



# Professional Cloud Developer

v2309

## Quiz questions\*

### Cloud Spanner

*\* These are for practice only and are not actual exam questions*

Question: Which of the following is a recommended way to avoid hotspots in Cloud Spanner when choosing a primary key?

- A. Use a column whose value monotonically increases as the first key part.
- B. Use a Universally Unique Identifier (UUID) as the primary key.
- C. Use a timestamp-based primary key as the first key part.
- D. Use sequential primary keys.

Question: What is one of the pitfalls of using a timestamp-based primary key as the first key part in Cloud Spanner?

- A. It ensures that data is evenly distributed across servers.
- B. It results in all inserts occurring at the end of your key space.
- C. It reduces the chances of creating hotspots.

- D. It ensures that data is always written in ascending order.

Question: When connecting a GKE-based microservice to Cloud Spanner using Workload Identity, which component provides Application Default Credentials for your pods?

- A. Cloud Endpoints
- B. IAM service account
- C. Cloud Key Management Service
- D. Cloud Storage

Question: What is a common technique in Cloud Spanner for spreading the load across multiple servers?

- A. Use a UUID as the primary key.
- B. Use a timestamp as the primary key.
- C. Swap the order of the keys.
- D. Create a column that contains the hash of the actual unique key and use it as the primary key.

Question: What is the primary benefit of using table interleaving in Cloud Spanner?

- A) It allows for multiple foreign key relationships.
- B) It co-locates child rows with parent rows in storage.
- C) It allows tables without a primary key.
- D) It automatically adds and removes split boundaries.

Question: What is a recommended method to ensure that numerical primary keys don't cause hotspotting at scale in Cloud Spanner?

- A. Use them in ascending order.

- B. Use them in descending order.
- C. Bit-reverse the sequential values.
- D. Use them without any modifications.

Question: How do you associate a child table with a parent table in Cloud Spanner?

- A) By using foreign keys.
- B) By declaring the child table as interleaved in the parent.
- C) By adding secondary indexes based on primary keys.
- D) By creating a surrogate primary key.

Question: What is the maximum depth of interleaved parent-child relationships in Cloud Spanner?

- A) 3 layers
- B) 5 layers
- C) 7 layers
- D) 10 layers

Question: What does Spanner do when related tables grow and start reaching the resource limits of an individual server?

- A) It compresses the data.
- B) It divides the data into chunks called "splits".
- C) It creates a backup of the data.
- D) It deletes old data.

Question: In Cloud Spanner, what is one potential cause of hotspots when choosing a primary key in the schema design?

- A. Using a column whose value changes randomly as the first key part.

- B. Using a column whose value monotonically changes as the first key part.
- C. Using a column whose value remains constant.
- D. Using a column whose value is based on a UUID.

## Answers to Quiz questions

### Cloud Spanner

Question: Which of the following is a recommended way to avoid hotspots in Cloud Spanner when choosing a primary key?

- A. Use a column whose value monotonically increases as the first key part.
- B. Use a Universally Unique Identifier (UUID) as the primary key.
- C. Use a timestamp-based primary key as the first key part.
- D. Use sequential primary keys.

Correct Answer: B. Use a Universally Unique Identifier (UUID) as the primary key.

Explanation: Using a UUID, especially UUID Version 4, as the primary key is recommended because it uses random values in the bit sequence, which helps in distributing the data across the key space and avoiding hotspots.

Resource: [Schema design best practices | Cloud Spanner | Google Cloud](#)

Question: What is one of the pitfalls of using a timestamp-based primary key as the first key part in Cloud Spanner?

- A. It ensures that data is evenly distributed across servers.
- B. It results in all inserts occurring at the end of your key space.
- C. It reduces the chances of creating hotspots.
- D. It ensures that data is always written in ascending order.

Correct Answer: B. It results in all inserts occurring at the end of your key space.

Explanation: When a timestamp-based primary key is used as the first key part, it results in all inserts occurring at the end of the key space. This is problematic because Spanner uses key ranges to divide data among servers, which means all your inserts are directed at a single server that ends up doing all the work.

Resource: [Schema design best practices | Cloud Spanner | Google Cloud](#)

Question: When connecting a GKE-based microservice to Cloud Spanner using Workload Identity, which component provides Application Default Credentials for your pods?

- A. Cloud Endpoints
- B. IAM service account
- C. Cloud Key Management Service
- D. Cloud Storage

Correct Answer: B. IAM service account

Explanation: Workload Identity allows a Kubernetes service account in your cluster to act as an IAM service account, which provides Application Default Credentials for your pods.

Resource: [Connect Cloud Spanner with a Google Kubernetes Engine \(GKE\) cluster](#)

Question: What is a common technique in Cloud Spanner for spreading the load across multiple servers?

- A. Use a UUID as the primary key.
- B. Use a timestamp as the primary key.
- C. Swap the order of the keys.
- D. Create a column that contains the hash of the actual unique key and use it as the primary key.

Correct Answer: D. Create a column that contains the hash of the actual unique key and use it as the primary key.

Explanation: By creating a column that contains the hash of the actual unique key and using it as the primary key, new rows are spread more evenly across the key space, helping to avoid hotspots.

Resource: [Schema design best practices | Cloud Spanner | Google Cloud](#)

Question: What is the primary benefit of using table interleaving in Cloud Spanner?

- A) It allows for multiple foreign key relationships.
- B) It co-locates child rows with parent rows in storage.
- C) It allows tables without a primary key.
- D) It automatically adds and removes split boundaries.

Correct Answer: B) It co-locates child rows with parent rows in storage.

Explanation: With table interleaving, Spanner physically co-locates child rows with parent rows in storage. This co-location can significantly improve performance, especially when there's a frequent need to fetch related data.

Resource: [Cloud Spanner Schema and Data Model](#)

Question: What is a recommended method to ensure that numerical primary keys don't cause hotspotting at scale in Cloud Spanner?

- A. Use them in ascending order.
- B. Use them in descending order.
- C. Bit-reverse the sequential values.
- D. Use them without any modifications.

Correct Answer: C. Bit-reverse the sequential values.

Explanation: One way to avoid hotspotting issues with numerical primary keys is to bit-reverse the sequential values. This ensures that primary key values are distributed evenly across the key space.

Resource: [Schema design best practices | Cloud Spanner | Google Cloud](#)

Question: How do you associate a child table with a parent table in Cloud Spanner?

- A) By using foreign keys.
- B) By declaring the child table as interleaved in the parent.
- C) By adding secondary indexes based on primary keys.
- D) By creating a surrogate primary key.

Correct Answer: B) By declaring the child table as interleaved in the parent.

Explanation: You associate a child table with a parent table by using DDL that declares the child table as interleaved in the parent. Additionally, the parent table primary key must be included as the first part of the child table composite primary key.

Resource: [Cloud Spanner Schema and Data Model](#)

Question: What is the maximum depth of interleaved parent-child relationships in Cloud Spanner?

- A) 3 layers
- B) 5 layers
- C) 7 layers
- D) 10 layers

Correct Answer: C) 7 layers

Explanation: In Cloud Spanner, you can define hierarchies of interleaved parent-child relationships up to seven layers deep. This allows you to co-locate rows of seven independent tables.

Resource: [Cloud Spanner Schema and Data Model](#)

Question: What does Spanner do when related tables grow and start reaching the resource limits of an individual server?

- A) It compresses the data.
- B) It divides the data into chunks called "splits".

- C) It creates a backup of the data.
- D) It deletes old data.

Correct Answer: B) It divides the data into chunks called "splits".

Explanation: Spanner is a distributed database. As your database grows, Spanner divides your data into chunks called "splits". These splits can move independently from each other and can be assigned to different servers, potentially in different physical locations.

Resource: [Cloud Spanner Schema and Data Model](#)

Question: In Cloud Spanner, what is one potential cause of hotspots when choosing a primary key in the schema design?

- A. Using a column whose value changes randomly as the first key part.
- B. Using a column whose value monotonically changes as the first key part.
- C. Using a column whose value remains constant.
- D. Using a column whose value is based on a UUID.

Correct Answer: B. Using a column whose value monotonically changes as the first key part.

Explanation: When a column whose value monotonically changes is used as the first key part, it results in all inserts occurring at the end of your key space. This can lead to hotspots as all inserts are directed at a single server.

Resource: [Schema design best practices | Cloud Spanner | Google Cloud](#)