



## Microsoft

### Exam Questions DP-203

Data Engineering on Microsoft Azure

**NEW QUESTION 1**

- (Exam Topic 1)

You need to ensure that the Twitter feed data can be analyzed in the dedicated SQL pool. The solution must meet the customer sentiment analytics requirements. Which three Transaction-SQL DDL commands should you run in sequence? To answer, move the appropriate commands from the list of commands to the answer area and arrange them in the correct order.

NOTE: More than one order of answer choices is correct. You will receive credit for any of the correct orders you select.

**Commands**

**Answer Area**

- CREATE EXTERNAL DATA SOURCE
- CREATE EXTERNAL FILE FORMAT
- CREATE EXTERNAL TABLE
- CREATE EXTERNAL TABLE AS SELECT
- CREATE DATABASE SCOPED CREDENTIAL

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Scenario: Allow Contoso users to use PolyBase in an Azure Synapse Analytics dedicated SQL pool to query the content of the data records that host the Twitter feeds. Data must be protected by using row-level security (RLS). The users must be authenticated by using their own Azure AD credentials.

Box 1: CREATE EXTERNAL DATA SOURCE

External data sources are used to connect to storage accounts. Box 2: CREATE EXTERNAL FILE FORMAT

CREATE EXTERNAL FILE FORMAT creates an external file format object that defines external data stored in Azure Blob Storage or Azure Data Lake Storage. Creating an external file format is a prerequisite for creating an external table.

Box 3: CREATE EXTERNAL TABLE AS SELECT

When used in conjunction with the CREATE TABLE AS SELECT statement, selecting from an external table imports data into a table within the SQL pool. In addition to the COPY statement, external tables are useful for loading data.

Reference:

<https://docs.microsoft.com/en-us/azure/synapse-analytics/sql/develop-tables-external-tables>

**NEW QUESTION 2**

- (Exam Topic 3)

You need to create an Azure Data Factory pipeline to process data for the following three departments at your company: Ecommerce, retail, and wholesale. The solution must ensure that data can also be processed for the entire company.

How should you complete the Data Factory data flow script? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

**Values**

**Answer Area**

- all, ecommerce, retail, wholesale
- dept=='ecommerce', dept=='retail', dept=='wholesale'
- dept=='ecommerce', dept=='wholesale', dept=='retail'
- disjoint: false
- disjoint: true
- ecommerce, retail, wholesale, all

```
CleanData
split(
    [ ]
    [ ]
) ~> SplitByDept@([ ])
```

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

The conditional split transformation routes data rows to different streams based on matching conditions. The conditional split transformation is similar to a CASE decision structure in a programming language. The transformation evaluates expressions, and based on the results, directs the data row to the specified stream.

Box 1: dept=='ecommerce', dept=='retail', dept=='wholesale'

First we put the condition. The order must match the stream labeling we define in Box 3. Syntax:

```
<incomingStream> split(
<conditionalExpression1>
<conditionalExpression2>
disjoint: {true | false}
) ~> <splitTx>@(stream1, stream2, ..., <defaultStream>)
```

Box 2: discount : false

disjoint is false because the data goes to the first matching condition. All remaining rows matching the third condition go to output stream all.

Box 3: ecommerce, retail, wholesale, all Label the streams

Reference:

<https://docs.microsoft.com/en-us/azure/data-factory/data-flow-conditional-split>

### NEW QUESTION 3

- (Exam Topic 3)

You have an Azure Data Lake Storage account that has a virtual network service endpoint configured.

You plan to use Azure Data Factory to extract data from the Data Lake Storage account. The data will then be loaded to a data warehouse in Azure Synapse Analytics by using PolyBase.

Which authentication method should you use to access Data Lake Storage?

- A. shared access key authentication
- B. managed identity authentication
- C. account key authentication
- D. service principal authentication

**Answer: B**

#### Explanation:

Reference:

<https://docs.microsoft.com/en-us/azure/data-factory/connector-azure-sql-data-warehouse#use-polybase-to-load-d>

### NEW QUESTION 4

- (Exam Topic 3)

What should you recommend using to secure sensitive customer contact information?

- A. data labels
- B. column-level security
- C. row-level security
- D. Transparent Data Encryption (TDE)

**Answer: B**

#### Explanation:

Scenario: All cloud data must be encrypted at rest and in transit.

Always Encrypted is a feature designed to protect sensitive data stored in specific database columns from access (for example, credit card numbers, national identification numbers, or data on a need to know basis). This includes database administrators or other privileged users who are authorized to access the database to perform management tasks, but have no business need to access the particular data in the encrypted columns. The data is always encrypted, which means the encrypted data is decrypted only for processing by client applications with access to the encryption key.

References:

<https://docs.microsoft.com/en-us/azure/sql-database/sql-database-security-overview>

### NEW QUESTION 5

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You plan to create an Azure Databricks workspace that has a tiered structure. The workspace will contain the following three workloads:

- A workload for data engineers who will use Python and SQL.
- A workload for jobs that will run notebooks that use Python, Scala, and SQL.
- A workload that data scientists will use to perform ad hoc analysis in Scala and R.

The enterprise architecture team at your company identifies the following standards for Databricks environments:

- The data engineers must share a cluster.
- The job cluster will be managed by using a request process whereby data scientists and data engineers provide packaged notebooks for deployment to the cluster.
- All the data scientists must be assigned their own cluster that terminates automatically after 120 minutes of inactivity. Currently, there are three data scientists.

You need to create the Databricks clusters for the workloads.

Solution: You create a Standard cluster for each data scientist, a High Concurrency cluster for the data engineers, and a Standard cluster for the jobs.

Does this meet the goal?

- A. Yes
- B. No

**Answer: B**

#### Explanation:

We would need a High Concurrency cluster for the jobs. Note:

Standard clusters are recommended for a single user. Standard can run workloads developed in any language: Python, R, Scala, and SQL.

A high concurrency cluster is a managed cloud resource. The key benefits of high concurrency clusters are that they provide Apache Spark-native fine-grained sharing for maximum resource utilization and minimum query latencies.

Reference: <https://docs.azuredatabricks.net/clusters/configure.html>

### NEW QUESTION 6

- (Exam Topic 3)

You are designing an Azure Synapse Analytics dedicated SQL pool.

You need to ensure that you can audit access to Personally Identifiable information (PII). What should you include in the solution?

- A. dynamic data masking
- B. row-level security (RLS)
- C. sensitivity classifications
- D. column-level security

Answer: D

**NEW QUESTION 7**

- (Exam Topic 3)

You are developing a solution that will stream to Azure Stream Analytics. The solution will have both streaming data and reference data. Which input type should you use for the reference data?

- A. Azure Cosmos DB
- B. Azure Blob storage
- C. Azure IoT Hub
- D. Azure Event Hubs

Answer: B

**Explanation:**

Stream Analytics supports Azure Blob storage and Azure SQL Database as the storage layer for Reference Data.

Reference:

<https://docs.microsoft.com/en-us/azure/stream-analytics/stream-analytics-use-reference-data>

**NEW QUESTION 8**

- (Exam Topic 3)

You store files in an Azure Data Lake Storage Gen2 container. The container has the storage policy shown in the following exhibit.

```

{
  "rules": [
    {
      "enabled": true,
      "name": "contosorule",
      "type": "lifecycle",
      "definition": {
        "actions": {
          "version": {
            "delete": {
              "daysAfterCreationGreaterThan": 60
            }
          },
          "baseBlob": {
            "tierToCool": {
              "daysAfterModificationGreaterThan": 30
            }
          }
        }
      },
      "filters": {
        "blobTypes": [
          "blockBlob"
        ],
        "prefixMatch": [
          "container1/contoso"
        ]
      }
    }
  ]
}

```

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

Answer Area

The files are [answer choice] after 30 days.

deleted from the container  
 moved to archive storage  
 moved to cool storage  
 moved to hot storage

The storage policy applies to [answer choice].

container1/contoso1.csv  
 container1/docs/contoso.json  
 container1/mycontoso/contoso.csv

- A. Mastered
- B. Not Mastered

Answer: A

**Explanation:**  
**Answer Area**

The files are [answer choice] after 30 days.

- deleted from the container
- moved to archive storage
- moved to cool storage
- moved to hot storage

The storage policy applies to [answer choice].

- container1/contoso1.csv
- container1/docs/contoso.json
- container1/mycontoso/contoso.csv

**NEW QUESTION 9**

- (Exam Topic 3)

You have an Azure subscription that contains a logical Microsoft SQL server named Server1. Server1 hosts an Azure Synapse Analytics SQL dedicated pool named Pool1.

You need to recommend a Transparent Data Encryption (TDE) solution for Server1. The solution must meet the following requirements:

- > Track the usage of encryption keys.
- > Maintain the access of client apps to Pool1 in the event of an Azure datacenter outage that affects the availability of the encryption keys.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

To track encryption key usage:

▼

Always Encrypted

TDE with customer-managed keys

TDE with platform-managed keys

To maintain client app access in the event of a datacenter outage:

▼

Create and configure Azure key vaults in two Azure regions.

Enable Advanced Data Security on Server1.

Implement the client apps by using a Microsoft .NET Framework data provider.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Box 1: TDE with customer-managed keys

Customer-managed keys are stored in the Azure Key Vault. You can monitor how and when your key vaults are accessed, and by whom. You can do this by enabling logging for Azure Key Vault, which saves information in an Azure storage account that you provide.

Box 2: Create and configure Azure key vaults in two Azure regions

The contents of your key vault are replicated within the region and to a secondary region at least 150 miles away, but within the same geography to maintain high durability of your keys and secrets.

Reference:

<https://docs.microsoft.com/en-us/azure/synapse-analytics/security/workspaces-encryption> <https://docs.microsoft.com/en-us/azure/key-vault/general/logging>

**NEW QUESTION 10**

- (Exam Topic 3)

You implement an enterprise data warehouse in Azure Synapse Analytics. You have a large fact table that is 10 terabytes (TB) in size. Incoming queries use the primary key SaleKey column to retrieve data as displayed in the following table:

SaleKey	CityKey	CustomerKey	StockItemKey	InvoiceDateKey	Quantity	UnitPrice	TotalExcludingTax
49309	90858	70	69	10/22/13	8	16	128
49313	55710	126	69	10/22/13	2	16	32
49343	44710	234	68	10/22/13	10	16	160
49352	66109	163	70	10/22/13	4	16	64
49488	65312	230	70	10/22/13	8	16	128
49646	85877	271	70	10/24/13	1	16	16
49798	41238	288	69	10/24/13	1	16	16

You need to distribute the large fact table across multiple nodes to optimize performance of the table. Which technology should you use?

- A. hash distributed table with clustered index
- B. hash distributed table with clustered Columnstore index
- C. round robin distributed table with clustered index
- D. round robin distributed table with clustered Columnstore index
- E. heap table with distribution replicate

**Answer:** B

**Explanation:**

Hash-distributed tables improve query performance on large fact tables.

Columnstore indexes can achieve up to 100x better performance on analytics and data warehousing workloads and up to 10x better data compression than traditional rowstore indexes.

Reference:

<https://docs.microsoft.com/en-us/azure/sql-data-warehouse/sql-data-warehouse-tables-distribute> <https://docs.microsoft.com/en-us/sql/relational-databases/indexes/columnstore-indexes-query-performance>

**NEW QUESTION 10**

- (Exam Topic 3)

You are planning the deployment of Azure Data Lake Storage Gen2. You have the following two reports that will access the data lake:

- > Report1: Reads three columns from a file that contains 50 columns.
- > Report2: Queries a single record based on a timestamp.

You need to recommend in which format to store the data in the data lake to support the reports. The solution must minimize read times.

What should you recommend for each report? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

Report1:  ▼

Avro
CSV
Parquet
TSV

Report2:  ▼

Avro
CSV
Parquet
TSV

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Report1: CSV

CSV: The destination writes records as delimited data. Report2: AVRO

AVRO supports timestamps.

Not Parquet, TSV: Not options for Azure Data Lake Storage Gen2. Reference:

<https://streamsets.com/documentation/datacollector/latest/help/datacollector/UserGuide/Destinations/ADLS-G2>

**NEW QUESTION 14**

- (Exam Topic 3)

You have an Azure Stream Analytics job that is a Stream Analytics project solution in Microsoft Visual Studio. The job accepts data generated by IoT devices in the JSON format.

You need to modify the job to accept data generated by the IoT devices in the Protobuf format.

Which three actions should you perform from Visual Studio on sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**Actions**

**Answer Area**

Change the Event Serialization Format to Protobuf in the input.json file of the job and reference the DLL.

Add an Azure Stream Analytics Custom Deserializer Project (.NET) project to the solution.

Add .NET deserializer code for Protobuf to the custom deserializer project.

Add .NET deserializer code for Protobuf to the Stream Analytics project.

Add an Azure Stream Analytics Application project to the solution.

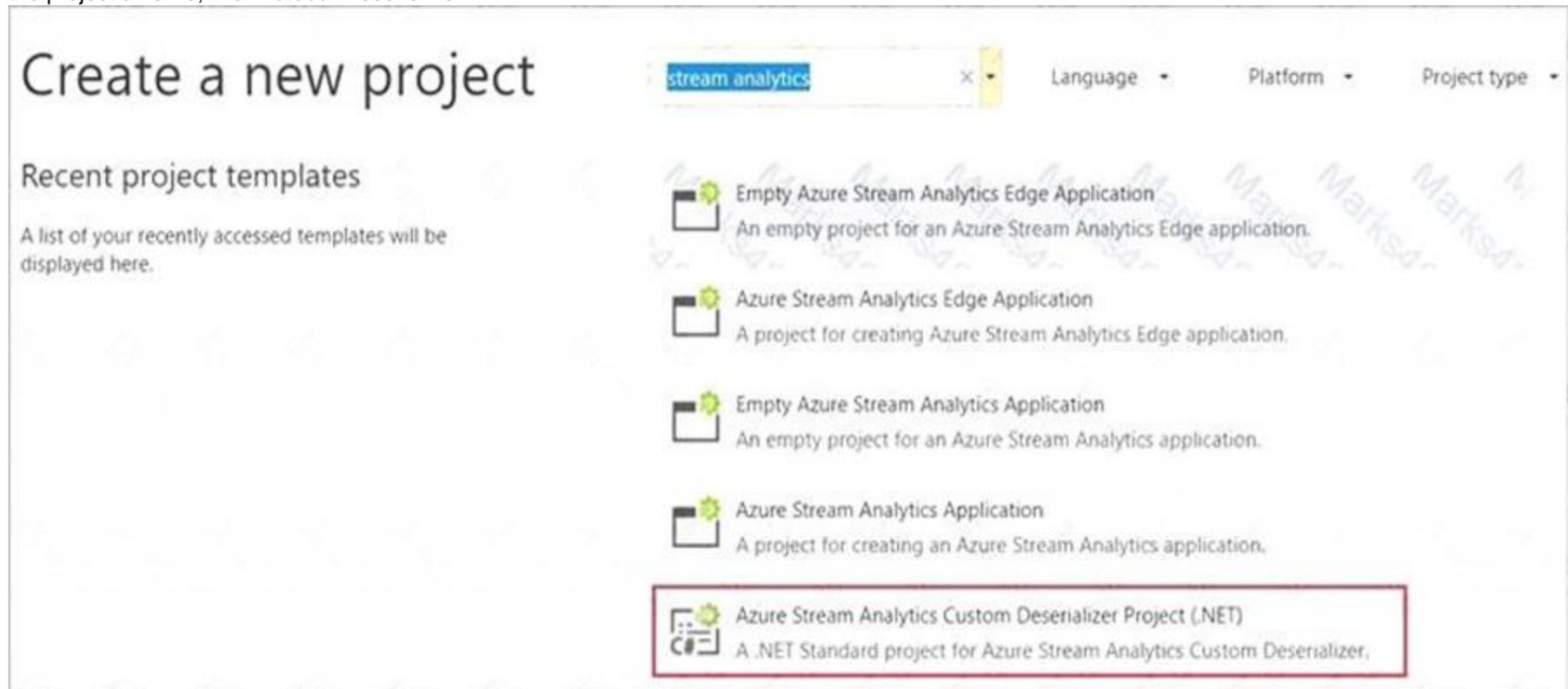
- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Step 1: Add an Azure Stream Analytics Custom Deserializer Project (.NET) project to the solution. Create a custom deserializer

\* 1. Open Visual Studio and select File > New > Project. Search for Stream Analytics and select Azure Stream Analytics Custom Deserializer Project (.NET). Give the project a name, like Protobuf Deserializer.



\* 2. In Solution Explorer, right-click your Protobuf Deserializer project and select Manage NuGet Packages from the menu. Then install the Microsoft.Azure.StreamAnalytics and Google.Protobuf NuGet packages.

\* 3. Add the MessageBodyProto class and the MessageBodyDeserializer class to your project.

\* 4. Build the Protobuf Deserializer project.

Step 2: Add .NET deserializer code for Protobuf to the custom deserializer project

Azure Stream Analytics has built-in support for three data formats: JSON, CSV, and Avro. With custom .NET deserializers, you can read data from other formats such as Protocol Buffer, Bond and other user defined formats for both cloud and edge jobs.

Step 3: Add an Azure Stream Analytics Application project to the solution Add an Azure Stream Analytics project

> In Solution Explorer, right-click the Protobuf Deserializer solution and select Add > New Project. Under Azure Stream Analytics > Stream Analytics, choose Azure Stream Analytics Application. Name it ProtobufCloudDeserializer and select OK.

> Right-click References under the ProtobufCloudDeserializer Azure Stream Analytics project. Under Projects, add Protobuf Deserializer. It should be automatically populated for you.

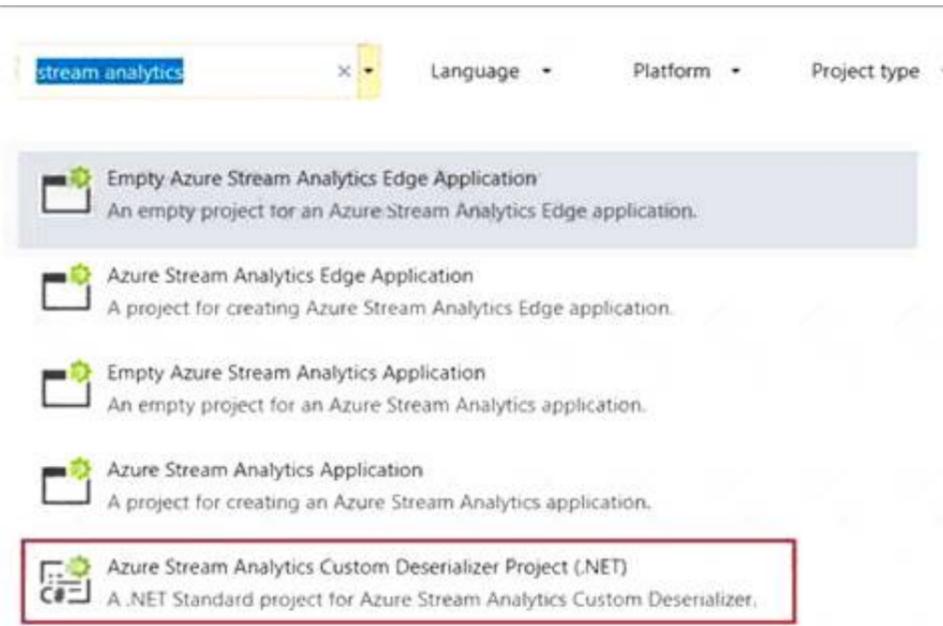
Reference:

<https://docs.microsoft.com/en-us/azure/stream-analytics/custom-deserializer>

# Create a new project

## Recent project templates

A list of your recently accessed templates will be displayed here.



**NEW QUESTION 15**

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have an Azure Storage account that contains 100 GB of files. The files contain text and numerical values. 75% of the rows contain description data that has an average length of 1.1 MB.

You plan to copy the data from the storage account to an Azure SQL data warehouse. You need to prepare the files to ensure that the data copies quickly.

Solution: You modify the files to ensure that each row is less than 1 MB. Does this meet the goal?

- A. Yes
- B. No

**Answer:** A

**Explanation:**

When exporting data into an ORC File Format, you might get Java out-of-memory errors when there are large text columns. To work around this limitation, export only a subset of the columns.

References:

<https://docs.microsoft.com/en-us/azure/sql-data-warehouse/guidance-for-loading-data>

**NEW QUESTION 19**

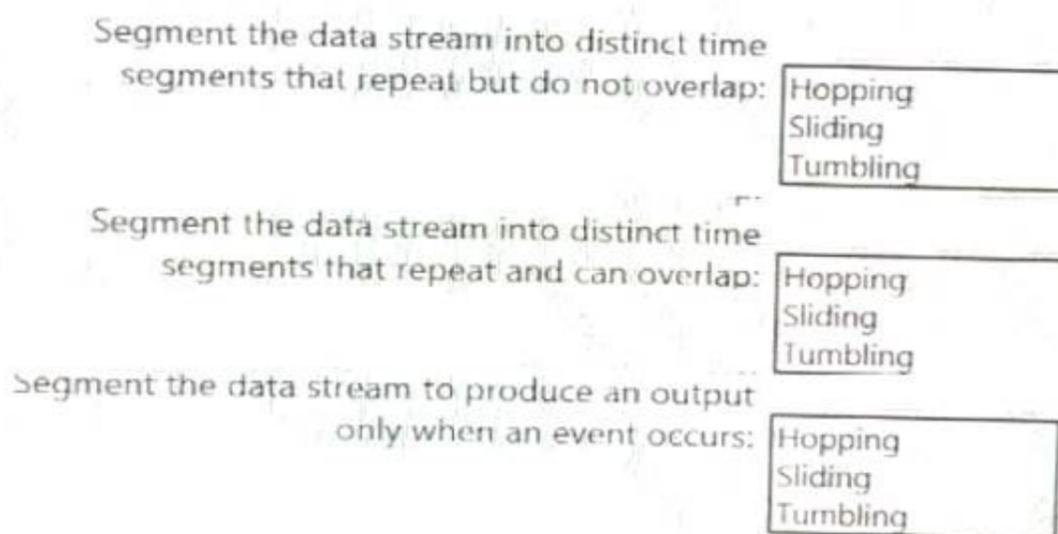
- (Exam Topic 3)

You are implementing Azure Stream Analytics windowing functions.

Which windowing function should you use for each requirement? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

**Answer Area**



- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Answer Area

Segment the data stream into distinct time segments that repeat but do not overlap:  Hopping  Sliding  Tumbling

Segment the data stream into distinct time segments that repeat and can overlap:  Hopping  Sliding  Tumbling

Segment the data stream to produce an output only when an event occurs:  Hopping  Sliding  Tumbling

**NEW QUESTION 21**

- (Exam Topic 3)

You have an Azure Stream Analytics query. The query returns a result set that contains 10,000 distinct values for a column named clusterID. You monitor the Stream Analytics job and discover high latency. You need to reduce the latency.

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

- A. Add a pass-through query.
- B. Add a temporal analytic function.
- C. Scale out the query by using PARTITION BY.
- D. Convert the query to a reference query.
- E. Increase the number of streaming units.

**Answer:** CE

**Explanation:**

C: Scaling a Stream Analytics job takes advantage of partitions in the input or output. Partitioning lets you divide data into subsets based on a partition key. A process that consumes the data (such as a Streaming Analytics job) can consume and write different partitions in parallel, which increases throughput.

E: Streaming Units (SUs) represents the computing resources that are allocated to execute a Stream Analytics job. The higher the number of SUs, the more CPU and memory resources are allocated for your job. This capacity lets you focus on the query logic and abstracts the need to manage the hardware to run your Stream Analytics job in a timely manner.

References:

<https://docs.microsoft.com/en-us/azure/stream-analytics/stream-analytics-parallelization> <https://docs.microsoft.com/en-us/azure/stream-analytics/stream-analytics-streaming-unit-consumption>

**NEW QUESTION 24**

- (Exam Topic 3)

You need to create a partitioned table in an Azure Synapse Analytics dedicated SQL pool.

How should you complete the Transact-SQL statement? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Values	Answer Area
CLUSTERED INDEX	<pre>CREATE TABLE table1 (   ID INTEGER,   col1 VARCHAR(10),   col2 VARCHAR(10) ) WITH (   [ ] = HASH(ID),   [ ] (ID RANGE LEFT FOR VALUES (1, 1000000, 2000000)) );</pre>
COLLATE	
DISTRIBUTION	
PARTITION	
PARTITION FUNCTION	
PARTITION SCHEME	

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

Box 1: DISTRIBUTION

Table distribution options include DISTRIBUTION = HASH ( distribution\_column\_name ), assigns each row to one distribution by hashing the value stored in distribution\_column\_name. Box 2: PARTITION

Table partition options. Syntax:

PARTITION ( partition\_column\_name RANGE [ LEFT | RIGHT ] FOR VALUES ( [ boundary\_value [,...n] ] ) )

Reference:

<https://docs.microsoft.com/en-us/sql/t-sql/statements/create-table-azure-sql-data-warehouse?>

**NEW QUESTION 29**

- (Exam Topic 3)

You have an Azure Stream Analytics job that receives clickstream data from an Azure event hub.

You need to define a query in the Stream Analytics job. The query must meet the following requirements: > Count the number of clicks within each 10-second window based on the country of a visitor.

> Ensure that each click is NOT counted more than once. How should you define the Query?

- A. SELECT Country, Avg(\*) AS AverageFROM ClickStream TIMESTAMP BY CreatedAt GROUP BY Country, SlidingWindow(second, 10)
- B. SELECT Country, Count(\*) AS CountFROM ClickStream TIMESTAMP BY CreatedAt GROUP BY Country, TumblingWindow(second, 10)
- C. SELECT Country, Avg(\*) AS AverageFROM ClickStream TIMESTAMP BY CreatedAt GROUP BY Country, HoppingWindow(second, 10, 2)
- D. SELECT Country, Count(\*) AS CountFROM ClickStream TIMESTAMP BY CreatedAt GROUP BY Country, SessionWindow(second, 5, 10)

**Answer: B**

**Explanation:**

Tumbling window functions are used to segment a data stream into distinct time segments and perform a function against them, such as the example below. The key differentiators of a Tumbling window are that they repeat, do not overlap, and an event cannot belong to more than one tumbling window.

Example: Reference:

<https://docs.microsoft.com/en-us/azure/stream-analytics/stream-analytics-window-functions>

**NEW QUESTION 32**

- (Exam Topic 3)

You develop data engineering solutions for a company.

A project requires the deployment of data to Azure Data Lake Storage.

You need to implement role-based access control (RBAC) so that project members can manage the Azure Data Lake Storage resources.

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

- A. Assign Azure AD security groups to Azure Data Lake Storage.
- B. Configure end-user authentication for the Azure Data Lake Storage account.
- C. Configure service-to-service authentication for the Azure Data Lake Storage account.
- D. Create security groups in Azure Active Directory (Azure AD) and add project members.
- E. Configure access control lists (ACL) for the Azure Data Lake Storage account.

**Answer: ADE**

**Explanation:**

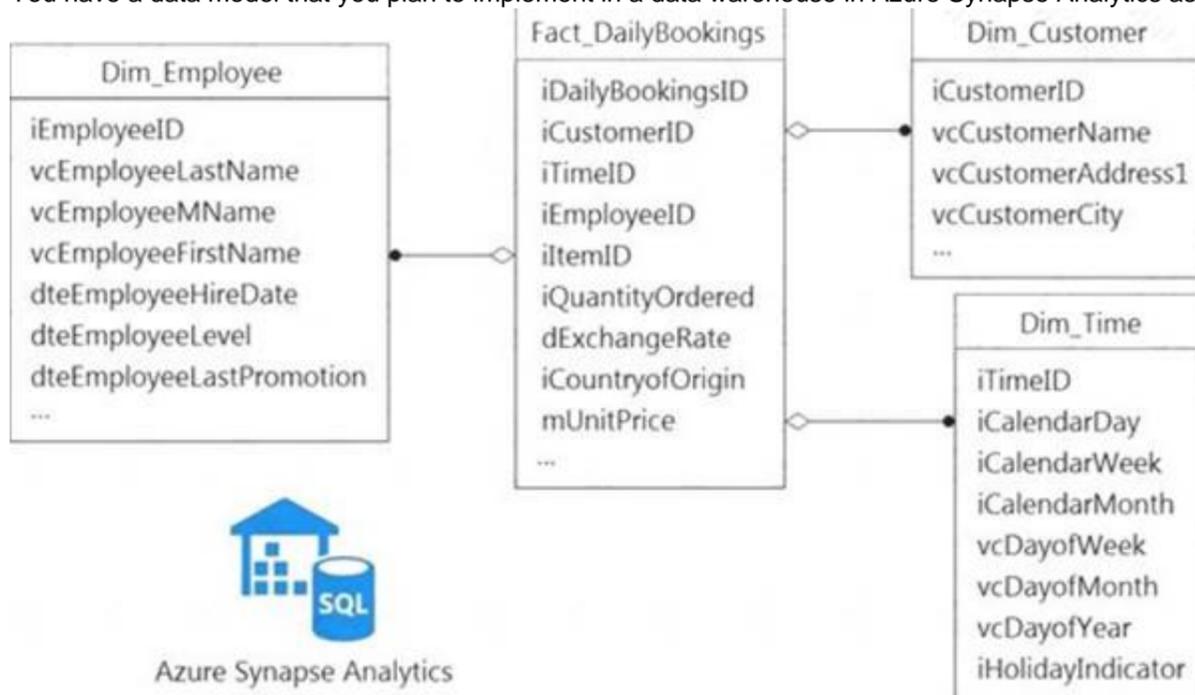
References:

<https://docs.microsoft.com/en-us/azure/data-lake-store/data-lake-store-secure-data>

**NEW QUESTION 33**

- (Exam Topic 3)

You have a data model that you plan to implement in a data warehouse in Azure Synapse Analytics as shown in the following exhibit.



All the dimension tables will be less than 2 GB after compression, and the fact table will be approximately 6 TB. Which type of table should you use for each table? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

Answer Area

Dim\_Customer:  ▼  
Hash distributed  
Round-robin  
Replicated

Dim\_Employee:  ▼  
Hash distributed  
Round-robin  
Replicated

Dim\_Time:  ▼  
Hash distributed  
Round-robin  
Replicated

Fact\_DailyBookings:  ▼  
Hash distributed  
Round-robin  
Replicated

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:  
**Answer Area**

Dim\_Customer:  ▼  
Hash distributed  
Round-robin  
Replicated

Dim\_Employee:  ▼  
Hash distributed  
Round-robin  
Replicated

Dim\_Time:  ▼  
Hash distributed  
Round-robin  
Replicated

Fact\_DailyBookings:  ▼  
Hash distributed  
Round-robin  
Replicated

NEW QUESTION 38  
- (Exam Topic 3)

You have an Azure Data Lake Storage Gen2 container that contains 100 TB of data.

You need to ensure that the data in the container is available for read workloads in a secondary region if an outage occurs in the primary region. The solution must minimize costs.

Which type of data redundancy should you use?

- A. zone-redundant storage (ZRS)
- B. read-access geo-redundant storage (RA-GRS)
- C. locally-redundant storage (LRS)
- D. geo-redundant storage (GRS)

**Answer: C**

**NEW QUESTION 43**

- (Exam Topic 3)

You are building an Azure Analytics query that will receive input data from Azure IoT Hub and write the results to Azure Blob storage.

You need to calculate the difference in readings per sensor per hour.

How should you complete the query? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```
SELECT sensorId,
       growth = reading -
       [ ] (reading) OVER (PARTITION BY sensorId [ ] (hour, 1))
FROM input
```

▼

LAG

LAST

LEAD

▼

LIMIT DURATION

OFFSET

WHEN

- A. Mastered
- B. Not Mastered

**Answer: A**

**Explanation:**

Box 1: LAG

The LAG analytic operator allows one to look up a “previous” event in an event stream, within certain constraints. It is very useful for computing the rate of growth of a variable, detecting when a variable crosses a threshold, or when a condition starts or stops being true.

Box 2: LIMIT DURATION

Example: Compute the rate of growth, per sensor: SELECT sensorId, growth = reading

LAG(reading) OVER (PARTITION BY sensorId LIMIT DURATION(hour, 1)) FROM input

Reference:

<https://docs.microsoft.com/en-us/stream-analytics-query/lag-azure-stream-analytics>

**NEW QUESTION 47**

- (Exam Topic 3)

You use Azure Stream Analytics to receive Twitter data from Azure Event Hubs and to output the data to an Azure Blob storage account.

You need to output the count of tweets during the last five minutes every five minutes. Each tweet must only be counted once.

Which windowing function should you use?

- A. a five-minute Session window
- B. a five-minute Sliding window
- C. a five-minute Tumbling window
- D. a five-minute Hopping window that has one-minute hop

**Answer: C**

**Explanation:**

Tumbling window functions are used to segment a data stream into distinct time segments and perform a function against them, such as the example below. The key differentiators of a Tumbling window are that they repeat, do not overlap, and an event cannot belong to more than one tumbling window.

References:

<https://docs.microsoft.com/en-us/azure/stream-analytics/stream-analytics-window-functions>

**NEW QUESTION 52**

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