

Microsoft

Exam Questions DP-420

Designing and Implementing Cloud-Native Applications Using Microsoft Azure Cosmos DB



NEW QUESTION 1

- (Exam Topic 1)

You configure multi-region writes for account1.

You need to ensure that App1 supports the new configuration for account1. The solution must meet the business requirements and the product catalog requirements.

What should you do?

- A. Set the default consistency level of account1 to bounded staleness.
- B. Create a private endpoint connection.
- C. Modify the connection policy of App1.
- D. Increase the number of request units per second (RU/s) allocated to the con-product and con-productVendor containers.

Answer: D

Explanation:

App1 queries the con-product and con-productVendor containers.

Note: Request unit is a performance currency abstracting the system resources such as CPU, IOPS, and memory that are required to perform the database operations supported by Azure Cosmos DB.

Scenario:

Develop an app named App1 that will run from all locations and query the data in account1.

Once multi-region writes are configured, maximize the performance of App1 queries against the data in account1.

Whenever there are multiple solutions for a requirement, select the solution that provides the best performance, as long as there are no additional costs associated.

Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/consistency-levels>

NEW QUESTION 2

- (Exam Topic 1)

You need to provide a solution for the Azure Functions notifications following updates to con-product. The solution must meet the business requirements and the product catalog requirements.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Configure the trigger for each function to use a different leaseCollectionPrefix
- B. Configure the trigger for each function to use the same leaseCollectionName
- C. Configure the trigger for each function to use a different leaseCollectionName
- D. Configure the trigger for each function to use the same leaseCollectionPrefix

Answer: AB

Explanation:

leaseCollectionPrefix: when set, the value is added as a prefix to the leases created in the Lease collection for this Function. Using a prefix allows two separate Azure Functions to share the same Lease collection by using different prefixes.

Scenario: Use Azure Functions to send notifications about product updates to different recipients. Trigger the execution of two Azure functions following every update to any document in the con-product container.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-cosmosdb-v2-trigger>

NEW QUESTION 3

- (Exam Topic 1)

You need to identify which connectivity mode to use when implementing App2. The solution must support the planned changes and meet the business requirements.

Which connectivity mode should you identify?

- A. Direct mode over HTTPS
- B. Gateway mode (using HTTPS)
- C. Direct mode over TCP

Answer: C

Explanation:

Scenario: Develop an app named App2 that will run from the retail stores and query the data in account2. App2 must be limited to a single DNS endpoint when accessing account2.

By using Azure Private Link, you can connect to an Azure Cosmos account via a private endpoint. The private endpoint is a set of private IP addresses in a subnet within your virtual network.

When you're using Private Link with an Azure Cosmos account through a direct mode connection, you can use only the TCP protocol. The HTTP protocol is not currently supported.

Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-configure-private-endpoints>

NEW QUESTION 4

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account named account1.

In account1, you run the following query in a container that contains 100GB of data. SELECT *

FROM c

WHERE LOWER(c.categoryid) = "hockey"

You view the following metrics while performing the query.

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: No

Each physical partition should have its own index, but since no index is used, the query is not cross-partition.

Box 2: No

Index utilization is 0% and Index Look up time is also zero.

Box 3: Yes

A partition key index will be created, and the query will perform across the partitions. Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/how-to-query-container>

NEW QUESTION 5

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account.

You run the following query against a container in the account. SELECT

IS_NUMBER("1234") AS A, IS_NUMBER(1234) AS B, IS_NUMBER({prop: 1234}) AS C

What is the output of the query?

- A. [{"A": false, "B": true, "C": false}]
- B. [{"A": true, "B": false, "C": true}]
- C. [{"A": true, "B": true, "C": false}]
- D. [{"A": true, "B": true, "C": true}]

Answer: A

Explanation:

IS_NUMBER returns a Boolean value indicating if the type of the specified expression is a number. "1234" is a string, not a number.

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/sql-query-is-number>

NEW QUESTION 6

- (Exam Topic 2)

You have a container named container1 in an Azure Cosmos DB Core (SQL) API account. The following is a sample of a document in container1.

```
{
  "studentId": "631282", "firstName": "James", "lastName": "Smith", "enrollmentYear": 1990, "isActivelyEnrolled": true, "address": {
    "street": "",
    "city": "",
    "stateProvince": "",
    "postal": ""
  }
}
```

```

}
}
The container1 container has the following indexing policy.
{
  "indexingMode": "consistent", "includePaths": [
  {
    "path": "/*"
  },
  {
    "path": "/address/city/?"
  }
  ],
  "excludePaths": [
  {
    "path": "/address/*"
  },
  {
    "path": "/firstName/?"
  }
  ]
}

```

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes

"path": "/*" is in includePaths.

Include the root path to selectively exclude paths that don't need to be indexed. This is the recommended approach as it lets Azure Cosmos DB proactively index any new property that may be added to your model.

Box 2: No

"path": "/firstName/?" is in excludePaths.

Box 3: Yes

"path": "/address/city/?" is in includePaths

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/index-policy>

NEW QUESTION 7

- (Exam Topic 2)

The following is a sample of a document in orders.

The orders container uses customerId as the partition key.

You need to provide a report of the total items ordered per month by item type. The solution must meet the following requirements:

Ensure that the report can run as quickly as possible. Minimize the consumption of request units (RUs). What should you do?

- A. Configure the report to query orders by using a SQL query.
- B. Configure the report to query a new aggregate container.
- C. Populate the aggregates by using the change feed.
- D. Configure the report to query orders by using a SQL query through a dedicated gateway.
- E. Configure the report to query a new aggregate container.
- F. Populate the aggregates by using SQL queries that run daily.

Answer: B

Explanation:

You can facilitate aggregate data by using Change Feed and Azure Functions, and then use it for reporting.

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/change-feed>

NEW QUESTION 8

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account.

You configure the diagnostic settings to send all log information to a Log Analytics workspace.

You need to identify when the provisioned request units per second (RU/s) for resources within the account were modified.

You write the following query. AzureDiagnostics

| where Category == "ControlPlaneRequests" What should you include in the query?

- A. | where OperationName startswith "AccountUpdateStart"
- B. | where OperationName startswith "SqlContainersDelete"
- C. | where OperationName startswith "MongoCollectionsThroughputUpdate"
- D. | where OperationName startswith "SqlContainersThroughputUpdate"

Answer: A

Explanation:

The following are the operation names in diagnostic logs for different operations: RegionAddStart, RegionAddComplete, RegionRemoveStart, RegionRemoveComplete, AccountDeleteStart, AccountDeleteComplete, RegionFailoverStart, RegionFailoverComplete, AccountCreateStart, AccountCreateComplete

AccountUpdateStart, AccountUpdateComplete, VirtualNetworkDeleteStart, VirtualNetworkDeleteComplete, DiagnosticLogUpdateStart, DiagnosticLogUpdateComplete

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/audit-control-plane-logs>

NEW QUESTION 9

- (Exam Topic 2)

You have a container in an Azure Cosmos DB Core (SQL) API account. The container stores telemetry data from IoT devices. The container uses telemetryId as the partition key and has a throughput of 1,000 request units per second (RU/s). Approximately 5,000 IoT devices submit data every five minutes by using the same telemetryId value.

You have an application that performs analytics on the data and frequently reads telemetry data for a single IoT device to perform trend analysis.

The following is a sample of a document in the container.

You need to reduce the amount of request units (RUs) consumed by the analytics application. What should you do?

- A. Decrease the offerThroughput value for the container.
- B. Increase the offerThroughput value for the container.
- C. Move the data to a new container that has a partition key of deviceId.
- D. Move the data to a new container that uses a partition key of date.

Answer: C

Explanation:

The partition key is what will determine how data is routed in the various partitions by Cosmos DB and needs to make sense in the context of your specific scenario. The IoT Device ID is generally the "natural" partition key for IoT applications.

Reference: <https://docs.microsoft.com/en-us/azure/architecture/solution-ideas/articles/iot-using-cosmos-db>

NEW QUESTION 10

- (Exam Topic 2)

You have three containers in an Azure Cosmos DB Core (SQL) API account as shown in the following table.

You have the following Azure functions:

A function named Fn1 that reads the change feed of cn1. A function named Fn2 that reads the change feed of cn2. A function named Fn3 that reads the change feed of cn3.

You perform the following actions: Delete an item named item1 from cn1. Update an item named item2 in cn2.

For an item named item3 in cn3, update the item time to live to 3,600 seconds.

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: No

Azure Cosmos DB's change feed is a great choice as a central data store in event sourcing architectures where all data ingestion is modeled as writes (no updates or deletes).

Note: The change feed does not capture deletes. If you delete an item from your container, it is also removed from the change feed. The most common method of handling this is adding a soft marker on the items that are being deleted. You can add a property called "deleted" and set it to "true" at the time of deletion. This document update will show up in the change feed. You can set a TTL on this item so that it can be automatically deleted later.

Box 2: No

The _etag format is internal and you should not take dependency on it, because it can change anytime.

Box 3: Yes

Change feed support in Azure Cosmos DB works by listening to an Azure Cosmos container for any changes. Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/sql/change-feed-design-patterns> <https://docs.microsoft.com/en-us/azure/cosmos-db/change-feed>

NEW QUESTION 10

- (Exam Topic 2)

You have a container in an Azure Cosmos DB Core (SQL) API account.

You need to use the Azure Cosmos DB SDK to replace a document by using optimistic concurrency. What should you include in the code? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: ConsistencyLevel

The ItemRequestOptions Class ConsistencyLevel property gets or sets the consistency level required for the request in the Azure Cosmos DB service.

Azure Cosmos DB offers 5 different consistency levels. Strong, Bounded Staleness, Session, Consistent Prefix and Eventual - in order of strongest to weakest consistency.

Box 2: _etag

The ItemRequestOptions class helped us implement optimistic concurrency by specifying that we wanted the SDK to use the If-Match header to allow the server to decide whether a resource should be updated. The If-Match value is the ETag value to be checked against. If the ETag value matches the server ETag value, the resource is updated.

Reference:

<https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.cosmos.itemrequestoptions> <https://cosmosdb.github.io/labs/dotnet/labs/10-concurrency-control.html>

NEW QUESTION 11

- (Exam Topic 2)

You have the following query.

```
SELECT * FROM  
WHERE c.sensor = "TEMP1"  
AND c.value < 22  
AND c.timestamp >= 1619146031231
```

You need to recommend a composite index strategy that will minimize the request units (RUs) consumed by the query.

What should you recommend?

- A. a composite index for (sensor ASC, value ASC) and a composite index for (sensor ASC, timestamp ASC)
- B. a composite index for (sensor ASC, value ASC, timestamp ASC) and a composite index for (sensor DESC, value DESC, timestamp DESC)
- C. a composite index for (value ASC, sensor ASC) and a composite index for (timestamp ASC, sensor ASC)
- D. a composite index for (sensor ASC, value ASC, timestamp ASC)

Answer: A

Explanation:

If a query has a filter with two or more properties, adding a composite index will improve performance. Consider the following query:

```
SELECT * FROM c WHERE c.name = "Tim" and c.age > 18
```

In the absence of a composite index on (name ASC, and age ASC), we will utilize a range index for this query. We can improve the efficiency of this query by creating a composite index for name and age.

Queries with multiple equality filters and a maximum of one range filter (such as >, <, <=, >=, !=) will utilize the composite index.

Reference:

<https://azure.microsoft.com/en-us/blog/three-ways-to-leverage-composite-indexes-in-azure-cosmos-db/>

NEW QUESTION 12

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account used by an application named App1. You open the Insights pane for the account and see the following chart.

Use the drop-down menus to select the answer choice that answers each question based on the information presented in the graphic.
NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: incorrect connection URLs

400 Bad Request: Returned when there is an error in the request URI, headers, or body. The response body will contain an error message explaining what the specific problem is.

The HyperText Transfer Protocol (HTTP) 400 Bad Request response status code indicates that the server cannot or will not process the request due to something that is perceived to be a client error (for example, malformed request syntax, invalid request message framing, or deceptive request routing).

Box 2: 6 thousand

201 Created: Success on PUT or POST. Object created or updated successfully. Note:

200 OK: Success on GET, PUT, or POST. Returned for a successful response.

404 Not Found: Returned when a resource does not exist on the server. If you are managing or querying an index, check the syntax and verify the index name is specified correctly.

Reference: <https://docs.microsoft.com/en-us/rest/api/searchservice/http-status-codes>

NEW QUESTION 14

- (Exam Topic 2)

The settings for a container in an Azure Cosmos DB Core (SQL) API account are configured as shown in the following exhibit.

Which statement describes the configuration of the container?

- A. All items will be deleted after one year.
- B. Items stored in the collection will be retained always, regardless of the items time to live value.
- C. Items stored in the collection will expire only if the item has a time to live value.
- D. All items will be deleted after one hour.

Answer: C

Explanation:

When DefaultTimeToLive is -1 then your Time to Live setting is On (No default)

Time to Live on a container, if present and the value is set to "-1", it is equal to infinity, and items don't expire by default.

Time to Live on an item:

This Property is applicable only if DefaultTimeToLive is present and it is not set to null for the parent container.

If present, it overrides the DefaultTimeToLive value of the parent container. Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/time-to-live>

NEW QUESTION 18

- (Exam Topic 2)

You have the indexing policy shown in the following exhibit.

Use the drop-down menus to select the answer choice that answers each question based on the information presented in the graphic.
NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: ORDER BY c.name DESC, c.age DESC

Queries that have an ORDER BY clause with two or more properties require a composite index.

The following considerations are used when using composite indexes for queries with an ORDER BY clause with two or more properties:

If the composite index paths do not match the sequence of the properties in the ORDER BY clause, then the composite index can't support the query.

The order of composite index paths (ascending or descending) should also match the order in the ORDER BY clause.

The composite index also supports an ORDER BY clause with the opposite order on all paths. Box 2: At the same time as the item creation

Azure Cosmos DB supports two indexing modes:

Consistent: The index is updated synchronously as you create, update or delete items. This means that the consistency of your read queries will be the consistency configured for the account.

None: Indexing is disabled on the container.

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/index-policy>

NEW QUESTION 23

- (Exam Topic 2)

You have a database in an Azure Cosmos DB SQL API Core (SQL) account that is used for development. The database is modified once per day in a batch process.

You need to ensure that you can restore the database if the last batch process fails. The solution must minimize costs.

How should you configure the backup settings? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

NEW QUESTION 26

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account that is used by 10 web apps.

You need to analyze the data stored in the account by using Apache Spark to create machine learning models. The solution must NOT affect the performance of the web apps.

Which two actions should you perform? Each correct answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. In an Apache Spark pool in Azure Synapse, create a table that uses cosmos.olap as the data source.
- B. Create a private endpoint connection to the account.
- C. In an Azure Synapse Analytics serverless SQL pool, create a view that uses OPENROWSET and the CosmosDB provider.
- D. Enable Azure Synapse Link for the account and Analytical store on the container.
- E. In an Apache Spark pool in Azure Synapse, create a table that uses cosmos.oltp as the data source.

Answer: AD

Explanation:

Reference:

<https://github.com/microsoft/MCW-Cosmos-DB-Real-Time-Advanced-Analytics/blob/main/Hands-on%20lab/H>

NEW QUESTION 28

- (Exam Topic 2)

You have a database named telemetry in an Azure Cosmos DB Core (SQL) API account that stores IoT data. The database contains two containers named readings and devices.

Documents in readings have the following structure.

```
id
deviceid
timestamp
ownerid
measures (array)
- type
- value
- metricid
```

Documents in devices have the following structure.

```
id
deviceid
owner
- ownerid
- emailaddress
- name brand model
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes

Need to join readings and devices.

Box 2: No

Only readings is required. All required fields are in readings.

Box 3: No

Only devices is required. All required fields are in devices.

NEW QUESTION 31

- (Exam Topic 2)

You are creating a database in an Azure Cosmos DB Core (SQL) API account. The database will be used by an application that will provide users with the ability to share online posts. Users will also be able to submit comments on other users' posts.

You need to store the data shown in the following table.

The application has the following characteristics: Users can submit an unlimited number of posts.

The average number of posts submitted by a user will be more than 1,000. Posts can have an unlimited number of comments from different users.

The average number of comments per post will be 100, but many posts will exceed 1,000 comments. Users will be limited to having a maximum of 20 interests.

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes

Non-relational data increases write costs, but can decrease read costs.

Box 2: Yes

Non-relational data increases write costs, but can decrease read costs.

Box 3: No

Non-relational data increases write costs, but can decrease read costs.

NEW QUESTION 32

- (Exam Topic 2)

You have a container named container1 in an Azure Cosmos DB Core (SQL) API account. Upserts of items in container1 occur every three seconds.

You have an Azure Functions app named function1 that is supposed to run whenever items are inserted or replaced in container1.

You discover that function1 runs, but not on every upsert.

You need to ensure that function1 processes each upsert within one second of the upsert. Which property should you change in the Function.json file of function1?

- A. checkpointInterval
- B. leaseCollectionsThroughput
- C. maxItemsPerInvocation
- D. feedPollDelay

Answer: D

Explanation:

With an upsert operation we can either insert or update an existing record at the same time.

FeedPollDelay: The time (in milliseconds) for the delay between polling a partition for new changes on the feed, after all current changes are drained. Default is 5,000 milliseconds, or 5 seconds.

Reference: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-cosmosdb-v2-trigger>

NEW QUESTION 37

- (Exam Topic 2)

You have a database in an Azure Cosmos DB Core (SQL) API account.

You need to create an Azure function that will access the database to retrieve records based on a variable named `accountnumber`. The solution must protect against SQL injection attacks.

How should you define the command statement in the function?

- A. `cmd = "SELECT * FROM Persons pWHERE p.accountnumber = 'accountnumber'"`
- B. `cmd = "SELECT * FROM Persons pWHERE p.accountnumber = LIKE @accountnumber"`
- C. `cmd = "SELECT * FROM Persons pWHERE p.accountnumber = @accountnumber"`
- D. `cmd = "SELECT * FROM Persons pWHERE p.accountnumber = " + accountnumber + """`

Answer: C

Explanation:

Azure Cosmos DB supports queries with parameters expressed by the familiar `@` notation. Parameterized SQL provides robust handling and escaping of user input, and prevents accidental exposure of data through SQL injection.

For example, you can write a query that takes `lastName` and `address.state` as parameters, and execute it for various values of `lastName` and `address.state` based on user input.

```
SELECT *
FROM Families f
WHERE f.lastName = @lastName AND f.address.state = @addressState
```

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/sql-query-parameterized-queries>

NEW QUESTION 42

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