

# Google

## Exam Questions Professional-Data-Engineer

Google Professional Data Engineer Exam



#### NEW QUESTION 1

- (Exam Topic 1)

Your company is streaming real-time sensor data from their factory floor into Bigtable and they have noticed extremely poor performance. How should the row key be redesigned to improve Bigtable performance on queries that populate real-time dashboards?

- A. Use a row key of the form <timestamp>.
- B. Use a row key of the form <sensorid>.
- C. Use a row key of the form <timestamp>#<sensorid>.
- D. Use a row key of the form >#<sensorid>#<timestamp>.

**Answer:** A

#### NEW QUESTION 2

- (Exam Topic 1)

Your company handles data processing for a number of different clients. Each client prefers to use their own suite of analytics tools, with some allowing direct query access via Google BigQuery. You need to secure the data so that clients cannot see each other's data. You want to ensure appropriate access to the data. Which three steps should you take? (Choose three.)

- A. Load data into different partitions.
- B. Load data into a different dataset for each client.
- C. Put each client's BigQuery dataset into a different table.
- D. Restrict a client's dataset to approved users.
- E. Only allow a service account to access the datasets.
- F. Use the appropriate identity and access management (IAM) roles for each client's users.

**Answer:** BDF

#### NEW QUESTION 3

- (Exam Topic 1)

You need to store and analyze social media postings in Google BigQuery at a rate of 10,000 messages per minute in near real-time. Initially, design the application to use streaming inserts for individual postings. Your application also performs data aggregations right after the streaming inserts. You discover that the queries after streaming inserts do not exhibit strong consistency, and reports from the queries might miss in-flight data. How can you adjust your application design?

- A. Re-write the application to load accumulated data every 2 minutes.
- B. Convert the streaming insert code to batch load for individual messages.
- C. Load the original message to Google Cloud SQL, and export the table every hour to BigQuery via streaming inserts.
- D. Estimate the average latency for data availability after streaming inserts, and always run queries after waiting twice as long.

**Answer:** D

#### Explanation:

The data is first comes to buffer and then written to Storage. If we are running queries in buffer we will face above mentioned issues. If we wait for the bigquery to write the data to storage then we won't face the issue. So We need to wait till it's written tio storage

#### NEW QUESTION 4

- (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 5

- (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 6

- (Exam Topic 1)

You are working on a sensitive project involving private user data. You have set up a project on Google Cloud Platform to house your work internally. An external consultant is going to assist with coding a complex transformation in a Google Cloud Dataflow pipeline for your project. How should you maintain users' privacy?

- A. Grant the consultant the Viewer role on the project.
- B. Grant the consultant the Cloud Dataflow Developer role on the project.
- C. Create a service account and allow the consultant to log on with it.
- D. Create an anonymized sample of the data for the consultant to work with in a different project.

**Answer: C**

#### NEW QUESTION 7

- (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 8

- (Exam Topic 1)

Your company is migrating their 30-node Apache Hadoop cluster to the cloud. They want to re-use Hadoop jobs they have already created and minimize the management of the cluster as much as possible. They also want to be able to persist data beyond the life of the cluster. What should you do?

- A. Create a Google Cloud Dataflow job to process the data.
- B. Create a Google Cloud Dataproc cluster that uses persistent disks for HDFS.
- C. Create a Hadoop cluster on Google Compute Engine that uses persistent disks.
- D. Create a Cloud Dataproc cluster that uses the Google Cloud Storage connector.
- E. Create a Hadoop cluster on Google Compute Engine that uses Local SSD disks.

**Answer: D**

#### NEW QUESTION 9

- (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: C**

#### NEW QUESTION 10

- (Exam Topic 1)

Your company uses a proprietary system to send inventory data every 6 hours to a data ingestion service in the cloud. Transmitted data includes a payload of several fields and the timestamp of the transmission. If there are any concerns about a transmission, the system re-transmits the data. How should you deduplicate the data most efficiently?

- A. Assign global unique identifiers (GUID) to each data entry.
- B. Compute the hash value of each data entry, and compare it with all historical data.
- C. Store each data entry as the primary key in a separate database and apply an index.
- D. Maintain a database table to store the hash value and other metadata for each data entry.

**Answer: D**

#### NEW QUESTION 10

- (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 13**

- (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 18**

- (Exam Topic 3)

Given the record streams MJTelco is interested in ingesting per day, they are concerned about the cost of Google BigQuery increasing. MJTelco asks you to provide a design solution. They require a single large data table called tracking\_table. Additionally, they want to minimize the cost of daily queries while performing fine-grained analysis of each day's events. They also want to use streaming ingestion. What should you do?

- A. Create a table called tracking\_table and include a DATE column.
- B. Create a partitioned table called tracking\_table and include a TIMESTAMP column.
- C. Create sharded tables for each day following the pattern tracking\_table\_YYYYMMDD.
- D. Create a table called tracking\_table with a TIMESTAMP column to represent the day.

**Answer:** B

**NEW QUESTION 23**

- (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 24**

- (Exam Topic 4)

Your company produces 20,000 files every hour. Each data file is formatted as a comma separated values (CSV) file that is less than 4 KB. All files must be ingested on Google Cloud Platform before they can be processed. Your company site has a 200 ms latency to Google Cloud, and your Internet connection bandwidth is limited as 50 Mbps. You currently deploy a secure FTP (SFTP) server on a virtual machine in Google Compute Engine as the data ingestion point. A local SFTP client runs on a dedicated machine to transmit the CSV files as is. The goal is to make reports with data from the previous day available to the executives by 10:00 a.m. each day. This design is barely able to keep up with the current volume, even though the bandwidth utilization is rather low.

You are told that due to seasonality, your company expects the number of files to double for the next three months. Which two actions should you take? (choose two.)

- A. Introduce data compression for each file to increase the rate of file transfer.
- B. Contact your internet service provider (ISP) to increase your maximum bandwidth to at least 100 Mbps.
- C. Redesign the data ingestion process to use gsutil tool to send the CSV files to a storage bucket in parallel.
- D. Assemble 1,000 files into a tape archive (TAR) file
- E. Transmit the TAR files instead, and disassemble the CSV files in the cloud upon receiving them.
- F. Create an S3-compatible storage endpoint in your network, and use Google Cloud Storage Transfer Service to transfer on-premises data to the designated storage bucket.

**Answer:** CE

**NEW QUESTION 25**

- (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 28**

- (Exam Topic 4)

You are designing the database schema for a machine learning-based food ordering service that will predict what users want to eat. Here is some of the information you need to store:

- > The user profile: What the user likes and doesn't like to eat
- > The user account information: Name, address, preferred meal times
- > The order information: When orders are made, from where, to whom

The database will be used to store all the transactional data of the product. You want to optimize the data schema. Which Google Cloud Platform product should you use?

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

**Answer: A**

**NEW QUESTION 29**

- (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 34

- (Exam Topic 5)

Which action can a Cloud Dataproc Viewer perform?

- A. Submit a job.
- B. Create a cluster.
- C. Delete a cluster.
- D. List the jobs.

**Answer:** D

#### Explanation:

A Cloud Dataproc Viewer is limited in its actions based on its role. A viewer can only list clusters, get cluster details, list jobs, get job details, list operations, and get operation details.

Reference: [https://cloud.google.com/dataproc/docs/concepts/iam#iam\\_roles\\_and\\_cloud\\_dataproc\\_operations\\_summary](https://cloud.google.com/dataproc/docs/concepts/iam#iam_roles_and_cloud_dataproc_operations_summary)

#### NEW QUESTION 35

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

#### NEW QUESTION 39

- (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 42

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

#### NEW QUESTION 44

- (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 46**

- (Exam Topic 5)

Which of these rules apply when you add preemptible workers to a Dataproc cluster (select 2 answers)?

- A. Preemptible workers cannot use persistent disk.
- B. Preemptible workers cannot store data.
- C. If a preemptible worker is reclaimed, then a replacement worker must be added manually.
- D. A Dataproc cluster cannot have only preemptible workers.

**Answer:** BD

**Explanation:**

The following rules will apply when you use preemptible workers with a Cloud Dataproc cluster: Processing only—Since preemptibles can be reclaimed at any time, preemptible workers do not store data.

Preemptibles added to a Cloud Dataproc cluster only function as processing nodes.

No preemptible-only clusters—To ensure clusters do not lose all workers, Cloud Dataproc cannot create preemptible-only clusters.

Persistent disk size—As a default, all preemptible workers are created with the smaller of 100GB or the primary worker boot disk size. This disk space is used for local caching of data and is not available through HDFS.

The managed group automatically re-adds workers lost due to reclamation as capacity permits. Reference:

<https://cloud.google.com/dataproc/docs/concepts/preemptible-vm>s

**NEW QUESTION 51**

- (Exam Topic 5)

Which Java SDK class can you use to run your Dataflow programs locally?

- A. LocalRunner
- B. DirectPipelineRunner
- C. MachineRunner
- D. LocalPipelineRunner

**Answer:** B

**Explanation:**

DirectPipelineRunner allows you to execute operations in the pipeline directly, without any optimization. Useful for small local execution and tests

Reference:

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

**NEW QUESTION 53**

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

**NEW QUESTION 57**

- (Exam Topic 5)

Which of these are examples of a value in a sparse vector? (Select 2 answers.)

- A. [0, 5, 0, 0, 0, 0]
- B. [0, 0, 0, 1, 0, 0, 1]
- C. [0, 1]
- D. [1, 0, 0, 0, 0, 0, 0]

**Answer:** CD

**Explanation:**

Categorical features in linear models are typically translated into a sparse vector in which each possible value has a corresponding index or id. For example, if there are only three possible eye colors you can represent 'eye\_color' as a length 3 vector: 'brown' would become [1, 0, 0], 'blue' would become [0, 1, 0] and 'green' would become [0, 0, 1]. These vectors are called "sparse" because they may be very long, with many zeros, when the set of possible values is very large (such as all English words).

[0, 0, 0, 1, 0, 0, 1] is not a sparse vector because it has two 1s in it. A sparse vector contains only a single 1. [0, 5, 0, 0, 0, 0] is not a sparse vector because it has a 5 in it. Sparse vectors only contain 0s and 1s. Reference: [https://www.tensorflow.org/tutorials/linear#feature\\_columns\\_and\\_transformations](https://www.tensorflow.org/tutorials/linear#feature_columns_and_transformations)

**NEW QUESTION 62**

- (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](https://cloud.google.com/dataproc/docs/concepts/service-accounts#important_notes)

**NEW QUESTION 63**

- (Exam Topic 5)

All Google Cloud Bigtable client requests go through a front-end server they are sent to a Cloud Bigtable node.

- A. before
- B. after
- C. only if
- D. once

**Answer:** A

**Explanation:**

In a Cloud Bigtable architecture all client requests go through a front-end server before they are sent to a Cloud Bigtable node.

The nodes are organized into a Cloud Bigtable cluster, which belongs to a Cloud Bigtable instance, which is a container for the cluster. Each node in the cluster handles a subset of the requests to the cluster.

When additional nodes are added to a cluster, you can increase the number of simultaneous requests that the cluster can handle, as well as the maximum throughput for the entire cluster.

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

**NEW QUESTION 66**

- (Exam Topic 5)

What are all of the BigQuery operations that Google charges for?

- A. Storage, queries, and streaming inserts
- B. Storage, queries, and loading data from a file
- C. Storage, queries, and exporting data
- D. Queries and streaming inserts

**Answer:** A

**Explanation:**

Google charges for storage, queries, and streaming inserts. Loading data from a file and exporting data are free operations.

Reference: <https://cloud.google.com/bigquery/pricing>

**NEW QUESTION 71**

- (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 72**

- (Exam Topic 5)

Which of the following statements about Legacy SQL and Standard SQL is not true?

- A. Standard SQL is the preferred query language for BigQuery.
- B. If you write a query in Legacy SQL, it might generate an error if you try to run it with Standard SQL.
- C. One difference between the two query languages is how you specify fully-qualified table names (i. table names that include their associated project name).
- D. You need to set a query language for each dataset and the default is Standard SQL.

**Answer:** D

**Explanation:**

You do not set a query language for each dataset. It is set each time you run a query and the default query language is Legacy SQL.

Standard SQL has been the preferred query language since BigQuery 2.0 was released.

In legacy SQL, to query a table with a project-qualified name, you use a colon, :, as a separator. In standard SQL, you use a period, ., instead.

Due to the differences in syntax between the two query languages (such as with project-qualified table names), if you write a query in Legacy SQL, it might generate an error if you try to run it with Standard SQL.

Reference:

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

**NEW QUESTION 75**

- (Exam Topic 6)

You are migrating a table to BigQuery and are deciding on the data model. Your table stores information related to purchases made across several store locations and includes information like the time of the transaction, items purchased, the store ID and the city and state in which the store is located. You frequently query this table to see how many of each item were sold over the past 30 days and to look at purchasing trends by state, city, and individual store. You want to model this table to minimize query time and cost. What should you do?

- A. Partition by transaction time; cluster by state first, then city then store ID
- B. Partition by transaction time; cluster by store ID first, then city, then state
- C. Top-level cluster by state first, then city then store
- D. Top-level cluster by store ID first, then city then state.

**Answer:** C

**NEW QUESTION 76**

- (Exam Topic 6)

You need ads data to serve AI models and historical data for analytics. Longtail and outlier data points need to be identified. You want to cleanse the data in near-real time before running it through AI models. What should you do?

- A. Use BigQuery to ingest, prepare, and then analyze the data, and then run queries to create views.
- B. Use Cloud Storage as a data warehouse, shell scripts for processing, and BigQuery to create views for desired datasets.
- C. Use Dataflow to identify longtail and outlier data points programmatically with BigQuery as a sink.
- D. Use Cloud Composer to identify longtail and outlier data points, and then output a usable dataset to BigQuery.

**Answer:** A

**NEW QUESTION 77**

- (Exam Topic 6)

Your team is working on a binary classification problem. You have trained a support vector machine (SVM) classifier with default parameters, and received an area under the Curve (AUC) of 0.87 on the validation set. You want to increase the AUC of the model. What should you do?

- A. Perform hyperparameter tuning.
- B. Train a classifier with deep neural networks, because neural networks would always beat SVMs.
- C. Deploy the model and measure the real-world AUC; it's always higher because of generalization.
- D. Scale predictions you get out of the model (tune a scaling factor as a hyperparameter) in order to get the highest AUC.

**Answer:** A

**Explanation:**

<https://towardsdatascience.com/understanding-hyperparameters-and-its-optimisation-techniques-f0debba07568>

**NEW QUESTION 81**

- (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 86**

- (Exam Topic 6)

You work for a shipping company that uses handheld scanners to read shipping labels. Your company has strict data privacy standards that require scanners to only transmit recipients' personally identifiable information (PII) to analytics systems, which violates user privacy rules. You want to quickly build a scalable solution using cloud-native managed services to prevent exposure of PII to the analytics systems. What should you do?

- A. Create an authorized view in BigQuery to restrict access to tables with sensitive data.
- B. Install a third-party data validation tool on Compute Engine virtual machines to check the incoming data for sensitive information.
- C. Use Stackdriver logging to analyze the data passed through the total pipeline to identify transactions that may contain sensitive information.
- D. Build a Cloud Function that reads the topics and makes a call to the Cloud Data Loss Prevention API.
- E. Use the tagging and confidence levels to either pass or quarantine the data in a bucket for review.

**Answer: D**

**NEW QUESTION 91**

- (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 93**

- (Exam Topic 6)

You have historical data covering the last three years in BigQuery and a data pipeline that delivers new data to BigQuery daily. You have noticed that when the Data Science team runs a query filtered on a date column and limited to 30–90 days of data, the query scans the entire table. You also noticed that your bill is increasing more quickly than you expected. You want to resolve the issue as cost-effectively as possible while maintaining the ability to conduct SQL queries. What should you do?

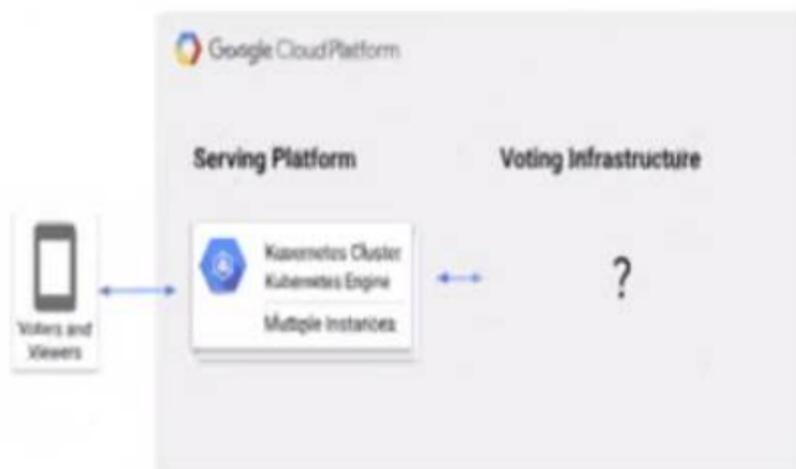
- A. Re-create the tables using DDL
- B. Partition the tables by a column containing a TIMESTAMP or DATETIME.
- C. Recommend that the Data Science team export the table to a CSV file on Cloud Storage and use Cloud Datalab to explore the data by reading the files directly.
- D. Modify your pipeline to maintain the last 30–90 days of data in one table and the longer history in a different table to minimize full table scans over the entire history.
- E. Write an Apache Beam pipeline that creates a BigQuery table per day
- F. Recommend that the Data Science team use wildcards on the table name suffixes to select the data they need.

**Answer: C**

**NEW QUESTION 95**

- (Exam Topic 6)

A live TV show asks viewers to cast votes using their mobile phones. The event generates a large volume of data during a 3 minute period. You are in charge of the Voting infrastructure\* and must ensure that the platform can handle the load and that all votes are processed. You must display partial results while voting is open. After voting ends you need to count the votes exactly once while optimizing cost. What should you do?



- A. Create a Memorystore instance with a high availability (HA) configuration
- B. Write votes to a Pub Sub topic and have Cloud Functions subscribe to it and write votes to BigQuery
- C. Write votes to a Pub/Sub topic and load into both Bigtable and BigQuery via a Dataflow pipeline. Query Bigtable for real-time results and BigQuery for later analysis. Shutdown the Bigtable instance when voting concludes.
- D. Create a Cloud SQL for PostgreSQL database with high availability (HA) configuration and multiple read replicas

**Answer: C**

**NEW QUESTION 96**

- (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 (app
- C. 200MB per file) instead of parquet files.
- D. Switch from HDDs to SSDs, copy initial data from GCS to HDFS, run the Spark job and copy results back to GCS.
- E. Switch from HDDs to SSDs, override the preemptible VMs configuration to increase the boot disk size.

**Answer:** A

#### NEW QUESTION 97

- (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 100

- (Exam Topic 6)

You're training a model to predict housing prices based on an available dataset with real estate properties. Your plan is to train a fully connected neural net, and you've discovered that the dataset contains latitude and longitude of the property. Real estate professionals have told you that the location of the property is highly influential on price, so you'd like to engineer a feature that incorporates this physical dependency. What should you do?

- A. Provide latitude and longitude as input vectors to your neural net.
- B. Create a numeric column from a feature cross of latitude and longitude.
- C. Create a feature cross of latitude and longitude, bucketize at the minute level and use L1 regularization during optimization.
- D. Create a feature cross of latitude and longitude, bucketize it at the minute level and use L2 regularization during optimization.

**Answer:** C

#### Explanation:

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

#### NEW QUESTION 103

- (Exam Topic 6)

You have a requirement to insert minute-resolution data from 50,000 sensors into a BigQuery table. You expect significant growth in data volume and need the data to be available within 1 minute of ingestion for real-time analysis of aggregated trends. What should you do?

- A. Use bq load to load a batch of sensor data every 60 seconds.
- B. Use a Cloud Dataflow pipeline to stream data into the BigQuery table.
- C. Use the INSERT statement to insert a batch of data every 60 seconds.
- D. Use the MERGE statement to apply updates in batch every 60 seconds.

**Answer:** C

#### NEW QUESTION 108

- (Exam Topic 6)

As your organization expands its usage of GCP, many teams have started to create their own projects. Projects are further multiplied to accommodate different stages of deployments and target audiences. Each project requires unique access control configurations. The central IT team needs to have access to all projects. Furthermore, data from Cloud Storage buckets and BigQuery datasets must be shared for use in other projects in an ad hoc way. You want to simplify access control management by minimizing the number of policies. Which two steps should you take? Choose 2 answers.

- A. Use Cloud Deployment Manager to automate access provision.
- B. Introduce resource hierarchy to leverage access control policy inheritance.
- C. Create distinct groups for various teams, and specify groups in Cloud IAM policies.
- D. Only use service accounts when sharing data for Cloud Storage buckets and BigQuery datasets.
- E. For each Cloud Storage bucket or BigQuery dataset, decide which projects need access
- F. Find all the active members who have access to these projects, and create a Cloud IAM policy to grant access to all these users.

**Answer:** AC

#### NEW QUESTION 110

- (Exam Topic 6)

Your team is responsible for developing and maintaining ETLs in your company. One of your Dataflow jobs is failing because of some errors in the input data, and you need to improve reliability of the pipeline (incl. being able to reprocess all failing data).

What should you do?

- A. Add a filtering step to skip these types of errors in the future, extract erroneous rows from logs.
- B. Add a try... catch block to your DoFn that transforms the data, extract erroneous rows from logs.
- C. Add a try... catch block to your DoFn that transforms the data, write erroneous rows to PubSub directly from the DoFn.
- D. Add a try... catch block to your DoFn that transforms the data, use a sideOutput to create a PCollection that can be stored to PubSub later.

**Answer: C**

#### NEW QUESTION 113

- (Exam Topic 6)

You are designing a pipeline that publishes application events to a Pub/Sub topic. You need to aggregate events across hourly intervals before loading the results to BigQuery for analysis. Your solution must be scalable so it can process and load large volumes of events to BigQuery. What should you do?

- A. Create a streaming Dataflow job to continually read from the Pub/Sub topic and perform the necessary aggregations using tumbling windows
- B. Schedule a batch Dataflow job to run hourly, pulling all available messages from the Pub-Sub topic and performing the necessary aggregations
- C. Schedule a Cloud Function to run hourly, pulling all available messages from the Pub/Sub topic and performing the necessary aggregations
- D. Create a Cloud Function to perform the necessary data processing that executes using the Pub/Sub trigger every time a new message is published to the topic.

**Answer: A**

#### NEW QUESTION 114

- (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: C**

#### NEW QUESTION 116

- (Exam Topic 6)

You work for a bank. You have a labelled dataset that contains information on already granted loan application and whether these applications have been defaulted. You have been asked to train a model to predict default rates for credit applicants. What should you do?

- A. Increase the size of the dataset by collecting additional data.
- B. Train a linear regression to predict a credit default risk score.
- C. Remove the bias from the data and collect applications that have been declined loans.
- D. Match loan applicants with their social profiles to enable feature engineering.

**Answer: B**

#### NEW QUESTION 120

- (Exam Topic 6)

You are using BigQuery and Data Studio to design a customer-facing dashboard that displays large quantities of aggregated data. You expect a high volume of concurrent users. You need to optimize the dashboard to provide quick visualizations with minimal latency. What should you do?

- A. Use BigQuery BI Engine with materialized views
- B. Use BigQuery BI Engine with streaming data.
- C. Use BigQuery BI Engine with authorized views
- D. Use BigQuery BI Engine with logical reviews

**Answer: B**

#### NEW QUESTION 125

- (Exam Topic 6)

You are using Cloud Bigtable to persist and serve stock market data for each of the major indices. To serve the trading application, you need to access only the most recent stock prices that are streaming in. How should you design your row key and tables to ensure that you can access the data with the most simple query?

- A. Create one unique table for all of the indices, and then use the index and timestamp as the row key design
- B. Create one unique table for all of the indices, and then use a reverse timestamp as the row key design.
- C. For each index, have a separate table and use a timestamp as the row key design
- D. For each index, have a separate table and use a reverse timestamp as the row key design

**Answer: A**

#### NEW QUESTION 128

- (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:** AE

#### NEW QUESTION 131

- (Exam Topic 6)

You are building an application to share financial market data with consumers, who will receive data feeds. Data is collected from the markets in real time. Consumers will receive the data in the following ways:

- > Real-time event stream
- > ANSI SQL access to real-time stream and historical data
- > Batch historical exports

Which solution should you use?

- A. Cloud Dataflow, Cloud SQL, Cloud Spanner
- B. Cloud Pub/Sub, Cloud Storage, BigQuery
- C. Cloud Dataproc, Cloud Dataflow, BigQuery
- D. Cloud Pub/Sub, Cloud Dataproc, Cloud SQL

**Answer:** A

#### NEW QUESTION 134

- (Exam Topic 6)

You set up a streaming data insert into a Redis cluster via a Kafka cluster. Both clusters are running on Compute Engine instances. You need to encrypt data at rest with encryption keys that you can create, rotate, and destroy as needed. What should you do?

- A. Create a dedicated service account, and use encryption at rest to reference your data stored in your Compute Engine cluster instances as part of your API service calls.
- B. Create encryption keys in Cloud Key Management Service
- C. Use those keys to encrypt your data in all of the Compute Engine cluster instances.
- D. Create encryption keys locally
- E. Upload your encryption keys to Cloud Key Management Service
- F. Use those keys to encrypt your data in all of the Compute Engine cluster instances.
- G. Create encryption keys in Cloud Key Management Service
- H. Reference those keys in your API service calls when accessing the data in your Compute Engine cluster instances.

**Answer:** C

#### NEW QUESTION 138

- (Exam Topic 6)

Your company has a hybrid cloud initiative. You have a complex data pipeline that moves data between cloud provider services and leverages services from each of the cloud providers. Which cloud-native service should you use to orchestrate the entire pipeline?

- A. Cloud Dataflow
- B. Cloud Composer
- C. Cloud Dataprep
- D. Cloud Dataproc

**Answer:** D

#### NEW QUESTION 142

- (Exam Topic 6)

You are implementing security best practices on your data pipeline. Currently, you are manually executing jobs as the Project Owner. You want to automate these jobs by taking nightly batch files containing non-public information from Google Cloud Storage, processing them with a Spark Scala job on a Google Cloud Dataproc cluster, and depositing the results into Google BigQuery. How should you securely run this workload?

- A. Restrict the Google Cloud Storage bucket so only you can see the files
- B. Grant the Project Owner role to a service account, and run the job with it
- C. Use a service account with the ability to read the batch files and to write to BigQuery
- D. Use a user account with the Project Viewer role on the Cloud Dataproc cluster to read the batch files and write to BigQuery

**Answer:** B

#### NEW QUESTION 146

- (Exam Topic 6)

You work for a mid-sized enterprise that needs to move its operational system transaction data from an on-premises database to GCP. The database is about 20 TB in size. Which database should you choose?

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

**Answer:** A

#### NEW QUESTION 148

- (Exam Topic 6)

You have a data stored in BigQuery. The data in the BigQuery dataset must be highly available. You need to define a storage, backup, and recovery strategy of this data that minimizes cost. How should you configure the BigQuery table?

- A. Set the BigQuery dataset to be regional
- B. In the event of an emergency, use a point-in-time snapshot to recover the data.
- C. Set the BigQuery dataset to be regional
- D. Create a scheduled query to make copies of the data to tables suffixed with the time of the backup
- E. In the event of an emergency, use the backup copy of the table.
- F. Set the BigQuery dataset to be multi-regional
- G. In the event of an emergency, use a point-in-time snapshot to recover the data.
- H. Set the BigQuery dataset to be multi-regional
- I. Create a scheduled query to make copies of the data to tables suffixed with the time of the backup
- J. In the event of an emergency, use the backup copy of the table.

**Answer: B**

#### NEW QUESTION 153

- (Exam Topic 6)

You want to analyze hundreds of thousands of social media posts daily at the lowest cost and with the fewest steps.

You have the following requirements:

- > You will batch-load the posts once per day and run them through the Cloud Natural Language API.
- > You will extract topics and sentiment from the posts.
- > You must store the raw posts for archiving and reprocessing.
- > You will create dashboards to be shared with people both inside and outside your organization.

You need to store both the data extracted from the API to perform analysis as well as the raw social media posts for historical archiving. What should you do?

- A. Store the social media posts and the data extracted from the API in BigQuery.
- B. Store the social media posts and the data extracted from the API in Cloud SQL.
- C. Store the raw social media posts in Cloud Storage, and write the data extracted from the API into BigQuery.
- D. Feed to social media posts into the API directly from the source, and write the extracted data from the API into BigQuery.

**Answer: D**

#### NEW QUESTION 157

- (Exam Topic 6)

You are building a data pipeline on Google Cloud. You need to prepare data using a casual method for a machine-learning process. You want to support a logistic regression model. You also need to monitor and adjust for null values, which must remain real-valued and cannot be removed. What should you do?

- A. Use Cloud Dataprep to find null values in sample source data
- B. Convert all nulls to 'none' using a Cloud Dataproc job.
- C. Use Cloud Dataprep to find null values in sample source data
- D. Convert all nulls to 0 using a Cloud Dataprep job.
- E. Use Cloud Dataflow to find null values in sample source data
- F. Convert all nulls to 'none' using a Cloud Dataprep job.
- G. Use Cloud Dataflow to find null values in sample source data
- H. Convert all nulls to using a custom script.

**Answer: C**

#### NEW QUESTION 161

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