?

- A. It is optimized to handle a high volume of data instances in a job and to run more complex models.
- B. Predictions are returned in the response message.
- C. Predictions are written to output files in a Cloud Storage location that you specify.
- D. It is optimized to minimize the latency of serving predictions.

Answer: BD

Explanation:

Online prediction

Optimized to minimize the latency of serving predictions. Predictions returned in the response message.

Batch prediction

Optimized to handle a high volume of instances in a job and to run more complex models. Predictions written to output files in a Cloud Storage location that you specify.

Reference:

https://cloud.google.com/ml-engine/docs/prediction-overview#online_prediction_versus_batch_prediction

NEW QUESTION 154

- (Exam Topic 5)

Which SQL keyword can be used to reduce the number of columns processed by BigQuery?

- A. BETWEEN
- B. WHERE
- C. SELECT
- D. LIMIT

Answer: C

Explanation:

SELECT allows you to query specific columns rather than the whole table.

LIMIT, BETWEEN, and WHERE clauses will not reduce the number of columns processed by BigQuery.

Reference:

https://cloud.google.com/bigquery/launch-checklist#architecture_design_and_development_checklist

NEW QUESTION 158

- (Exam Topic 5)

You are planning to use Google's Dataflow SDK to analyze customer data such as displayed below. Your project requirement is to extract only the customer name from the data source and then write to an output PCollection.

Tom,555 X street Tim,553 Y street Sam, 111 Z street

Which operation is best suited for the above data processing requirement?

- A. ParDo
- B. Sink API
- C. Source API
- D. Data extraction

Answer: A

Explanation:

In Google Cloud dataflow SDK, you can use the ParDo to extract only a customer name of each element in your PCollection.

Reference: <https://cloud.google.com/dataflow/model/par-do>

NEW QUESTION 163

- (Exam Topic 5)

Which software libraries are supported by Cloud Machine Learning Engine?

- A. Theano and TensorFlow
- B. Theano and Torch
- C. TensorFlow
- D. TensorFlow and Torch

Answer: C

Explanation:

Cloud ML Engine mainly does two things:

Enables you to train machine learning models at scale by running TensorFlow training applications in the cloud.

Hosts those trained models for you in the cloud so that you can use them to get predictions about new data.

Reference: https://cloud.google.com/ml-engine/docs/technical-overview#what_it_does

NEW QUESTION 165

- (Exam Topic 5)

Suppose you have a table that includes a nested column called "city" inside a column called "person", but when you try to submit the following query in BigQuery, it gives you an error.

```
SELECT person FROM `project1.example.table1` WHERE city = "London"
```

How would you correct the error?

- A. Add ", UNNEST(person)" before the WHERE clause.
- B. Change "person" to "person.city".
- C. Change "person" to "city.person".
- D. Add ", UNNEST(city)" before the WHERE clause.

Answer: A

Explanation:

To access the person.city column, you need to "UNNEST(person)" and JOIN it to table1 using a comma. Reference:

https://cloud.google.com/bigquery/docs/reference/standard-sql/migrating-from-legacy-sql#nested_repeated_resu

NEW QUESTION 168

- (Exam Topic 5)

Which of these numbers are adjusted by a neural network as it learns from a training dataset (select 2 answers)?

- A. Weights
- B. Biases
- C. Continuous features
- D. Input values

Answer: AB

Explanation:

A neural network is a simple mechanism that's implemented with basic math. The only difference between the traditional programming model and a neural network is that you let the computer determine the parameters (weights and bias) by learning from training datasets.

Reference:

<https://cloud.google.com/blog/big-data/2016/07/understanding-neural-networks-with-tensorflow-playground>

NEW QUESTION 172

- (Exam Topic 5)

Which of the following is not possible using primitive roles?

- A. Give a user viewer access to BigQuery and owner access to Google Compute Engine instances.
- B. Give UserA owner access and UserB editor access for all datasets in a project.
- C. Give a user access to view all datasets in a project, but not run queries on them.
- D. Give GroupA owner access and GroupB editor access for all datasets in a project.

Answer: C

Explanation:

Primitive roles can be used to give owner, editor, or viewer access to a user or group, but they can't be used to separate data access permissions from job-running permissions.

Reference: https://cloud.google.com/bigquery/docs/access-control#primitive_iam_roles

NEW QUESTION 176

- (Exam Topic 5)

Cloud Bigtable is a recommended option for storing very large amounts of _____ ?

- A. multi-keyed data with very high latency
- B. multi-keyed data with very low latency
- C. single-keyed data with very low latency
- D. single-keyed data with very high latency

Answer: C

Explanation:

Cloud Bigtable is a sparsely populated table that can scale to billions of rows and thousands of columns, allowing you to store terabytes or even petabytes of data.

A single value in each row is indexed; this value is known as the row key. Cloud Bigtable is ideal for storing very large amounts of single-keyed data with very low latency. It supports high read and write throughput at low latency, and it is an ideal data source for MapReduce operations.

Reference: <https://cloud.google.com/bigtable/docs/overview>

NEW QUESTION 177

- (Exam Topic 6)

You have enabled the free integration between Firebase Analytics and Google BigQuery. Firebase now automatically creates a new table daily in BigQuery in the format app_events_YYYYMMDD. You want to query all of the tables for the past 30 days in legacy SQL. What should you do?

- A. Use the TABLE_DATE_RANGE function
- B. Use the WHERE_PARTITIONTIME pseudo column
- C. Use WHERE date BETWEEN YYYY-MM-DD AND YYYY-MM-DD
- D. Use SELECT IF.(date >= YYYY-MM-DD AND date <= YYYY-MM-DD)

Answer: A

Explanation:

Reference:

<https://cloud.google.com/blog/products/gcp/using-bigquery-and-firebase-analytics-to-understandyour-mobile-ap>

NEW QUESTION 179

- (Exam Topic 6)

You are running a pipeline in Cloud Dataflow that receives messages from a Cloud Pub/Sub topic and writes the results to a BigQuery dataset in the EU. Currently, your pipeline is located in europe-west4 and has a maximum of 3 workers, instance type n1-standard-1. You notice that during peak periods, your pipeline is struggling to process records in a timely fashion, when all 3 workers are at maximum CPU utilization. Which two actions can you take to increase performance of your pipeline? (Choose two.)

- A. Increase the number of max workers
- B. Use a larger instance type for your Cloud Dataflow workers
- C. Change the zone of your Cloud Dataflow pipeline to run in us-central1
- D. Create a temporary table in Cloud Bigtable that will act as a buffer for new dat
- E. Create a new step in your pipeline to write to this table first, and then create a new pipeline to write from Cloud Bigtable to BigQuery
- F. Create a temporary table in Cloud Spanner that will act as a buffer for new dat
- G. Create a new step in your pipeline to write to this table first, and then create a new pipeline to write from Cloud Spanner to BigQuery

Answer: BE

NEW QUESTION 182

- (Exam Topic 6)

You currently have a single on-premises Kafka cluster in a data center in the us-east region that is responsible for ingesting messages from IoT devices globally. Because large parts of globe have poor internet connectivity, messages sometimes batch at the edge, come in all at once, and cause a spike in load on your Kafka cluster. This is becoming difficult to manage and prohibitively expensive. What is the Google-recommended cloud native architecture for this scenario?

- A. Edge TPUs as sensor devices for storing and transmitting the messages.
- B. Cloud Dataflow connected to the Kafka cluster to scale the processing of incoming messages.
- C. An IoT gateway connected to Cloud Pub/Sub, with Cloud Dataflow to read and process the messages from Cloud Pub/Sub.
- D. A Kafka cluster virtualized on Compute Engine in us-east with Cloud Load Balancing to connect to the devices around the world.

Answer: C

NEW QUESTION 186

- (Exam Topic 6)

Your company maintains a hybrid deployment with GCP, where analytics are performed on your anonymized customer data. The data are imported to Cloud Storage from your data center through parallel uploads to a data transfer server running on GCP. Management informs you that the daily transfers take too long and have asked you to fix the problem. You want to maximize transfer speeds. Which action should you take?

- A. Increase the CPU size on your server.
- B. Increase the size of the Google Persistent Disk on your server.
- C. Increase your network bandwidth from your datacenter to GCP.
- D. Increase your network bandwidth from Compute Engine to Cloud Storage.

Answer: C

NEW QUESTION 191

- (Exam Topic 6)

Your analytics team wants to build a simple statistical model to determine which customers are most likely to work with your company again, based on a few different metrics. They want to run the model on Apache Spark, using data housed in Google Cloud Storage, and you have recommended using Google Cloud Dataproc to execute this job. Testing has shown that this workload can run in approximately 30 minutes on a 15-node cluster, outputting the results into Google BigQuery. The plan is to run this workload weekly. How should you optimize the cluster for cost?

- A. Migrate the workload to Google Cloud Dataflow
- B. Use pre-emptible virtual machines (VMs) for the cluster
- C. Use a higher-memory node so that the job runs faster
- D. Use SSDs on the worker nodes so that the job can run faster

Answer: A

NEW QUESTION 194

- (Exam Topic 6)

You are designing storage for two relational tables that are part of a 10-TB database on Google Cloud. You want to support transactions that scale horizontally. You also want to optimize data for range queries on nonkey columns. What should you do?

- A. Use Cloud SQL for storag
- B. Add secondary indexes to support query patterns.
- C. Use Cloud SQL for storag
- D. Use Cloud Dataflow to transform data to support query patterns.

- E. Use Cloud Spanner for storage
- F. Add secondary indexes to support query patterns.
- G. Use Cloud Spanner for storage
- H. Use Cloud Dataflow to transform data to support query patterns.

Answer: D

Explanation:

Reference: <https://cloud.google.com/solutions/data-lifecycle-cloud-platform>

NEW QUESTION 198

- (Exam Topic 6)

You need to deploy additional dependencies to all of a Cloud Dataproc cluster at startup using an existing initialization action. Company security policies require that Cloud Dataproc nodes do not have access to the Internet so public initialization actions cannot fetch resources. What should you do?

- A. Deploy the Cloud SQL Proxy on the Cloud Dataproc master
- B. Use an SSH tunnel to give the Cloud Dataproc cluster access to the Internet
- C. Copy all dependencies to a Cloud Storage bucket within your VPC security perimeter
- D. Use Resource Manager to add the service account used by the Cloud Dataproc cluster to the Network User role

Answer: D

NEW QUESTION 202

- (Exam Topic 6)

You are a retailer that wants to integrate your online sales capabilities with different in-home assistants, such as Google Home. You need to interpret customer voice commands and issue an order to the backend systems. Which solutions should you choose?

- A. Cloud Speech-to-Text API
- B. Cloud Natural Language API
- C. Dialogflow Enterprise Edition
- D. Cloud AutoML Natural Language

Answer: D

NEW QUESTION 204

- (Exam Topic 6)

Your financial services company is moving to cloud technology and wants to store 50 TB of financial timeseries data in the cloud. This data is updated frequently and new data will be streaming in all the time. Your company also wants to move their existing Apache Hadoop jobs to the cloud to get insights into this data. Which product should they use to store the data?

- A. Cloud Bigtable
- B. Google BigQuery
- C. Google Cloud Storage
- D. Google Cloud Datastore

Answer: A

Explanation:

Reference: <https://cloud.google.com/bigtable/docs/schema-design-time-series>

NEW QUESTION 205

- (Exam Topic 6)

You are developing an application that uses a recommendation engine on Google Cloud. Your solution should display new videos to customers based on past views. Your solution needs to generate labels for the entities in videos that the customer has viewed. Your design must be able to provide very fast filtering suggestions based on data from other customer preferences on several TB of data. What should you do?

- A. Build and train a complex classification model with Spark MLlib to generate labels and filter the results. Deploy the models using Cloud Datapro
- B. Call the model from your application.
- C. Build and train a classification model with Spark MLlib to generate label
- D. Build and train a second classification model with Spark MLlib to filter results to match customer preference
- E. Deploy the Models using Cloud Datapro
- F. Call the models from your application.
- G. Build an application that calls the Cloud Video Intelligence API to generate label
- H. Store data in Cloud Bigtable, and filter the predicted labels to match the user's viewing history to generate preferences.
- I. Build an application that calls the Cloud Video Intelligence API to generate label
- J. Store data in Cloud SQL, and join and filter the predicted labels to match the user's viewing history to generate preferences.

Answer: C

NEW QUESTION 207

- (Exam Topic 6)

You are developing an application on Google Cloud that will automatically generate subject labels for users' blog posts. You are under competitive pressure to add this feature quickly, and you have no additional developer resources. No one on your team has experience with machine learning. What should you do?

- A. Call the Cloud Natural Language API from your applicatio
- B. Process the generated Entity Analysis as labels.
- C. Call the Cloud Natural Language API from your applicatio

- D. Process the generated Sentiment Analysis as labels.
- E. Build and train a text classification model using TensorFlow
- F. Deploy the model using Cloud Machine Learning Engine
- G. Call the model from your application and process the results as labels.
- H. Build and train a text classification model using TensorFlow
- I. Deploy the model using a Kubernetes Engine cluster
- J. Call the model from your application and process the results as labels.

Answer: B

NEW QUESTION 212

- (Exam Topic 6)

You operate an IoT pipeline built around Apache Kafka that normally receives around 5000 messages per second. You want to use Google Cloud Platform to create an alert as soon as the moving average over 1 hour drops below 4000 messages per second. What should you do?

- A. Consume the stream of data in Cloud Dataflow using Kafka I
- B. Set a sliding time window of 1 hour every 5 minute
- C. Compute the average when the window closes, and send an alert if the average is less than 4000 messages.
- D. Consume the stream of data in Cloud Dataflow using Kafka I
- E. Set a fixed time window of 1 hour. Compute the average when the window closes, and send an alert if the average is less than 4000 messages.
- F. Use Kafka Connect to link your Kafka message queue to Cloud Pub/Sub
- G. Use a Cloud Dataflow template to write your messages from Cloud Pub/Sub to Cloud Bigtable
- H. Use Cloud Scheduler to run a script every hour that counts the number of rows created in Cloud Bigtable in the last hour
- I. If that number falls below 4000, send an alert.
- J. Use Kafka Connect to link your Kafka message queue to Cloud Pub/Sub
- K. Use a Cloud Dataflow template to write your messages from Cloud Pub/Sub to BigQuery
- L. Use Cloud Scheduler to run a script every five minutes that counts the number of rows created in BigQuery in the last hour
- M. If that number falls below 4000, send an alert.

Answer: C

NEW QUESTION 213

- (Exam Topic 6)

You need to choose a database to store time series CPU and memory usage for millions of computers. You need to store this data in one-second interval samples. Analysts will be performing real-time, ad hoc analytics against the database. You want to avoid being charged for every query executed and ensure that the schema design will allow for future growth of the dataset. Which database and data model should you choose?

- A. Create a table in BigQuery, and append the new samples for CPU and memory to the table
- B. Create a wide table in BigQuery, create a column for the sample value at each second, and update the row with the interval for each second
- C. Create a narrow table in Cloud Bigtable with a row key that combines the Computer Engine computer identifier with the sample time at each second
- D. Create a wide table in Cloud Bigtable with a row key that combines the computer identifier with the sample time at each minute, and combine the values for each second as column data.

Answer: D

NEW QUESTION 216

- (Exam Topic 6)

You decided to use Cloud Datastore to ingest vehicle telemetry data in real time. You want to build a storage system that will account for the long-term data growth, while keeping the costs low. You also want to create snapshots of the data periodically, so that you can make a point-in-time (PIT) recovery, or clone a copy of the data for Cloud Datastore in a different environment. You want to archive these snapshots for a long time. Which two methods can accomplish this? Choose 2 answers.

- A. Use managed export, and store the data in a Cloud Storage bucket using Nearline or Coldline class.
- B. Use managed export, and then import to Cloud Datastore in a separate project under a unique namespace reserved for that export.
- C. Use managed export, and then import the data into a BigQuery table created just for that export, and delete temporary export files.
- D. Write an application that uses Cloud Datastore client libraries to read all the entities
- E. Treat each entity as a BigQuery table row via BigQuery streaming insert
- F. Assign an export timestamp for each export, and attach it as an extra column for each row
- G. Make sure that the BigQuery table is partitioned using the export timestamp column.
- H. Write an application that uses Cloud Datastore client libraries to read all the entities
- I. Format the exported data into a JSON file
- J. Apply compression before storing the data in Cloud Source Repositories.

Answer: CE

NEW QUESTION 220

- (Exam Topic 6)

You plan to deploy Cloud SQL using MySQL. You need to ensure high availability in the event of a zone failure. What should you do?

- A. Create a Cloud SQL instance in one zone, and create a failover replica in another zone within the same region.
- B. Create a Cloud SQL instance in one zone, and create a read replica in another zone within the same region.
- C. Create a Cloud SQL instance in one zone, and configure an external read replica in a zone in a different region.
- D. Create a Cloud SQL instance in a region, and configure automatic backup to a Cloud Storage bucket in the same region.

Answer: C

NEW QUESTION 223

- (Exam Topic 6)

You are integrating one of your internal IT applications and Google BigQuery, so users can query BigQuery from the application's interface. You do not want individual users to authenticate to BigQuery and you do not want to give them access to the dataset. You need to securely access BigQuery from your IT application.

What should you do?

- A. Create groups for your users and give those groups access to the dataset
- B. Integrate with a single sign-on (SSO) platform, and pass each user's credentials along with the query request
- C. Create a service account and grant dataset access to that account
- D. Use the service account's private key to access the dataset
- E. Create a dummy user and grant dataset access to that user
- F. Store the username and password for that user in a file on the files system, and use those credentials to access the BigQuery dataset

Answer: C

NEW QUESTION 224

- (Exam Topic 6)

You are designing storage for 20 TB of text files as part of deploying a data pipeline on Google Cloud. Your input data is in CSV format. You want to minimize the cost of querying aggregate values for multiple users who will query the data in Cloud Storage with multiple engines. Which storage service and schema design should you use?

- A. Use Cloud Bigtable for storage
- B. Install the HBase shell on a Compute Engine instance to query the Cloud Bigtable data.
- C. Use Cloud Bigtable for storage
- D. Link as permanent tables in BigQuery for query.
- E. Use Cloud Storage for storage
- F. Link as permanent tables in BigQuery for query.
- G. Use Cloud Storage for storage
- H. Link as temporary tables in BigQuery for query.

Answer: A

NEW QUESTION 227

- (Exam Topic 6)

You are selecting services to write and transform JSON messages from Cloud Pub/Sub to BigQuery for a data pipeline on Google Cloud. You want to minimize service costs. You also want to monitor and accommodate input data volume that will vary in size with minimal manual intervention. What should you do?

- A. Use Cloud Dataproc to run your transformation
- B. Monitor CPU utilization for the cluster
- C. Resize the number of worker nodes in your cluster via the command line.
- D. Use Cloud Dataproc to run your transformation
- E. Use the diagnose command to generate an operational output archive
- F. Locate the bottleneck and adjust cluster resources.
- G. Use Cloud Dataflow to run your transformation
- H. Monitor the job system lag with Stackdriver
- I. Use the default autoscaling setting for worker instances.
- J. Use Cloud Dataflow to run your transformation
- K. Monitor the total execution time for a sampling of jobs
- L. Configure the job to use non-default Compute Engine machine types when needed.

Answer: B

NEW QUESTION 232

- (Exam Topic 6)

You use a dataset in BigQuery for analysis. You want to provide third-party companies with access to the same dataset. You need to keep the costs of data sharing low and ensure that the data is current. Which solution should you choose?

- A. Create an authorized view on the BigQuery table to control data access, and provide third-party companies with access to that view.
- B. Use Cloud Scheduler to export the data on a regular basis to Cloud Storage, and provide third-party companies with access to the bucket.
- C. Create a separate dataset in BigQuery that contains the relevant data to share, and provide third-party companies with access to the new dataset.
- D. Create a Cloud Dataflow job that reads the data in frequent time intervals, and writes it to the relevant BigQuery dataset or Cloud Storage bucket for third-party companies to use.

Answer: B

NEW QUESTION 236

- (Exam Topic 6)

Each analytics team in your organization is running BigQuery jobs in their own projects. You want to enable each team to monitor slot usage within their projects. What should you do?

- A. Create a Stackdriver Monitoring dashboard based on the BigQuery metric query/scanned_bytes
- B. Create a Stackdriver Monitoring dashboard based on the BigQuery metric slots/allocated_for_project
- C. Create a log export for each project, capture the BigQuery job execution logs, create a custom metric based on the totalSlotMs, and create a Stackdriver Monitoring dashboard based on the custom metric
- D. Create an aggregated log export at the organization level, capture the BigQuery job execution logs, create a custom metric based on the totalSlotMs, and create a Stackdriver Monitoring dashboard based on the custom metric

Answer: D

NEW QUESTION 237

- (Exam Topic 6)

You are using Google BigQuery as your data warehouse. Your users report that the following simple query is running very slowly, no matter when they run the query:

```
SELECT country, state, city FROM [myproject:mydataset.mytable] GROUP BY country
```

You check the query plan for the query and see the following output in the Read section of Stage:1:



What is the most likely cause of the delay for this query?

- A. Users are running too many concurrent queries in the system
- B. The [myproject:mydataset.mytable] table has too many partitions
- C. Either the state or the city columns in the [myproject:mydataset.mytable] table have too many NULL values
- D. Most rows in the [myproject:mydataset.mytable] table have the same value in the country column, causing data skew

Answer: A

NEW QUESTION 238

- (Exam Topic 6)

You need to create a data pipeline that copies time-series transaction data so that it can be queried from within BigQuery by your data science team for analysis. Every hour, thousands of transactions are updated with a new status. The size of the initial dataset is 1.5 PB, and it will grow by 3 TB per day. The data is heavily structured, and your data science team will build machine learning models based on this data. You want to maximize performance and usability for your data science team. Which two strategies should you adopt? Choose 2 answers.

- A. Denormalize the data as much as possible.
- B. Preserve the structure of the data as much as possible.
- C. Use BigQuery UPDATE to further reduce the size of the dataset.
- D. Develop a data pipeline where status updates are appended to BigQuery instead of updated.
- E. Copy a daily snapshot of transaction data to Cloud Storage and store it as an Avro file
- F. Use BigQuery's support for external data sources to query.

Answer: DE

NEW QUESTION 239

- (Exam Topic 6)

You are operating a Cloud Dataflow streaming pipeline. The pipeline aggregates events from a Cloud Pub/Sub subscription source, within a window, and sinks the resulting aggregation to a Cloud Storage bucket. The source has consistent throughput. You want to monitor an alert on behavior of the pipeline with Cloud Stackdriver to ensure that it is processing data. Which Stackdriver alerts should you create?

- A. An alert based on a decrease of subscription/num_undelivered_messages for the source and a rate of change increase of instance/storage/used_bytes for the destination
- B. An alert based on an increase of subscription/num_undelivered_messages for the source and a rate of change decrease of instance/storage/used_bytes for the destination
- C. An alert based on a decrease of instance/storage/used_bytes for the source and a rate of change increase of subscription/num_undelivered_messages for the destination
- D. An alert based on an increase of instance/storage/used_bytes for the source and a rate of change decrease of subscription/num_undelivered_messages for the destination

Answer: B

NEW QUESTION 241

- (Exam Topic 6)

An online retailer has built their current application on Google App Engine. A new initiative at the company mandates that they extend their application to allow their customers to transact directly via the application.

They need to manage their shopping transactions and analyze combined data from multiple datasets using a business intelligence (BI) tool. They want to use only a single database for this purpose. Which Google Cloud database should they choose?

- A. BigQuery
- B. Cloud SQL
- C. Cloud BigTable
- D. Cloud Datastore

Answer: C

NEW QUESTION 245

- (Exam Topic 6)

You need to set access to BigQuery for different departments within your company. Your solution should comply with the following requirements:

- Each department should have access only to their data.
- Each department will have one or more leads who need to be able to create and update tables and provide them to their team.
- Each department has data analysts who need to be able to query but not modify data.

How should you set access to the data in BigQuery?

- A. Create a dataset for each department
- B. Assign the department leads the role of OWNER, and assign the data analysts the role of WRITER on their dataset.
- C. Create a dataset for each department
- D. Assign the department leads the role of WRITER, and assign the data analysts the role of READER on their dataset.
- E. Create a table for each department
- F. Assign the department leads the role of Owner, and assign the data analysts the role of Editor on the project the table is in.

- G. Create a table for each department.
H. Assign the department leads the role of Editor, and assign the data analysts the role of Viewer on the project the table is in.

Answer: D

NEW QUESTION 248

- (Exam Topic 6)

You've migrated a Hadoop job from an on-prem cluster to dataproc and GCS. Your Spark job is a complicated analytical workload that consists of many shuffling operations and initial data are parquet files (on average 200-400 MB size each). You see some degradation in performance after the migration to Dataproc, so you'd like to optimize for it. You need to keep in mind that your organization is very cost-sensitive, so you'd like to continue using Dataproc on preemptibles (with 2 non-preemptible workers only) for this workload. What should you do?

- A. Increase the size of your parquet files to ensure them to be 1 GB minimum.
- B. Switch to TFRecords formats (approx 200MB per file) instead of parquet files.
- C. Switch from HDDs to SSDs, copy initial data from GCS to HDFS, run the Spark job and copy results back to GCS.
- D. Switch from HDDs to SSDs, override the preemptible VMs configuration to increase the boot disk size.

Answer: C

NEW QUESTION 251

- (Exam Topic 6)

Your United States-based company has created an application for assessing and responding to user actions. The primary table's data volume grows by 250,000 records per second. Many third parties use your application's APIs to build the functionality into their own frontend applications. Your application's APIs should comply with the following requirements:

- Single global endpoint
- ANSI SQL support
- Consistent access to the most up-to-date data

- What should you do?
- A. Implement BigQuery with no region selected for storage or processing.
 - B. Implement Cloud Spanner with the leader in North America and read-only replicas in Asia and Europe.
 - C. Implement Cloud SQL for PostgreSQL with the master in North America and read replicas in Asia and Europe.
 - D. Implement Cloud Bigtable with the primary cluster in North America and secondary clusters in Asia and Europe.

Answer: B

NEW QUESTION 253

- (Exam Topic 6)

You need to migrate a 2TB relational database to Google Cloud Platform. You do not have the resources to significantly refactor the application that uses this database and cost to operate is of primary concern. Which service do you select for storing and serving your data?

- A. Cloud Spanner
- B. Cloud Bigtable
- C. Cloud Firestore
- D. Cloud SQL

Answer: D

NEW QUESTION 255

- (Exam Topic 6)

You work for a global shipping company. You want to train a model on 40 TB of data to predict which ships in each geographic region are likely to cause delivery delays on any given day. The model will be based on multiple attributes collected from multiple sources. Telemetry data, including location in GeoJSON format, will be pulled from each ship and loaded every hour. You want to have a dashboard that shows how many and which ships are likely to cause delays within a region. You want to use a storage solution that has native functionality for prediction and geospatial processing. Which storage solution should you use?

- A. BigQuery
- B. Cloud Bigtable
- C. Cloud Datastore
- D. Cloud SQL for PostgreSQL

Answer: A

NEW QUESTION 258

- (Exam Topic 6)

You have data pipelines running on BigQuery, Cloud Dataflow, and Cloud Dataproc. You need to perform health checks and monitor their behavior, and then notify the team managing the pipelines if they fail. You also need to be able to work across multiple projects. Your preference is to use managed products of features of the platform. What should you do?

- A. Export the information to Cloud Stackdriver, and set up an Alerting policy
- B. Run a Virtual Machine in Compute Engine with Airflow, and export the information to Stackdriver
- C. Export the logs to BigQuery, and set up App Engine to read that information and send emails if you find a failure in the logs
- D. Develop an App Engine application to consume logs using GCP API calls, and send emails if you find a failure in the logs

Answer: B

NEW QUESTION 262

- (Exam Topic 6)

You use BigQuery as your centralized analytics platform. New data is loaded every day, and an ETL pipeline modifies the original data and prepares it for the final users. This ETL pipeline is regularly modified and can generate errors, but sometimes the errors are detected only after 2 weeks. You need to provide a method to recover from these errors, and your backups should be optimized for storage costs. How should you organize your data in BigQuery and store your backups?

- A. Organize your data in a single table, export, and compress and store the BigQuery data in Cloud Storage.
- B. Organize your data in separate tables for each month, and export, compress, and store the data in Cloud Storage.
- C. Organize your data in separate tables for each month, and duplicate your data on a separate dataset in BigQuery.
- D. Organize your data in separate tables for each month, and use snapshot decorators to restore the table to a time prior to the corruption.

Answer: D

NEW QUESTION 263

- (Exam Topic 6)

You are planning to migrate your current on-premises Apache Hadoop deployment to the cloud. You need to ensure that the deployment is as fault-tolerant and cost-effective as possible for long-running batch jobs. You want to use a managed service. What should you do?

- A. Deploy a Cloud Dataproc cluster
- B. Use a standard persistent disk and 50% preemptible worker
- C. Store data in Cloud Storage, and change references in scripts from hdfs:// to gs://
- D. Deploy a Cloud Dataproc cluster
- E. Use an SSD persistent disk and 50% preemptible worker
- F. Store data in Cloud Storage, and change references in scripts from hdfs:// to gs://
- G. Install Hadoop and Spark on a 10-node Compute Engine instance group with standard instance
- H. Install the Cloud Storage connector, and store the data in Cloud Storage
- I. Change references in scripts from hdfs:// to gs://
- J. Install Hadoop and Spark on a 10-node Compute Engine instance group with preemptible instances. Store data in HDFS
- K. Change references in scripts from hdfs:// to gs://

Answer: A

NEW QUESTION 266

- (Exam Topic 6)

Your company is currently setting up data pipelines for their campaign. For all the Google Cloud Pub/Sub streaming data, one of the important business requirements is to be able to periodically identify the inputs and their timings during their campaign. Engineers have decided to use windowing and transformation in Google Cloud Dataflow for this purpose. However, when testing this feature, they find that the Cloud Dataflow job fails for all streaming inserts. What is the most likely cause of this problem?

- A. They have not assigned the timestamp, which causes the job to fail
- B. They have not set the triggers to accommodate the data coming in late, which causes the job to fail
- C. They have not applied a global windowing function, which causes the job to fail when the pipeline is created
- D. They have not applied a non-global windowing function, which causes the job to fail when the pipeline is created

Answer: C

NEW QUESTION 271

- (Exam Topic 6)

An organization maintains a Google BigQuery dataset that contains tables with user-level data. They want to expose aggregates of this data to other Google Cloud projects, while still controlling access to the user-level data. Additionally, they need to minimize their overall storage cost and ensure the analysis cost for other projects is assigned to those projects. What should they do?

- A. Create and share an authorized view that provides the aggregate results.
- B. Create and share a new dataset and view that provides the aggregate results.
- C. Create and share a new dataset and table that contains the aggregate results.
- D. Create dataViewer Identity and Access Management (IAM) roles on the dataset to enable sharing.

Answer: D

Explanation:

Reference: <https://cloud.google.com/bigquery/docs/access-control>

NEW QUESTION 272

- (Exam Topic 6)

You architect a system to analyze seismic data. Your extract, transform, and load (ETL) process runs as a series of MapReduce jobs on an Apache Hadoop cluster. The ETL process takes days to process a data set because some steps are computationally expensive. Then you discover that a sensor calibration step has been omitted. How should you change your ETL process to carry out sensor calibration systematically in the future?

- A. Modify the transform MapReduce jobs to apply sensor calibration before they do anything else.
- B. Introduce a new MapReduce job to apply sensor calibration to raw data, and ensure all other MapReduce jobs are chained after this.
- C. Add sensor calibration data to the output of the ETL process, and document that all users need to apply sensor calibration themselves.
- D. Develop an algorithm through simulation to predict variance of data output from the last MapReduce job based on calibration factors, and apply the correction to all data.

Answer: A

NEW QUESTION 276

- (Exam Topic 6)

Your neural network model is taking days to train. You want to increase the training speed. What can you do?

- A. Subsample your test dataset.
- B. Subsample your training dataset.
- C. Increase the number of input features to your model.
- D. Increase the number of layers in your neural network.

Answer: D

Explanation:

Reference: <https://towardsdatascience.com/how-to-increase-the-accuracy-of-a-neural-network-9f5d1c6f407d>

NEW QUESTION 280

- (Exam Topic 6)

You are working on a niche product in the image recognition domain. Your team has developed a model that is dominated by custom C++ TensorFlow ops your team has implemented. These ops are used inside your main training loop and are performing bulky matrix multiplications. It currently takes up to several days to train a model. You want to decrease this time significantly and keep the cost low by using an accelerator on Google Cloud. What should you do?

- A. Use Cloud TPUs without any additional adjustment to your code.
- B. Use Cloud TPUs after implementing GPU kernel support for your custom ops.
- C. Use Cloud GPUs after implementing GPU kernel support for your custom ops.
- D. Stay on CPUs, and increase the size of the cluster you're training your model on.

Answer: B

NEW QUESTION 281

- (Exam Topic 6)

You have a petabyte of analytics data and need to design a storage and processing platform for it. You must be able to perform data warehouse-style analytics on the data in Google Cloud and expose the dataset as files for batch analysis tools in other cloud providers. What should you do?

- A. Store and process the entire dataset in BigQuery.
- B. Store and process the entire dataset in Cloud Bigtable.
- C. Store the full dataset in BigQuery, and store a compressed copy of the data in a Cloud Storage bucket.
- D. Store the warm data as files in Cloud Storage, and store the active data in BigQuery.
- E. Keep this ratio as 80% warm and 20% active.

Answer: D

NEW QUESTION 285

- (Exam Topic 6)

You store historic data in Cloud Storage. You need to perform analytics on the historic data. You want to use a solution to detect invalid data entries and perform data transformations that will not require programming or knowledge of SQL. What should you do?

- A. Use Cloud Dataflow with Beam to detect errors and perform transformations.
- B. Use Cloud Dataprep with recipes to detect errors and perform transformations.
- C. Use Cloud Dataproc with a Hadoop job to detect errors and perform transformations.
- D. Use federated tables in BigQuery with queries to detect errors and perform transformations.

Answer: A

NEW QUESTION 290

- (Exam Topic 6)

You are building a new data pipeline to share data between two different types of applications: jobs generators and job runners. Your solution must scale to accommodate increases in usage and must accommodate the addition of new applications without negatively affecting the performance of existing ones. What should you do?

- A. Create an API using App Engine to receive and send messages to the applications
- B. Use a Cloud Pub/Sub topic to publish jobs, and use subscriptions to execute them
- C. Create a table on Cloud SQL, and insert and delete rows with the job information
- D. Create a table on Cloud Spanner, and insert and delete rows with the job information

Answer: A

NEW QUESTION 292

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