

## Professional Data Engineer.34q

Number: Google Data Engineer

Passing Score: 800

Time Limit: 120 min



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Google Certified Professional - Data Engineer

## Exam A

### QUESTION 1

You are building a model to make clothing recommendations. You know a user's fashion preference is likely to change over time, so you build a data pipeline to stream new data back to the model as it becomes available. How should you use this data to train the model?



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- A. Continuously retrain the model on just the new data.
- B. Continuously retrain the model on a combination of existing data and the new data.
- C. Train on the existing data while using the new data as your test set.
- D. Train on the new data while using the existing data as your test set.

**Correct Answer:** D

**Section:** (none)

**Explanation**

**Explanation/Reference:**

### QUESTION 2

Your weather app queries a database every 15 minutes to get the current temperature. The frontend is powered by Google App Engine and server millions of users. How should you design the frontend to respond to a database failure?

- A. Issue a command to restart the database servers.
- B. Retry the query with exponential backoff, up to a cap of 15 minutes.
- C. Retry the query every second until it comes back online to minimize staleness of data.
- D. Reduce the query frequency to once every hour until the database comes back online.

**Correct Answer:** B

**Section:** (none)

**Explanation**

**Explanation/Reference:**

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### QUESTION 3

You are building new real-time data warehouse for your company and will use Google BigQuery streaming inserts. There is no guarantee that data will only be sent in once but you do have a unique ID for each row of data and an event timestamp. You want to ensure that duplicates are not included while interactively querying data. Which query type should you use?

- A. Include `ORDER BY` on timestamp column and `LIMIT` to 1.
- B. Use `GROUP BY` on the unique ID column and timestamp column and `SUM` on the values.
- C. Use the `LAG` window function with `PARTITION` by unique ID along with `WHERE LAG IS NOT NULL`.
- D. Use the `ROW_NUMBER` window function with `PARTITION` by unique ID along with `WHERE row equals 1`.

**Correct Answer:** D

**Section:** (none)

**Explanation**

**Explanation/Reference:**

### QUESTION 4

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*'`

**Correct Answer:** B

**Section:** (none)

## Explanation

### Explanation/Reference:

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

### QUESTION 5

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

**Correct Answer:** A

**Section:** (none)

### Explanation

### Explanation/Reference:

### QUESTION 6

You want to use a database of information about tissue samples to classify future tissue samples as either normal or mutated. You are evaluating an unsupervised anomaly detection method for classifying the tissue samples. Which two characteristics support this method? (Choose two.)

- A. There are very few occurrences of mutations relative to normal samples.
- B. There are roughly equal occurrences of both normal and mutated samples in the database.
- C. You expect future mutations to have different features from the mutated samples in the database.
- D. You expect future mutations to have similar features to the mutated samples in the database.
- E. You already have labels for which samples are mutated and which are normal in the database.

**Correct Answer:** BC

**Section:** (none)

### Explanation

### Explanation/Reference:

**QUESTION 7**

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.

**Correct Answer:** A

**Section:** (none)

**Explanation**

**Explanation/Reference:**

**QUESTION 8**

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.

**Correct Answer:** B

**Section:** (none)

**Explanation**

**Explanation/Reference:**

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

**QUESTION 9**

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.

**Correct Answer:** B

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 10

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?



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- A. Delete the table `CLICK_STREAM`, and then re-create it such that the column `DT` is of the `TIMESTAMP` type. Reload the data.
- B. 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. Reference the column `TS` instead of the column `DT` from now on.
- C. Create a view `CLICK_STREAM_V`, where strings from the column `DT` are cast into `TIMESTAMP` values. Reference the view `CLICK_STREAM_V` instead of the table `CLICK_STREAM` from now on.
- D. Add two columns to the table `CLICK_STREAM`: `TS` of the `TIMESTAMP` type and `IS_NEW` of the `BOOLEAN` type. Reload all data in append mode. For each appended row, set the value of `IS_NEW` to true. 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.
- E. 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. Run the query into a destination table `NEW_CLICK_STREAM`, in which the column `TS` is the `TIMESTAMP` type. Reference the table `NEW_CLICK_STREAM` instead of the table `CLICK_STREAM` from now on. In the future, new data is loaded into the table `NEW_CLICK_STREAM`.

**Correct Answer:** D

**Section:** (none)

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### Explanation

### Explanation/Reference:

#### QUESTION 11

You want to use Google Stackdriver Logging to monitor Google BigQuery usage. You need an instant notification to be sent to your monitoring tool when new data is appended to a certain table using an insert job, but you do not want to receive notifications for other tables. What should you do?

- A. Make a call to the Stackdriver API to list all logs, and apply an advanced filter.
- B. In the Stackdriver logging admin interface, and enable a log sink export to BigQuery.
- C. In the Stackdriver logging admin interface, enable a log sink export to Google Cloud Pub/Sub, and subscribe to the topic from your monitoring tool.
- D. Using the Stackdriver API, create a project sink with advanced log filter to export to Pub/Sub, and subscribe to the topic from your monitoring tool.

**Correct Answer:** B

**Section:** (none)

### Explanation

### Explanation/Reference:

#### QUESTION 12

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.

**Correct Answer:** B

**Section:** (none)

### Explanation

### Explanation/Reference:

#### QUESTION 13

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.

**Correct Answer:** D

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 14

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>.`

**Correct Answer:** A

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 15

Your company's customer and order databases are often under heavy load. This makes performing analytics against them difficult without harming operations. The databases are in a MySQL cluster, with nightly backups taken using `mysqldump`. You want to perform analytics with minimal impact on operations. What should you



do?

- A. Add a node to the MySQL cluster and build an OLAP cube there.
- B. Use an ETL tool to load the data from MySQL into Google BigQuery.
- C. Connect an on-premises Apache Hadoop cluster to MySQL and perform ETL.
- D. Mount the backups to Google Cloud SQL, and then process the data using Google Cloud Dataproc.

**Correct Answer:** C

**Section:** (none)

**Explanation**

**Explanation/Reference:**

## **QUESTION 16**

### **Flowlogistic Case Study**

#### **Company Overview**

Flowlogistic is a leading logistics and supply chain provider. They help businesses throughout the world manage their resources and transport them to their final destination. The company has grown rapidly, expanding their offerings to include rail, truck, aircraft, and oceanic shipping.

#### **Company Background**

The company started as a regional trucking company, and then expanded into other logistics market. Because they have not updated their infrastructure, managing and tracking orders and shipments has become a bottleneck. To improve operations, Flowlogistic developed proprietary technology for tracking shipments in real time at the parcel level. However, they are unable to deploy it because their technology stack, based on Apache Kafka, cannot support the processing volume. In addition, Flowlogistic wants to further analyze their orders and shipments to determine how best to deploy their resources.

#### **Solution Concept**

Flowlogistic wants to implement two concepts using the cloud:

- Use their proprietary technology in a real-time inventory-tracking system that indicates the location of their loads
- Perform analytics on all their orders and shipment logs, which contain both structured and unstructured data, to determine how best to deploy resources, which markets to expand into. They also want to use predictive analytics to learn earlier when a shipment will be delayed.

#### **Existing Technical Environment**

Flowlogistic architecture resides in a single data center:

- Databases

- 8 physical servers in 2 clusters
  - SQL Server – user data, inventory, static data
- 3 physical servers
  - Cassandra – metadata, tracking messages
- 10 Kafka servers – tracking message aggregation and batch insert
- Application servers – customer front end, middleware for order/customs
  - 60 virtual machines across 20 physical servers
    - Tomcat – Java services
    - Nginx – static content
    - Batch servers
- Storage appliances
  - iSCSI for virtual machine (VM) hosts
  - Fibre Channel storage area network (FC SAN) – SQL server storage
  - Network-attached storage (NAS) image storage, logs, backups
- Apache Hadoop /Spark servers
  - Core Data Lake
  - Data analysis workloads
- 20 miscellaneous servers
  - Jenkins, monitoring, bastion hosts,

### **Business Requirements**

- Build a reliable and reproducible environment with scaled parity of production.
- Aggregate data in a centralized Data Lake for analysis
- Use historical data to perform predictive analytics on future shipments
- Accurately track every shipment worldwide using proprietary technology
- Improve business agility and speed of innovation through rapid provisioning of new resources
- Analyze and optimize architecture for performance in the cloud
- Migrate fully to the cloud if all other requirements are met

### **Technical Requirements**

- Handle both streaming and batch data
- Migrate existing Hadoop workloads
- Ensure architecture is scalable and elastic to meet the changing demands of the company.
- Use managed services whenever possible
- Encrypt data flight and at rest
- Connect a VPN between the production data center and cloud environment

### **SEO Statement**

We have grown so quickly that our inability to upgrade our infrastructure is really hampering further growth and efficiency. We are efficient at moving shipments around the world, but we are inefficient at moving data around.

We need to organize our information so we can more easily understand where our customers are and what they are shipping.

#### **CTO Statement**

IT has never been a priority for us, so as our data has grown, we have not invested enough in our technology. I have a good staff to manage IT, but they are so busy managing our infrastructure that I cannot get them to do the things that really matter, such as organizing our data, building the analytics, and figuring out how to implement the CFO's tracking technology.

#### **CFO Statement**

Part of our competitive advantage is that we penalize ourselves for late shipments and deliveries. Knowing where our shipments are at all times has a direct correlation to our bottom line and profitability. Additionally, I don't want to commit capital to building out a server environment.

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.

**Correct Answer: C**

**Section: (none)**

**Explanation**

**Explanation/Reference:**

#### **QUESTION 17**

#### **MJTelco Case Study**

#### **Company Overview**

MJTelco is a startup that plans to build networks in rapidly growing, underserved markets around the world. The company has patents for innovative optical communications hardware. Based on these patents, they can create many reliable, high-speed backbone links with inexpensive hardware.

#### **Company Background**

Founded by experienced telecom executives, MJTelco uses technologies originally developed to overcome communications challenges in space. Fundamental to their operation, they need to create a distributed data infrastructure that drives real-time analysis and incorporates machine learning to continuously optimize their topologies. Because their hardware is inexpensive, they plan to overdeploy the network allowing them to account for the impact of dynamic regional politics on location availability and cost.

Their management and operations teams are situated all around the globe creating many-to-many relationship between data consumers and provides in their system. After careful consideration, they decided public cloud is the perfect environment to support their needs.

## **Solution Concept**

MJTelco is running a successful proof-of-concept (PoC) project in its labs. They have two primary needs:

- Scale and harden their PoC to support significantly more data flows generated when they ramp to more than 50,000 installations.
- Refine their machine-learning cycles to verify and improve the dynamic models they use to control topology definition.

MJTelco will also use three separate operating environments – development/test, staging, and production – to meet the needs of running experiments, deploying new features, and serving production customers.

## **Business Requirements**

- Scale up their production environment with minimal cost, instantiating resources when and where needed in an unpredictable, distributed telecom user community.
- Ensure security of their proprietary data to protect their leading-edge machine learning and analysis.
- Provide reliable and timely access to data for analysis from distributed research workers
- Maintain isolated environments that support rapid iteration of their machine-learning models without affecting their customers.

## **Technical Requirements**

- Ensure secure and efficient transport and storage of telemetry data
- Rapidly scale instances to support between 10,000 and 100,000 data providers with multiple flows each.
- Allow analysis and presentation against data tables tracking up to 2 years of data storing approximately 100m records/day
- Support rapid iteration of monitoring infrastructure focused on awareness of data pipeline problems both in telemetry flows and in production learning cycles.

## **CEO Statement**

Our business model relies on our patents, analytics and dynamic machine learning. Our inexpensive hardware is organized to be highly reliable, which gives us cost advantages. We need to quickly stabilize our large distributed data pipelines to meet our reliability and capacity commitments.

## **CTO Statement**

Our public cloud services must operate as advertised. We need resources that scale and keep our data secure. We also need environments in which our data scientists can carefully study and quickly adapt our models. Because we rely on automation to process our data, we also need our development and test environments to work as we iterate.

**CFO Statement**

The project is too large for us to maintain the hardware and software required for the data and analysis. Also, we cannot afford to staff an operations team to monitor so many data feeds, so we will rely on automation and infrastructure. Google Cloud's machine learning will allow our quantitative researchers to work on our high-value problems instead of problems with our data pipelines.

MJTelco needs you to create a schema in Google Bigtable that will allow for the historical analysis of the last 2 years of records. Each record that comes in is sent every 15 minutes, and contains a unique identifier of the device and a data record. The most common query is for all the data for a given device for a given day. Which schema should you use?

- A. Rowkey: date#device\_id  
Column data: data\_point
- B. Rowkey: date  
Column data: device\_id, data\_point
- C. Rowkey: device\_id  
Column data: date, data\_point
- D. Rowkey: data\_point  
Column data: device\_id, date
- E. Rowkey: date#data\_point  
Column data: device\_id

**Correct Answer:** D

**Section:** (none)

**Explanation**

**Explanation/Reference:**

**QUESTION 18**

Your company has recently grown rapidly and now ingesting data at a significantly higher rate than it was previously. You manage the daily batch MapReduce analytics jobs in Apache Hadoop. However, the recent increase in data has meant the batch jobs are falling behind. You were asked to recommend ways the development team could increase the responsiveness of the analytics without increasing costs. What should you recommend they do?

- A. Rewrite the job in Pig.
- B. Rewrite the job in Apache Spark.
- C. Increase the size of the Hadoop cluster.
- D. Decrease the size of the Hadoop cluster but also rewrite the job in Hive.

**Correct Answer:** A

**Section: (none)**

**Explanation**

**Explanation/Reference:**

**QUESTION 19**

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'`

**Correct Answer:** A

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 20

You work for a manufacturing plant that batches application log files together into a single log file once a day at 2:00 AM. You have written a Google Cloud Dataflow job to process that log file. You need to make sure the log file is processed once per day as inexpensively as possible. What should you do?

- A. Change the processing job to use Google Cloud Dataproc instead.
- B. Manually start the Cloud Dataflow job each morning when you get into the office.
- C. Create a cron job with Google App Engine Cron Service to run the Cloud Dataflow job.
- D. Configure the Cloud Dataflow job as a streaming job so that it processes the log data immediately.

**Correct Answer:** C

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 21

You are training a spam classifier. You notice that you are overfitting the training data. Which three actions can you take to resolve this problem? (Choose three.)



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- A. Get more training examples
- B. Reduce the number of training examples
- C. Use a smaller set of features
- D. Use a larger set of features
- E. Increase the regularization parameters
- F. Decrease the regularization parameters

**Correct Answer:** ADF

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### QUESTION 22

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

**Correct Answer:** B

**Section:** (none)

**Explanation**

**Explanation/Reference:**

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**QUESTION 23**

Your globally distributed auction application allows users to bid on items. Occasionally, users place identical bids at nearly identical times, and different application servers process those bids. Each bid event contains the item, amount, user, and timestamp. You want to collate those bid events into a single location in real time to determine which user bid first. What should you do?

- A. Create a file on a shared file and have the application servers write all bid events to that file. Process the file with Apache Hadoop to identify which user bid first.
- B. Have each application server write the bid events to Cloud Pub/Sub as they occur. Push the events from Cloud Pub/Sub to a custom endpoint that writes the bid event information into Cloud SQL.
- C. Set up a MySQL database for each application server to write bid events into. Periodically query each of those distributed MySQL databases and update a master MySQL database with bid event information.
- D. Have each application server write the bid events to Google Cloud Pub/Sub as they occur. Use a pull subscription to pull the bid events using Google Cloud Dataflow. Give the bid for each item to the user in the bid event that is processed first.

**Correct Answer:** C

**Section:** (none)

**Explanation**

**Explanation/Reference:**

**QUESTION 24**

Your organization has been collecting and analyzing data in Google BigQuery for 6 months. The majority of the data analyzed is placed in a time-partitioned table named `events_partitioned`. To reduce the cost of queries, your organization created a view called `events`, which queries only the last 14 days of data. The view is described in legacy SQL. Next month, existing applications will be connecting to BigQuery to read the `events` data via an ODBC connection. You need to ensure the applications can connect. Which two actions should you take? (Choose two.)

- A. Create a new view over events using standard SQL
- B. Create a new partitioned table using a standard SQL query
- C. Create a new view over `events_partitioned` using standard SQL
- D. Create a service account for the ODBC connection to use for authentication
- E. Create a Google Cloud Identity and Access Management (Cloud IAM) role for the ODBC connection and shared “events”

**Correct Answer:** AE

**Section:** (none)

**Explanation**

**Explanation/Reference:**

**QUESTION 25**

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`

**Correct Answer: A**

**Section: (none)**

**Explanation**

**Explanation/Reference:**

Reference: <https://cloud.google.com/blog/products/gcp/using-bigquery-and-firebase-analytics-to-understand-your-mobile-app?hl=am>

**QUESTION 26**

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 the all streaming insert. 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

**Correct Answer: C**

**Section: (none)**

**Explanation**

**Explanation/Reference:**

**QUESTION 27**

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

**Correct Answer:** A

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### **QUESTION 28**

Your company receives both batch- and stream-based event data. You want to process the data using Google Cloud Dataflow over a predictable time period. However, you realize that in some instances data can arrive late or out of order. How should you design your Cloud Dataflow pipeline to handle data that is late or out of order?

- A. Set a single global window to capture all the data.
- B. Set sliding windows to capture all the lagged data.
- C. Use watermarks and timestamps to capture the lagged data.
- D. Ensure every datasource type (stream or batch) has a timestamp, and use the timestamps to define the logic for lagged data.

**Correct Answer:** B

**Section:** (none)

**Explanation**

**Explanation/Reference:**

#### **QUESTION 29**

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

**Correct Answer:** C

**Section:** (none)

**Explanation**

**Explanation/Reference:**

### QUESTION 30

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 Dataproc. Call the model from your application.
- B. Build and train a classification model with Spark MLlib to generate labels. Build and train a second classification model with Spark MLlib to filter results to match customer preferences. Deploy the models using Cloud Dataproc. Call the models from your application.
- C. Build an application that calls the Cloud Video Intelligence API to generate labels. Store data in Cloud Bigtable, and filter the predicted labels to match the user's viewing history to generate preferences.
- D. Build an application that calls the Cloud Video Intelligence API to generate labels. Store data in Cloud SQL, and join and filter the predicted labels to match the user's viewing history to generate preferences.

**Correct Answer:** C

**Section:** (none)

**Explanation**

**Explanation/Reference:**

### QUESTION 31

Your infrastructure includes a set of YouTube channels. You have been tasked with creating a process for sending the YouTube channel data to Google Cloud for analysis. You want to design a solution that allows your world-wide marketing teams to perform ANSI SQL and other types of analysis on up-to-date YouTube channels log data. How should you set up the log data transfer into Google Cloud?

- A. Use Storage Transfer Service to transfer the offsite backup files to a Cloud Storage Multi-Regional storage bucket as a final destination.
- B. Use Storage Transfer Service to transfer the offsite backup files to a Cloud Storage Regional bucket as a final destination.
- C. Use BigQuery Data Transfer Service to transfer the offsite backup files to a Cloud Storage Multi-Regional storage bucket as a final destination.
- D. Use BigQuery Data Transfer Service to transfer the offsite backup files to a Cloud Storage Regional storage bucket as a final destination.

**Correct Answer:** B

**Section:** (none)

### **Explanation**

### **Explanation/Reference:**

#### **QUESTION 32**

You are designing storage for very large text files for a data pipeline on Google Cloud. You want to support ANSI SQL queries. You also want to support compression and parallel load from the input locations using Google recommended practices. What should you do?

- A. Transform text files to compressed Avro using Cloud Dataflow. Use BigQuery for storage and query.
- B. Transform text files to compressed Avro using Cloud Dataflow. Use Cloud Storage and BigQuery permanent linked tables for query.
- C. Compress text files to gzip using the Grid Computing Tools. Use BigQuery for storage and query.
- D. Compress text files to gzip using the Grid Computing Tools. Use Cloud Storage, and then import into Cloud Bigtable for query.

**Correct Answer: D**

**Section: (none)**

### **Explanation**

### **Explanation/Reference:**

#### **QUESTION 33**

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

**Correct Answer: A**

**Section: (none)**

### **Explanation**

### **Explanation/Reference:**

#### **QUESTION 34**

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 non-key columns. What should you do?

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

**Correct Answer:** D

**Section:** (none)

**Explanation**

**Explanation/Reference:**

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



<https://www.gratisexam.com/>