



<https://github.com/Tizcom/Microsoft-Certification-Day-2022>

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Microsoft Certification Day

อัปสกิลกับการติวสอบแบบเข้มข้น

วันที่ 21 – 22 กรกฎาคม 2565

เวลา 9:00 – 16:30 น.

วิทยากร:
ธีชนก ชนาคลัง

21 กรกฎาคม 2565

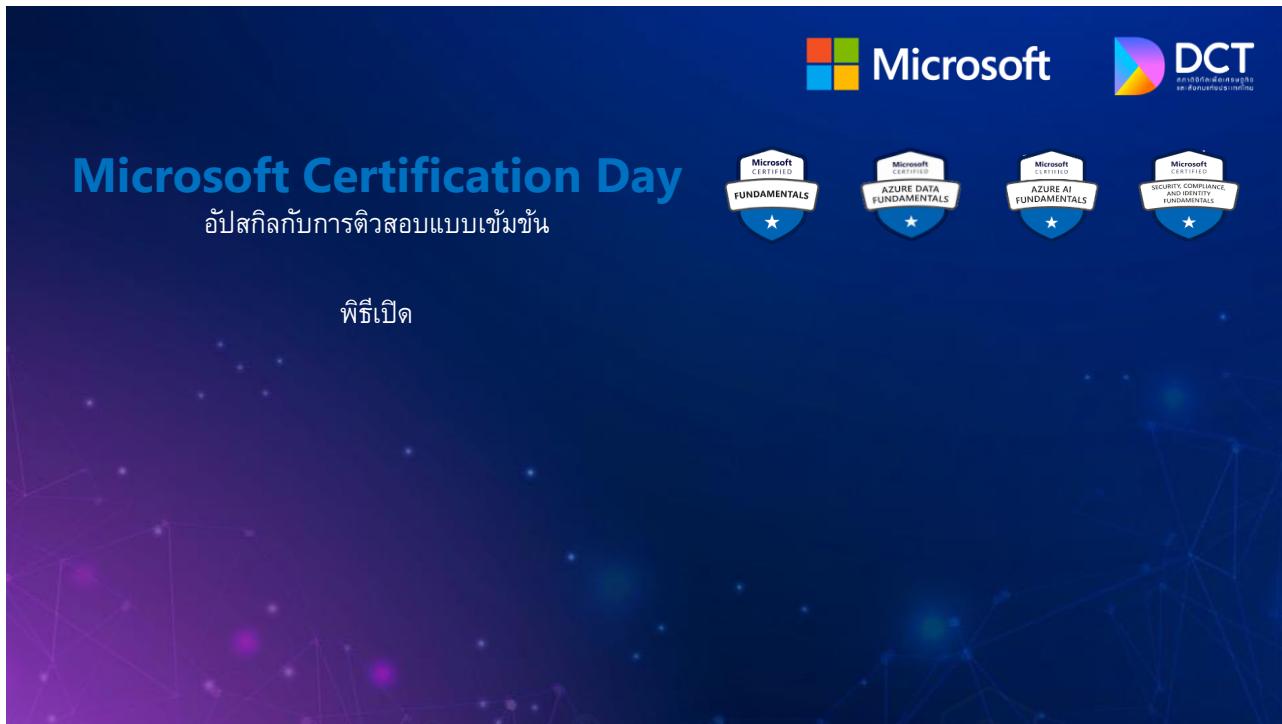
AZ-900
9:00-12:00 น.

DP-900
13:30-16:30 น.

AI-900
9:00-12:00 น.

SC-900
13:30-16:30 น.

2



Microsoft Certification Day
อัปสกิลกับการติวสอบแบบเข้มข้น

พิธีเปิด

Microsoft DCT

Microsoft Certified Fundamentals
Microsoft Certified Azure Data Fundamentals
Microsoft Certified Azure AI Fundamentals
Microsoft Certified Security, Compliance, and Identity Fundamentals

3



Microsoft Certification Day
อัปสกิลกับการติวสอบแบบเข้มข้น

Microsoft DCT

Microsoft Certified Fundamentals
Microsoft Certified Azure Data Fundamentals
Microsoft Certified Azure AI Fundamentals
Microsoft Certified Security, Compliance, and Identity Fundamentals

เนื่องจากการเรียนนี้เป็นการเรียนผ่านระบบ Teams Meeting ดังนั้นจึงขออนุญาตในการที่แต่ละท่านจะเห็นข้อมูลส่วนบุคคลในระบบ
และต้องขออภัยที่ทางทีมงานจะไม่มีการบันทึกการสอนได้ฯ ผ่านระบบ

4



วันที่ 21 กรกฎาคม 2565
เวลา 13:30 — 16:30

Data Fundamentals

เพื่อสอบ DP-900



5

แนะนำศูนย์สอบ ที่สามารถรับของที่ระลึก
เมื่อสอบผ่าน AZ-900 AI-900,DP-900, PL-900,
SC-900, MS-700, MB910, MB920
หมดเขต 30 กันยายน 2565



Microsoft



ศูนย์สอบ	ติดต่อ	เบอร์โทร	ที่ตั้ง	ช่วง Covid เปิดหรือไม่
ERT	Patthama	02-718-1599 ต่อ 1903	เลขที่ 2922/135-136 ชั้น 3 (இழப்பகாசா) ห้อง 331-332 อาคารชาญอิสรภาพาณิช 2 ถนนเพชรบุรีตัดใหม่ แขวงบางจากปี เขตด้ำบขาง กรุงเทพฯ 10320	เปิดปกติ
Iverson	Siriwat	095-894-9191	อาคารวัน แปซิฟิค เพลส ชั้น 12 ห้อง 1208-1209 เลขที่ 140 ถนนสุขุมวิท แขวง คลองเตย เขตคลองเตย กรุงเทพมหานคร 10110 (ติด BTS สถานีนานา)	เปิดจีที, พุ, ศุกร์
Trainocate	Siriporn Nipa	080-669-1428 081-008-7991	999/9 The Offices at CentralWorld , 16F, Unit ML1606-1607, Pathumwan, Bangkok 10330 Thailand	เปิดปกติ

สำหรับผู้สอบ online
ตั้งแต่ 1 July 21

สามารถแลกติดต่อไปที่
phanwadee@iverson.co.th หรือ

siriporn@trainocate.com

โดย-แนบ Transcript อัปเดท
LinkedIn และ -แจ้งเบอร์ติดต่อกลับ

ทุกศูนย์สอบปิดเสาร์-อาทิตย์

6



Microsoft Cloud Squad Program

มาอัปสกิล เพิ่มทักษะสู่ความเป็นครูด้าน Cloud ไปกับ Microsoft

สำหรับท่านที่เข้าร่วม Microsoft Virtual Training Day โดยลงทะเบียนต่อหน้าครูด้วยความตั้งใจจริงและเข้าใจในเนื้อหา !! exam voucher รับฟรี !! ของที่ระลึกเมื่อสอบผ่าน Microsoft Certifications ในแต่ละวิชา



สำหรับผู้สอนฝ่าย
AZ-900, DP-900 และ AI-900 เลือกได้ตามว่า
จะรับเสื้อและถุง หรือ แก้วเก็บความเย็น Azure

สำหรับผู้สอนฝ่าย
SC-900 และ MS-700 เลือกได้ตามว่า
จะรับเสื้อและถุง หรือ แก้วเก็บความเย็น Microsoft 365

สำหรับผู้สอนฝ่าย
PL-900 หรือ
MB-910, MB-920



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Microsoft
DCT

ดูข้อมูลหลักสูตรต่างๆ ได้ที่นี่

<https://www.microsoft.com/apac/events/th-th>

เรียนรู้ภายใน 30 วันได้ที่นี่

<https://aka.ms/30dayslearnit>

เรียนรู้หลักสูตรต่างๆ

<https://aka.ms/mslearning>

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Microsoft Support

Microsoft Certified Fundamentals Badges:

- Microsoft Certified: FUNDAMENTALS
- Microsoft Certified: AZURE DATA FUNDAMENTALS
- Microsoft Certified: AZURE AI FUNDAMENTALS
- Microsoft Certified: SECURITY, COMPLIANCE, AND IDENTITY FUNDAMENTALS

หลังจากเรียนจบประมาณ 5 วันทำการ ท่านจะได้รับเมลแจ้งลิงค์เพื่อทำการลงทะเบียนสอบ หากไม่ได้รับเมล หรือได้รับแล้วไม่สามารถลงทะเบียนสอบได้ ให้เข้าลิงค์นี้เพื่อแจ้งได้ที่ **Certification support** ที่นี่ <https://aka.ms/certificationsupportth>

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Join LINE OpenChat

You've been invited to join "**Microsoft Cloud Squad**" by Spark Tech Thailand. Visit the link below to join the OpenChat.

ข้อมูลข่าวสารทั้งหมดจะได้รับการแจ้งผ่านทาง
Line OpenChat
<https://line.me/ti/g2/cUJu4AdnVTyxN9GXCAxI5Q>

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Join LINE OpenChat by Spark Tech Thailand (ไลน์ OpenChat ของพันธมิตรในโครงการนี้ของเรา เพื่อเอาไว้สื่อสารรายละเอียดโครงการครับ)



You've been invited to join "Microsoft Cloud Squad" by Spark Tech Thailand. Visit the link below to join the OpenChat.

ข้อมูลข่าวสารทั้งหมดจะได้รับการแจ้งผ่านทาง Line OpenChat นี้ครับ

<https://line.me/ti/g2/cUJu4AdnVTyxN9GXCAXI5Q>



11

 Microsoft Azure
Microsoft Azure Data Fundamentals
[DP-900]

12

Tissana Tanaklang

**Software and Solution Development Trainer
Iverson Training Center Co., Ltd.
tissana@iverson.co.th , tissana_t@hotmail.com**

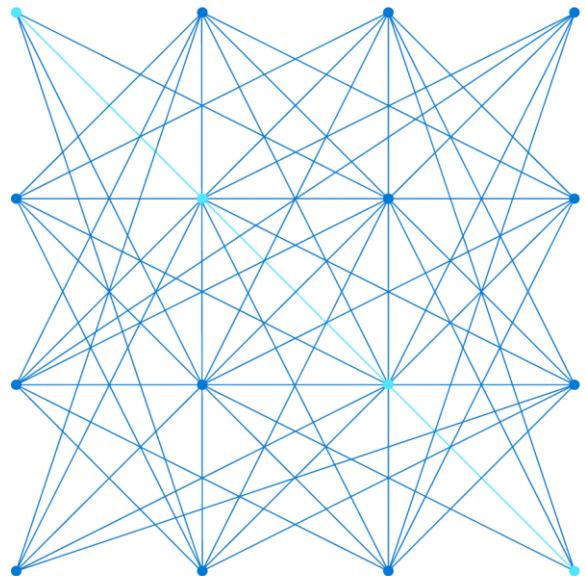
- Microsoft Certified Trainer (MCT)
- Microsoft Certified Azure Data Engineer Associate
- Microsoft Certified Azure Data Scientist Associate
- Microsoft Certified Power BI Data Analyst Associate
- Microsoft Certified Azure Data Fundamentals
- Microsoft Certified Azure AI Engineer Associate
- Microsoft Certified Azure AI Fundamentals
- Microsoft Certified Azure Fundamentals
- Microsoft Certified Power Platform Fundamentals



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 Microsoft Azure

Data Concept



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What is data?

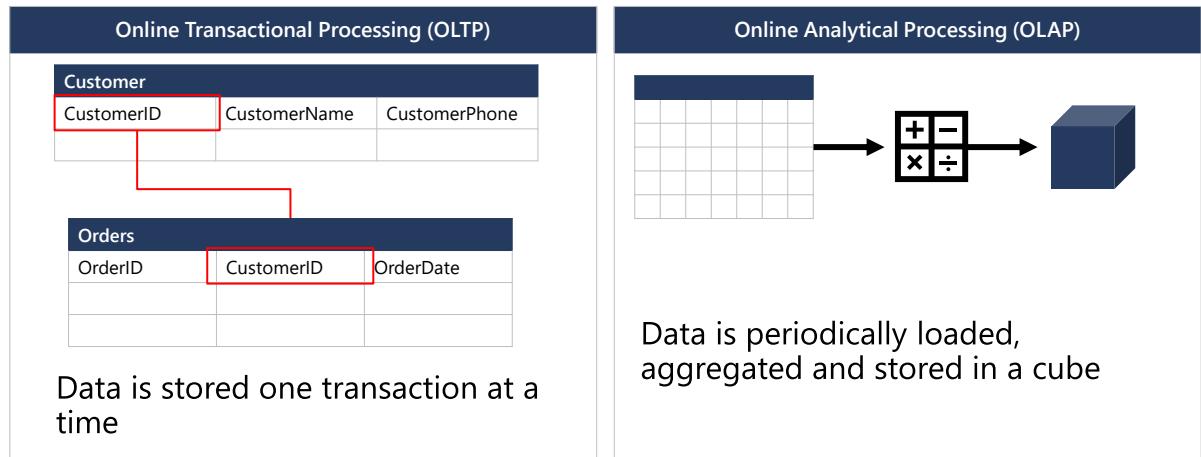
Collection of facts, numbers, descriptions, objects , stored in a structured, semi-structured, unstructured way



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15

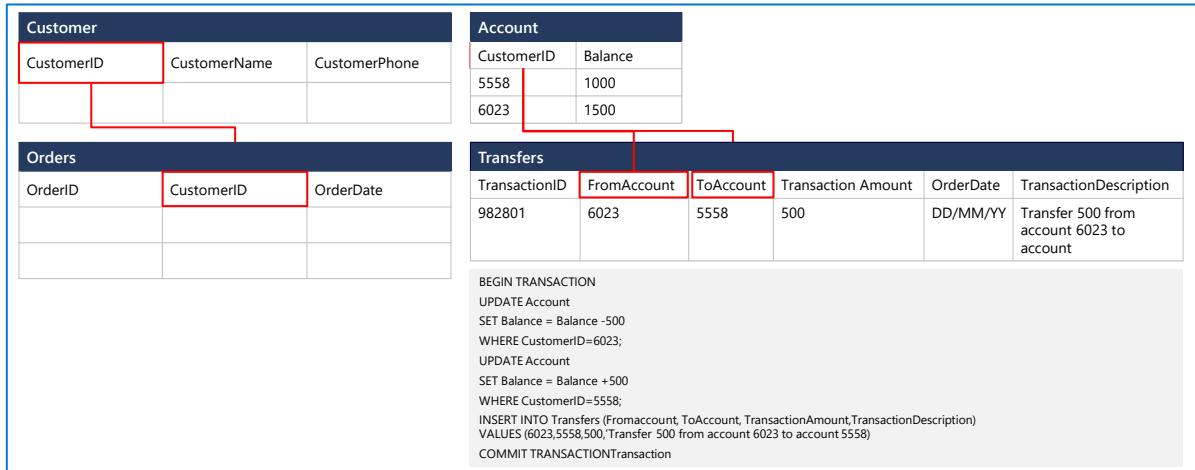
Transactional vs analytical data stores



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16

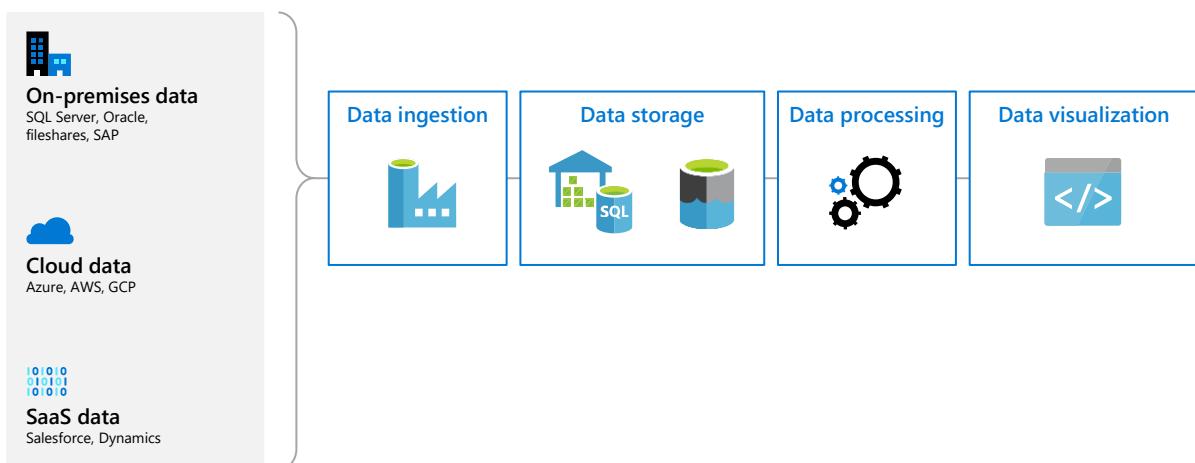
Transactional workloads



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17

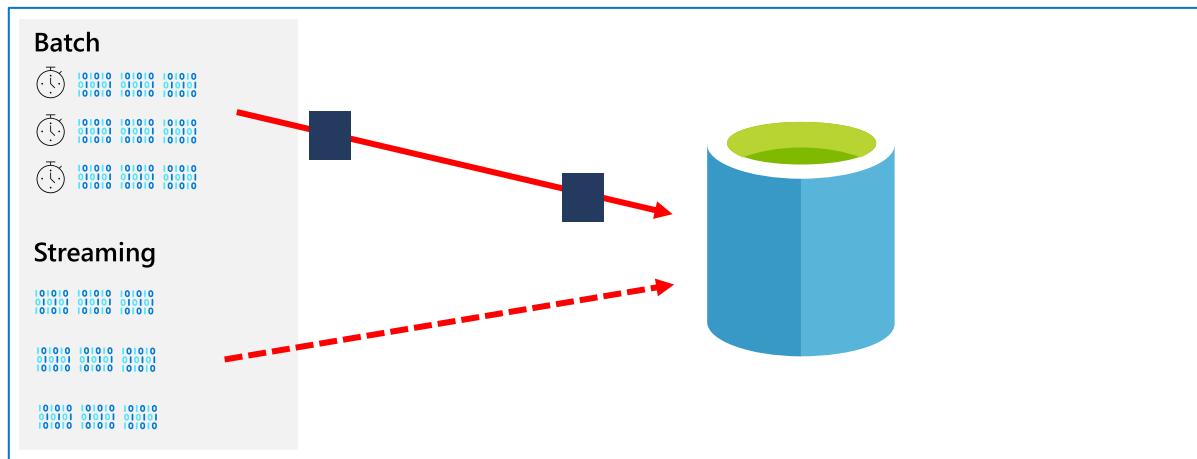
Analytical system



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Batch data/streaming data



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Question

Workload Types

Batch
Streaming

Answer Area

Workload type
Workload type
Workload type

Data for a product catalog will be loaded every 12 hours to a data warehouse.

Data for online purchases will be loaded to a data warehouse as the purchases occur.

Updates to inventory data will be loaded to a data warehouse every 1,000 transactions.

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Answer

Batch

Data for a product catalog will be loaded every 12 hours to a data warehouse.

Streaming

Data for online purchases will be loaded to a data warehouse as the purchases occur.

Batch

Updates to inventory data will be loaded to a data warehouse every 1,000 transactions.

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Roles in data

Database Administrator

Database Management
Implements Data Security
Backups
User Access
Monitors performance



Data Engineer

Data Pipelines and processes
Data Ingestion storage
Prepare data for Analytics
Prepare data for analytical processing



Data Analyst

Provides insights into the data
Visual Reporting
Modeling Data for Analysis
Combines data for visualization and analysis



22

Common tools – Database administrator

Azure Data Studio	SQL Server Management Studio	Azure Portal/CLI
Graphical interface for managing on-premises and cloud-based data services	Graphical interface for managing on-premises and cloud-based data services	Tools for management and provisioning of Azure Data Services
Runs on Windows, macOS, Linux	Runs on Windows Comprehensive Database Administration tool	Manual and automation of scripts using Azure Resource Manager or Command Line Interface scripting

23

Common tools – Data engineering

Azure Synapse Studio	SQL Server Management Studio	Azure Portal/CLI
Azure Portal integrated to manage Azure Synapse Data Ingestion (Azure Data Factory) Management of Azure Synapse assets (SQL Pools/Spark Pool)	Graphical interface for managing on-premises and cloud-based data services Runs on Windows Comprehensive Database Administration tool	Tools for management and provisioning of Azure resources Manual and automation of scripts using Azure Resource Manager or Command Line Interface scripting

24

Common tools – Data analyst

Power BI Desktop	Power BI Portal/ Power BI Service	Power BI Report Builder
Data Visualization tool	Authoring and management of Power BI reports	Data Visualization tool for paginated reports
Model and Visualize Data	Authoring of Power BI dashboards	Model and Visualize paginated reports
Management of Azure Synapse assets (SQL Pools/Spark Pool)	Share Reports/Datasets	

25

Question

A relational database must be used when

a dynamic schema is required.
data will be stored as key/value pairs.
storing large images and videos.
strong consistency guarantees are required.

26

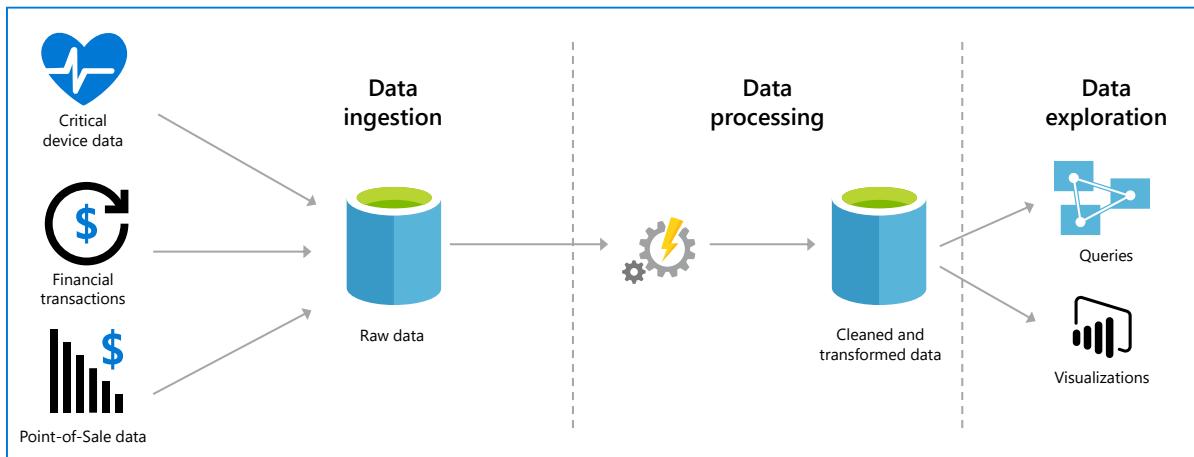
Answer

A relational database must be used when

a dynamic schema is required.
data will be stored as key/value pairs.
storing large images and videos.
strong consistency guarantees are required.

27

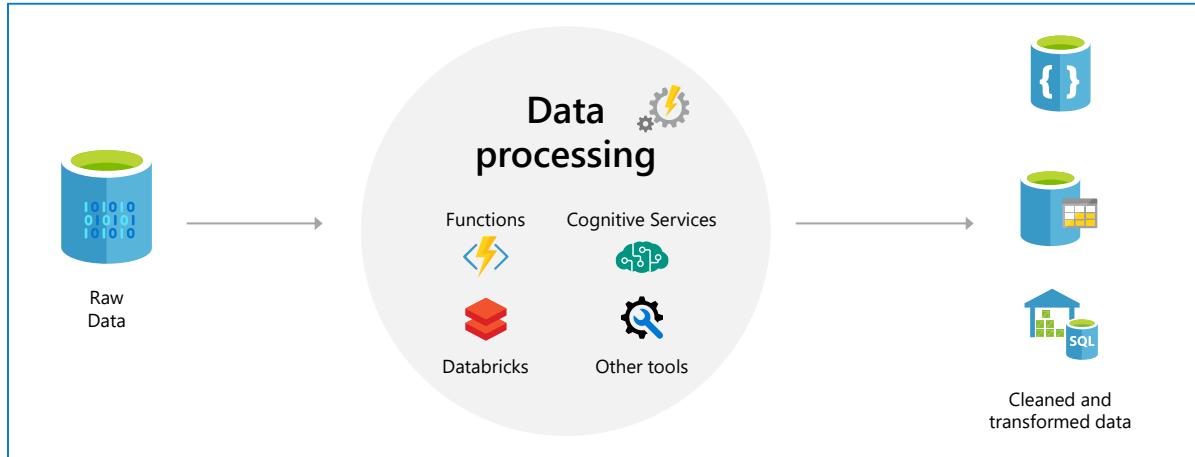
What is data ingestion?



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28

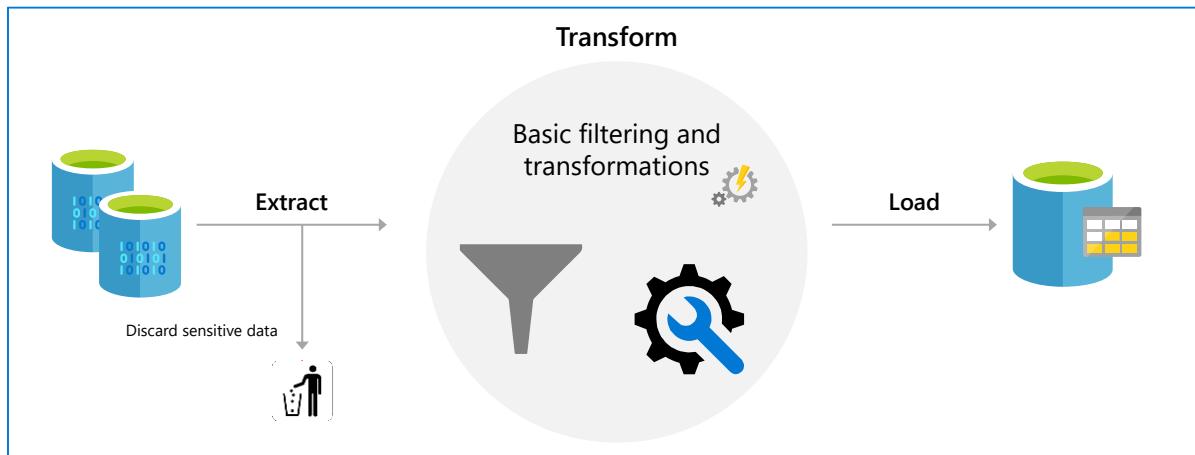
What is data processing?



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29

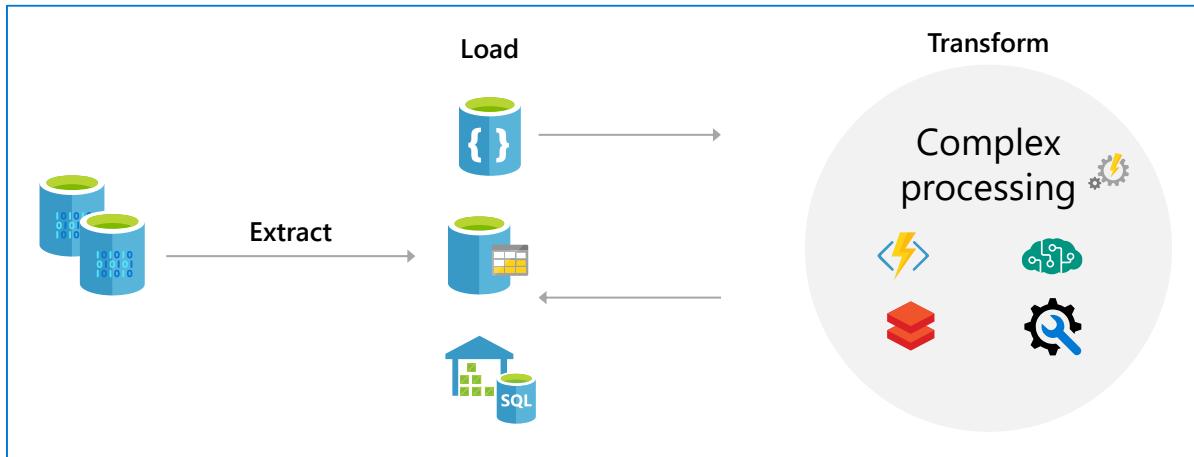
What is ETL?



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What is ELT?



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Question

Locations

An in-memory data integration tool

The CRM system

The data warehouse

Answer Area

Extract:

Location

Load:

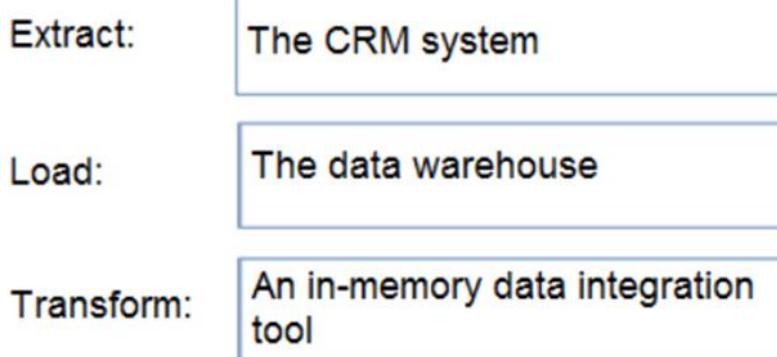
Location

Transform:

Location

32

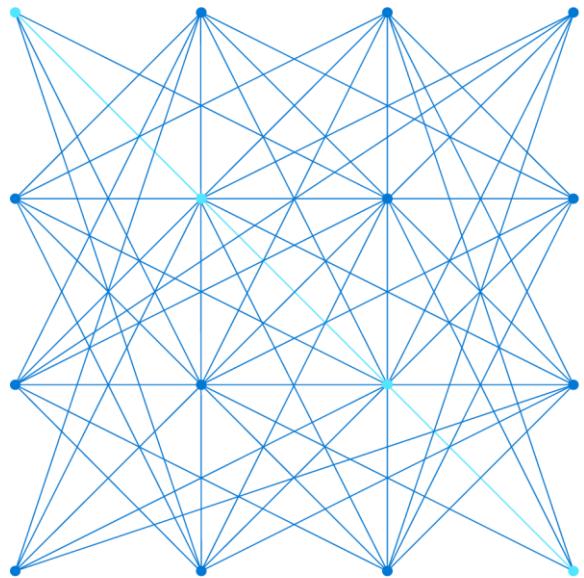
Answer



33



Explore relational data in Azure



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34

Tables

Customers		
CustomerID	CustomerName	CustomerPhone
100	Muisto Linna	XXX-XXX-XXXX
101	Noam Maoz	XXX-XXX-XXXX
102	Vanja Matkovic	XXX-XXX-XXXX
103	Qamar Mounir	XXX-XXX-XXXX
104	Zhenis Omar	XXX-XXX-XXXX
105	Claude Paulet	XXX-XXX-XXXX
106	Alex Pettersen	XXX-XXX-XXXX
107	Francis Ribeiro	XXX-XXX-XXXX

Data is stored in a table

Table consists of rows and columns

All rows have same # of columns

Each column is defined by a datatype

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Question

Relational data uses ▼ to enforce relationships between different tables.

collections
columns
keys
partitions

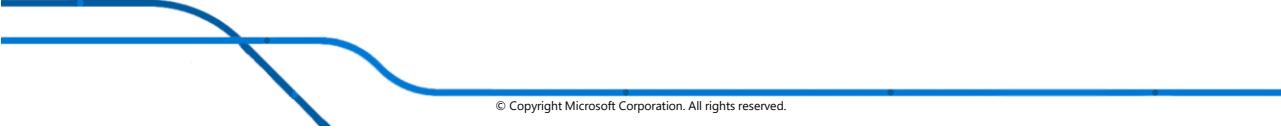
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36

Answer

Relational data uses  to enforce relationships between different tables.

collections
columns
keys
partitions



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Entities

Customers		
CustomerID	CustomerName	CustomerPhone
100	Muisto Linna	XXX-XXX-XXXX
101	Noam Maoz	XXX-XXX-XXXX
102	Vanja Matkovic	XXX-XXX-XXXX
103	Qamar Mounir	XXX-XXX-XXXX
104	Zhenis Omar	XXX-XXX-XXXX
105	Claude Paulet	XXX-XXX-XXXX
106	Alex Pettersen	XXX-XXX-XXXX

An entity is a representation of an item which can be physical (such as a customer or a product), or virtual (such as an order).

Entities are connected by relations enabling interaction. For example, a customer can place an order for a product

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Normalization

Customers			Orders		
CustomerID	CustomerName	CustomerPhone	OrderID	CustomerName	CustomerPhone
100	Muisto Linna	XXX-XXX-XXXX	AD100	Noam Maoz	XXX-XXX-XXXX
101	Noam Maoz	XXX-XXX-XXXX	AD101	Noam Maoz	XXX-XXX-XXXX
102	Vanja Matkovic	XXX-XXX-XXXX	AD102	Noam Maoz	XXX-XXX-XXXX
103	Qamar Mounir	XXX-XXX-XXXX	AX103	Qamar Mounir	XXX-XXX-XXXX
104	Zhenis Omar	XXX-XXX-XXXX	AS104	Qamar Mounir	XXX-XXX-XXXX
105	Claude Paulet	XXX-XXX-XXXX	AR105	Claude Paulet	XXX-XXX-XXXX
106	Alex Pettersen	XXX-XXX-XXXX	MK106	Muisto Linna	XXX-XXX-XXXX

Data is normalized to:

Reduce storage

Avoid data duplication

Improve data quality

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Question

Statements	Yes	No
------------	-----	----

Normalization involves eliminating relationships between database tables.

Normalizing a database reduces data redundancy.

Normalization improves data integrity.

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Answer

Statements	Yes	No
Normalization involves eliminating relationships between database tables.	<input type="radio"/>	<input checked="" type="radio"/>
Normalizing a database reduces data redundancy.	<input checked="" type="radio"/>	<input type="radio"/>
Normalization improves data integrity.	<input checked="" type="radio"/>	<input type="radio"/>

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Relations

Customers			Orders		
CustomerID	CustomerName	CustomerPhone	OrderID	CustomerID	SalesPersonID
100	Muisto Linna	XXX-XXX-XXXX	AD100	101	200
101	Noam Maoz	XXX-XXX-XXXX	AD101	101	200
102	Vanja Matkovic	XXX-XXX-XXXX	AD102	101	200
103	Qamar Mounir	XXX-XXX-XXXX	AX103	103	201
104	Zhenis Omar	XXX-XXX-XXXX	AS104	103	201
105	Claude Paulet	XXX-XXX-XXXX	AR105	105	200
106	Alex Pettersen	XXX-XXX-XXXX	MK106	105	201

In a normalized database schema:

Primary Keys and Foreign keys are used to define relationships

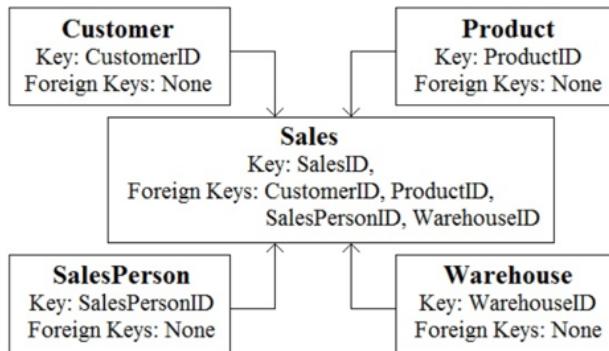
No data duplication exists (other than key values in 3rd Normal Form (3NF)

Data is retrieved by joining tables together in a query

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Question



The data model is a [answer choice].

transactional model
star schema
snowflake schema
fact
dimension
bridge

Customer is a [answer choice] table.

43

Answer

The data model is a [answer choice].

transactional model
star schema
snowflake schema

Customer is a [answer choice] table.

fact
dimension
bridge

44

Indexes

Customers			IDX-CustomerRegion	
CustomerID	CustomerName	CustomerPhone	CustomerID	Region
100	Muisto Linna	XXX-XXX-XXXX	100	France
101	Noam Maoz	XXX-XXX-XXXX	101	Brazil
102	Vanja Matkovic	XXX-XXX-XXXX	102	Croatia
103	Qamar Mounir	XXX-XXX-XXXX	103	Jordan
104	Zhenis Omar	XXX-XXX-XXXX	104	Spain
105	Claude Paulet	XXX-XXX-XXXX	105	France
106	Alex Pettersen	XXX-XXX-XXXX	106	USA

An index:

Optimizes search queries for faster data retrieval

Reduces the amount of data pages that need to be read to retrieve the data in a SQL Statement

Data is retrieved by joining tables together in a query

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View

Customers			Orders			Create the definition of a view: CREATE VIEW vw_customerorders AS SELECT Customers.CustomerID, Customers.CustomerName, Orders.OrderID FROM Customers JOIN Orders on Customers.CustomerID = Orders.CustomerID Retrieve the orders placed by customer 102 using the view: SELECT CustomerName, OrderID from vw_customerorders WHERE CustomerID=102
CustomerID	CustomerName	CustomerPhone	OrderID	CustomerID	SalesPersonID	
100	Muisto Linna	XXX-XXX-XXXX	AD100	101	200	
101	Noam Maoz	XXX-XXX-XXXX	AD101	101	200	
102	Vanja Matkovic	XXX-XXX-XXXX	AD102	101	200	
103	Qamar Mounir	XXX-XXX-XXXX	AX103	103	201	
104	Zhenis Omar	XXX-XXX-XXXX	AS104	103	201	
105	Claude Paulet	XXX-XXX-XXXX	AR105	105	200	
106	Alex Pettersen	XXX-XXX-XXXX	MK106	105	201	
			DB205	100	205	

A view is a virtual table based on the result set of query:

Views are created to simplify the query

Combine relational data into a single pane view

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Question

▼	
A heap	
A stored procedure	
A view	
An index	

▼ is a virtual table that contains content defined by a query.

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Answer

▼	
A heap	
A stored procedure	
A view	
An index	

▼ is a virtual table that contains content defined by a query.

48



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Question

You have a SQL query that combines customer data and order data. The query includes calculated columns.

You need to persist the SQL query so that other users can use the query.

What should you create?

- A. an index
- B. a view
- C. a scalar function
- D. a table

49

Answer

You have a SQL query that combines customer data and order data. The query includes calculated columns.

You need to persist the SQL query so that other users can use the query.

What should you create?

- A. an index
- B. a view**
- C. a scalar function
- D. a table

50

Question

Terms

Index
View
Table

Answer Area

A database object that holds data

A database object whose content is defined by a query

A database object that helps improve the speed of data retrieval

51

Answer

Terms

Index
View
Table

Answer Area

Table
View
Index

A database object that holds data

A database object whose content is defined by a query

A database object that helps improve the speed of data retrieval

52

Question

Statements	Yes	No
Relational database tables contain columns and rows	<input type="radio"/>	<input type="radio"/>
Indexes in a relational database describe the data types in a table	<input type="radio"/>	<input type="radio"/>
A database view is a virtual table whose content is defined by a query	<input type="radio"/>	<input type="radio"/>

53

Answer

Statements	Yes	No
Relational database tables contain columns and rows	<input checked="" type="radio"/>	<input type="radio"/>
Indexes in a relational database describe the data types in a table	<input type="radio"/>	<input checked="" type="radio"/>
A database view is a virtual table whose content is defined by a query	<input checked="" type="radio"/>	<input type="radio"/>

54

What are Azure Data Services?



SQL Server on Azure Virtual Machines

Best for re-hosting and apps requiring OS-level access and control
Automated manageability features and OS-level access



Azure SQL Managed Instance

Best for modernizing existing apps
Offers high compatibility with SQL Server and native VNET support



Azure SQL Database

Best for building new apps in the cloud
Pre-provisioned or serverless compute and Hyperscale storage to meet demanding workload requirements

— Infrastructure as a Service — — Platform as a Service — — —

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Create an Azure SQL database

Home > New > SQL Database > Create SQL Database

Create SQL Database

Basics **Networking** **Additional settings** **Tags** **Review + create**

Create a SQL database with your preferred configurations. Complete the Basics tab then go to Review + Create to provision with smart defaults, or visit each tab to customize. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Resource group *

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name * Server * The value must not be empty.

Want to use SQL elastic pool? * Yes No

Compute + storage *

Dashboard > New > Create SQL Database

Create SQL Database

1 Basics

2 Additional settings **Networking** **Tags** **Review + create**

Customize additional configuration parameters including collation & sample data.

Data source

Start with a blank database, restore from a backup or select sample data to populate your new database.

* Use existing data None Backup Sample

* Backup You can also restore a database to a server blade. [Learn more](#)

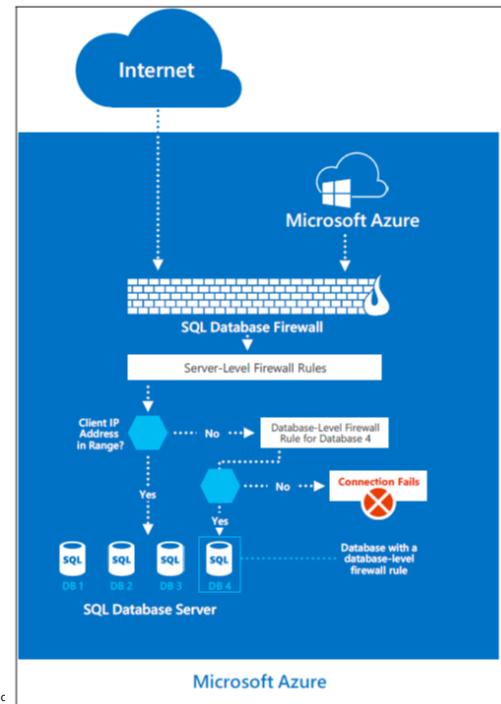
3 Database Collection

Database collation defines the rules that sort and compare data, and cannot be changed after database creation. The default database collation is SQL_Latin1_General_CI_AS. [Learn more](#)

Database	Collation
database1	(2019-09-16 12:05:30 UTC)
database2	(2019-09-16 12:06:45 UTC)
database3	(2019-09-16 12:07:51 UTC)
database4	(2019-09-16 12:08:38 UTC)
database5	(2019-09-16 12:09:23 UTC)
database6	(2019-09-16 12:10:41 UTC)
database7	(2019-09-16 12:11:38 UTC)

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Server-Level Firewall Rules



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PostgreSQL, MySQL, MariaDB



PostgreSQL is the most popular and wanted database for modern apps



MySQL is a leading open source relational database for LAMP stack apps



MariaDB is a community-developed fork of MySQL with strong focus on the user community

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Question

Your company needs to implement a relational database in Azure. The solution must minimize ongoing maintenance. Which Azure service should you use?

- A. Azure HDInsight
- B. Azure SQL Database
- C. Azure Cosmos DB
- D. SQL Server on Azure virtual machines



59

Answer

Your company needs to implement a relational database in Azure. The solution must minimize ongoing maintenance. Which Azure service should you use?

- A. Azure HDInsight
- B. Azure SQL Database**
- C. Azure Cosmos DB
- D. SQL Server on Azure virtual machines



60

Question

Statements	Yes	No
Platform as a service (PaaS) database offerings in Azure provide built-in high availability.	<input type="radio"/>	<input type="radio"/>
Platform as a service (PaaS) database offerings in Azure provide configurable scaling options.	<input type="radio"/>	<input type="radio"/>
Platform as a service (PaaS) database offerings in Azure reduce the administrative overhead for managing hardware.	<input type="radio"/>	<input type="radio"/>

61

Answer

Statements	Yes	No
Platform as a service (PaaS) database offerings in Azure provide built-in high availability.	<input checked="" type="radio"/>	<input type="radio"/>
Platform as a service (PaaS) database offerings in Azure provide configurable scaling options.	<input checked="" type="radio"/>	<input type="radio"/>
Platform as a service (PaaS) database offerings in Azure reduce the administrative overhead for managing hardware.	<input checked="" type="radio"/>	<input type="radio"/>

62

Question

By default, each Azure SQL database is protected by

a network security group (NSG).
a server-level firewall.
Azure Firewall.
Azure Front Door.

63



Answer

By default, each Azure SQL database is protected by

a network security group (NSG).
a server-level firewall.
Azure Firewall.
Azure Front Door.

64



Question

You need to ensure that users use multi-factor authentication (MFA) when connecting to an Azure SQL database. Which type of authentication should you use?

- A. service principal authentication
- B. Azure Active Directory (Azure AD) authentication
- C. SQL authentication
- D. certificate authentication

65



Answer

You need to ensure that users use multi-factor authentication (MFA) when connecting to an Azure SQL database. Which type of authentication should you use?

- A. service principal authentication
- B. Azure Active Directory (Azure AD) authentication**
- C. SQL authentication
- D. certificate authentication

66



Introduction to SQL



SQL is a standard language for use with relational databases



SQL standards are maintained by ANSI and ISO



Proprietary RDBMS systems have their own extensions of SQL such as T-SQL, PL/SQL, pgSQL

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SQL Statement types

DML	DDL	DCL
Data Manipulation Language Used to query and manipulate data SELECT, INSERT, UPDATE, DELETE	Data Definition Language Used to define database objects CREATE, ALTER, DROP, RENAME	Data Control Language Used to manage security permissions GRANT, REVOKE, DENY

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Use DML statements

Statement	Description
SELECT	Select/read from a table
INSERT	Insert new rows in a table
UPDATE	Edit/Update existing rows in a table
DELETE	Delete existing rows in a table

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69

Question

You have an inventory management database that contains the following table.

ProductName	Quantity
Product1	100
Product2	129
Product3	176

Which statement should you use in a SQL query to change the inventory quantity of Product1 to 270?

- A. INSERT
- B. MERGE
- C. UPDATE
- D. CREATE

70



Answer

You have an inventory management database that contains the following table.

ProductName	Quantity
Product1	100
Product2	129
Product3	176

Which statement should you use in a SQL query to change the inventory quantity of Product1 to 270?

- A. INSERT
- B. MERGE
- C. UPDATE
- D. CREATE

71

Question

You have the following SQL query.

```
INSERT INTO dbo.Products (ProductID, ProductName, Price, ProductDescription)
VALUES (1, 'Clamp', 12.48, 'Workbench clamp') ;
```

What are dbo.Products and ProductName? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Dbo.Products :

A column
A database
A table
An index

ProductName :

A column
A database
A table
An index

72

Answer

Answer Area

Dbo.Products:	<input type="button" value="▼"/>
A column	
A database	
A table	
An index	

ProductName:	<input type="button" value="▼"/>
A column	
A database	
A table	
An index	

73



Use DDL statements

Statement	Description
CREATE	Create a new object in the database, such as a table or a view
ALTER	Modify the structure of an object. For instance, altering a table to add a new column.
DROP	Remove an object from the database.
RENAME	Rename an existing object.

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74

Question

Which statement is an example of Data Definition Language (DDL)?

- A. SELECT
- B. JOIN
- C. MERGE
- D. CREATE

75

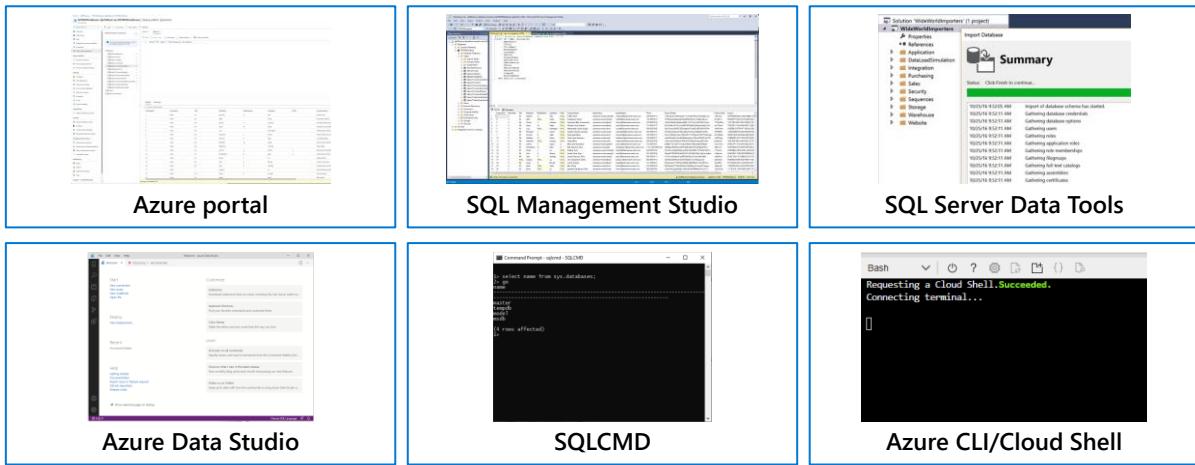
Answer

Which statement is an example of Data Definition Language (DDL)?

- A. SELECT
- B. JOIN
- C. MERGE
- D. CREATE

76

Query tools

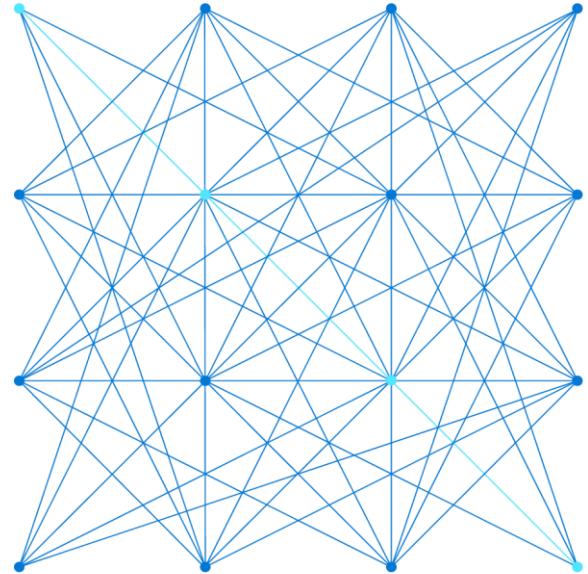


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Explore
non-relational data
in Azure



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78

Explore characteristics of non-relational data

Entities

```
## Customer 1 ID: 1
Name: Mark Hanson
Telephone: [ Home: 1-999-9999999, Business: 1-888-8888888, Cell: 1-777- 7777777 ]
Address: [ Home: 121 Main Street, Some City, NY, 10110,
           Business: 87 Big Building, Some City, NY, 10111 ]
## Customer 2 ID: 2
Title: Mr
Name: Jeff Hay
Telephone: [ Home: 0044-1999-333333, Mobile: 0044-17545-444444 ]
Address: [ UK: 86 High Street, Some Town, A County, GL8888, UK,
           US: 777 7th Street, Another City, CA, 90111 ]
```

Non-relational collections can have:

Multiple entities in the same collection or container with different fields

Have a different, non-tabular schema

Are often defined by labeling each field with the name it represents

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Types of non-relational data

What is semi-structured data?

Data structure is defined within the actual data by fields. Format/file types include:



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80

Question

```

"customer" : {
    "first name" : "Ben",
    "last name" : "Smith",
    "address" : {
        "line 1" : "161 Azure Ln",
        "line 2" : "Palo Alto",
        "ZIP code" : "54762"
    },
    "social media": [
        {
            "service" : "twitter",
            "handle" : "@bensmith"
        },
        {
            "service" : "linkedin",
            "handle" : "bensmith"
        }
    ],
    "phone numbers": [
        {
            "type" : "mobile",
            "number" : "555-555-555"
        }
    ]
}

```



Answer Area

Customer is [answer choice].

a nested array
a nested object
a root object

Address is [answer choice].

a nested array
a nested object
a root object

Social media is [answer choice].

a nested array
a nested object
a root object

81

Answer

Customer is [answer choice].

a nested array
a nested object
a root object

Address is [answer choice].

a nested array
a nested object
a root object

Social media is [answer choice].

a nested array
a nested object
a root object

82

What is unstructured data?



Does not naturally contain fields:

Examples: video, audio, media streams, documents



Often used to extract data organization and categorize or identify "structures"



Frequently used in combination with Machine Learning or Cognitive Services capabilities to "extract data" by using:

Text Analytics

Sentiment Analysis with Cognitive APIs

Vision API

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83

What is NoSQL?

Loose term, to describe non-relational



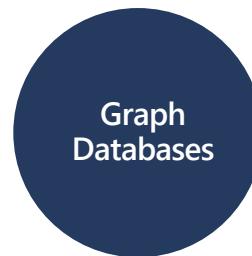
Key-value
stores



Document
based



Column
family
databases



Graph
Databases

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Key-Value Stores

A key-value store is the simplest (and often quickest) type of NoSQL database for inserting and querying data.

The diagram shows a table with two columns: 'Key' and 'Value'. The 'Key' column contains five entries: 'AAAAA', 'AABAB', 'DFA766', and 'FABCC4'. The 'Value' column contains binary strings: '110100111010100110101111...', '1001100001011001101011110...', '0000000000101010110101010...', and '1110110110101010100101101...'. A callout box labeled 'Opaque to data store' points to the 'Value' column.

Key	Value
AAAAA	110100111010100110101111...
AABAB	1001100001011001101011110...
DFA766	0000000000101010110101010...
FABCC4	1110110110101010100101101...

85

Question

A key/value data store is optimized for

The diagram shows a table with four rows. The rows contain the following text: 'enforcing constraints', 'simple lookups', 'table joins', and 'transactions'. There is a small downward arrow icon in the top right corner of the table.

enforcing constraints
simple lookups
table joins
transactions

86

Answer

A key/value data store is optimized for

enforcing constraints
simple lookups
table joins
transactions



87

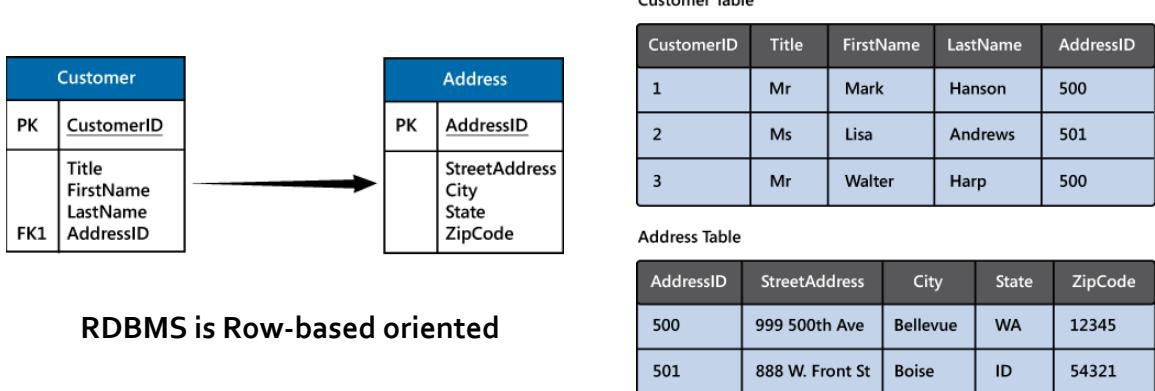
Document Databases

Key	Document
1001	<pre>{ "CustomerID": 99, "OrderItems": [{ "ProductID": 2010, "Quantity": 2, "Cost": 520 }, { "ProductID": 4365, "Quantity": 1, "Cost": 18 }], "OrderDate": "04/01/2017" }</pre>
1002	<pre>{ "CustomerID": 220, "OrderItems": [{ "ProductID": 1285, "Quantity": 1, "Cost": 120 }], "OrderDate": "05/08/2017" }</pre>

A document database represents the opposite end of the NoSQL spectrum from a key-value store. In a document database, each document has a unique ID, but the fields in the documents are transparent to the database management system. Document databases typically store data in JSON format,

88

Column Family Databases



89



90

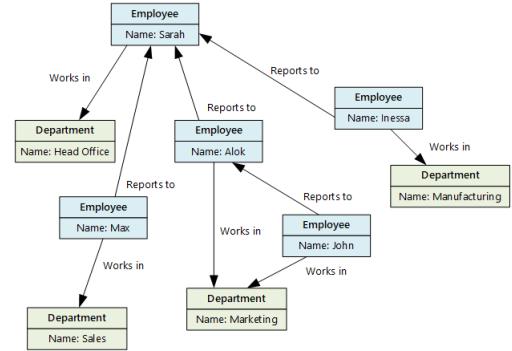
What is a graph database?



Stores entities centric around relationships

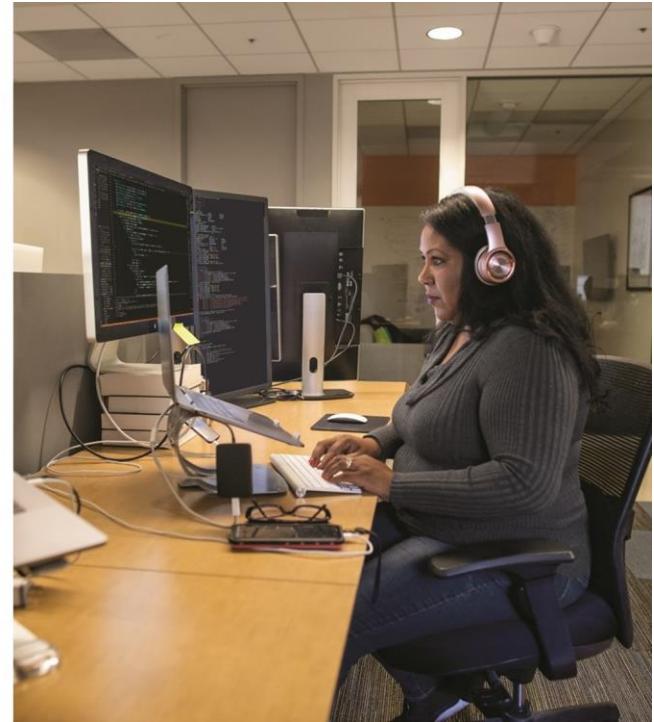


Enables applications to perform queries traversing a network of nodes and edges



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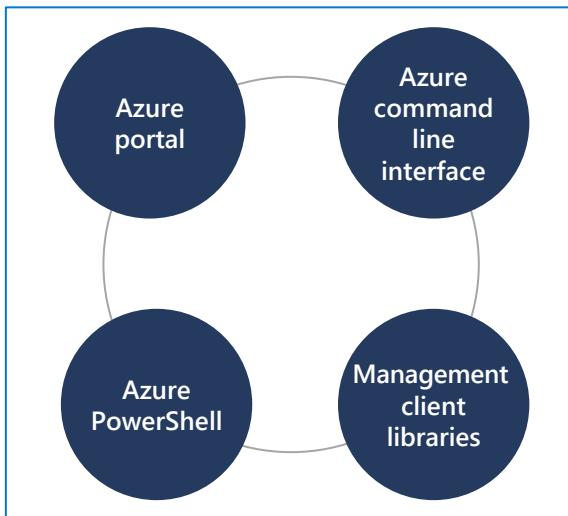
91



Create a storage account

92

Storage account creation tool



93

Storage account settings

Home > New > Storage account > Create storage account

Create storage account

[Basics](#) [Networking](#) [Advanced](#) [Tags](#) [Review + create](#)

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below.

[Learn more about Azure storage accounts](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription: dtestao

Resource group: [Select existing...](#) [Create new](#)

Instance details

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

Storage account name:

Location: (US) South Central US

Performance: Standard Premium

Account kind: StorageV2 (general purpose v2)

Replication: Read-access geo-redundant storage (RA-GRS)

Access tier (default): Cool Hot

94

Azure Blob storage

The screenshot shows the Azure Blob storage overview page. On the left, there's a navigation sidebar with links like Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data transfer, Events, Storage Explorer (preview), Settings (Access keys, Geo-replication, CORS, Configuration), and a note about classic alerts retiring in 2021.

Essentials section details:

- Resource group: DataFundamentals
- Status: Primary: Available, Secondary: Available
- Location: East US 2, Central US
- Subscription: CM Azure Subscription
- Subscription ID: 09c9876d-233f-4906-b0ac-d31970596a44
- Tags: Click here to add tags
- Performance/Access tier: Standard/Hot
- Replication: Read-access geo-redundant storage (RA-GRS)
- Account kind: StorageV2 (general purpose v2)

Containers section (highlighted with a red box):

- Icon: Blue folder icon
- Name: Containers
- Description: Scalable, cost-effective storage for unstructured data
- Link: Learn more

File shares: Serverless SMB and NFS file shares. [Learn more](#)

Tables: Tabular data storage. [Learn more](#)

Queues: Effectively scale apps according to traffic. [Learn more](#)

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Question

You need to create an Azure Storage account.

Data in the account must replicate outside the Azure region automatically.

Which two types of replication can you use for the storage account? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

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

96

Answer

You need to create an Azure Storage account.

Data in the account must replicate outside the Azure region automatically.

Which two types of replication can you use for the storage account? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

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



97

Question

You manage an application that stores data in a shared folder on a Windows server.

You need to move the shared folder to Azure Storage.

Which type of Azure Storage should you use?

- A. queue**
- B. blob**
- C. file**
- D. table**



98

Answer

You manage an application that stores data in a shared folder on a Windows server.

You need to move the shared folder to Azure Storage.

Which type of Azure Storage should you use?

- A. queue
- B. blob
- C. file**
- D. table

99



Question

You have an application that runs on Windows and requires access to a mapped drive.

Which Azure service should you use?

- A. Azure Files
- B. Azure Blob storage
- C. Azure Cosmos DB
- D. Azure Table storage

100



Answer

You have an application that runs on Windows and requires access to a mapped drive.
Which Azure service should you use?

- A. Azure Files**
- B. Azure Blob storage
- C. Azure Cosmos DB
- D. Azure Table storage

101



Question

Services	Answer Area
Azure Blob storage	Service
Azure Cosmos DB	Enables the use of SQL queries against data stored in JSON documents
Azure Files	Service
Azure Table storage	Enables users to access data by using the Server Message Block (SMB) version 3 protocol



102

Answer

Azure Cosmos DB	Enables the use of SQL queries against data stored in JSON documents
Azure Files	Enables users to access data by using the Server Message Block (SMB) version 3 protocol

103



Explore Azure Blob storage

Block blobs	Page blobs	Append blobs
Has a maximum size of 4.7TB Best for storing large, discrete, binary objects that changes infrequently Each individual block can store up to 100MB of data A block blob can contain up to 50000 blocks	Can hold up to 8TB of data Is organized as a collection of fixed sized-512 byte pages Used to implement virtual disk storage for virtual machines	The maximum size is just over 195GB Is a block blob that is used to optimize append operations Each individual block can store up to 4MB of data

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Provisioning Data Lake storage

Create storage account

Basics Advanced Tags Review + create

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription: Visual Studio Enterprise
Resource group: Select existing... Create new

INSTANCE DETAILS

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

Storage account name:
Location: East US
Performance: Standard (selected)
Account kind: StorageV2 (general purpose v2)
Replication: Read-access geo-redundant storage (RA-GRS)
Access tier (default): Cool (selected) Hot

SECURITY

Secure transfer required: Enabled Disabled

VIRTUAL NETWORKS

Allow access from: All networks Selected network
All networks will be able to access this storage account. [Learn more](#)

DATA LAKE STORAGE GEN2 (PREVIEW)

Hierarchical namespace: Enabled Disabled

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Question

Statements

Yes

No

When ingesting data from Azure Data Lake Storage across Azure regions, you will incur costs for bandwidth.

You can use blob, table, and file storage in the same Azure Storage account.

You implement Azure Data Lake Storage by creating an Azure Storage account.

106

Answer

Statements	Yes	No
When ingesting data from Azure Data Lake Storage across Azure regions, you will incur costs for bandwidth.	<input checked="" type="radio"/>	<input type="radio"/>
You can use blob, table, and file storage in the same Azure Storage account.	<input checked="" type="radio"/>	<input type="radio"/>
You implement Azure Data Lake Storage by creating an Azure Storage account.	<input checked="" type="radio"/>	<input type="radio"/>

107

Question

To configure an Azure Storage account to support both security at the folder level and atomic directory manipulation,

- enable the hierarchical namespace.
- set Account kind to BlobStorage.
- set Performance to Premium.
- set Replication to Read-access geo-redundant storage (RA-GRS).

108

Answer

To configure an Azure Storage account to support both security at the folder level and atomic directory manipulation,

- | |
|--|
| enable the hierarchical namespace. |
| set Account kind to BlobStorage. |
| set Performance to Premium. |
| set Replication to Read-access geo-redundant storage (RA-GRS). |

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Explore Azure Cosmos DB



Scalability



Performance



Availability



Programming model

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Cosmos DB APIs

SQL API	Table API	MongoDB API	Cassandra API	Gremlin API
<ul style="list-style-type: none"> Supports SQL-like query language 	<ul style="list-style-type: none"> Compatible with Azure Table Storage 	<ul style="list-style-type: none"> Compatible with MongoDB 	<ul style="list-style-type: none"> Compatible with Cassandra 	<ul style="list-style-type: none"> A graph database

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Create an Azure Cosmos DB account

Home > New > Create Azure Cosmos DB Account

Create Azure Cosmos DB Account

Basics Networking Tags Review + create

Azure Cosmos DB is a globally distributed, multi-model, fully managed database service. Try it for free, for 30 days with unlimited renewals. Go to production starting at \$24/month per database, multiple containers included. Learn more.

Project Details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * dtestao

Resource Group * Select existing... Create new

Instance Details

Account Name * Enter account name

API * Core (SQL)

Apache Spark * None Sign up for Apache Spark preview

Location * (US) West US

Geo-Redundancy * Enable Disable

Multi-region Writes * Enable Disable

*Up to 33% off multi-region writes is available to qualifying new accounts only. Accounts must be created between December 1, 2019 and February 29, 2020. Offer limited to accounts with both account locations and geo-redundancy, and applies only to multi-region writes in those same regions. Both Geo-Redundancy and Multi-region Writes must be enabled in account settings. Actual discount will vary based on number of qualifying regions selected.

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Creating a Database and a Container in Cosmos DB

Add Container

Start at \$24/mo per database, multiple containers included [More details](#)

* Database id Create new Use existing
 Type a new database id

Provision database throughput Throughput (400 - 100,000 RU/s) Autopilot (preview) Manual
 400

Estimated spend (USD): **\$0.032 hourly / \$0.77 daily** (1 region, 400RU/s, \$0.00008/RU)

* Container id e.g., Container1

* Partition key e.g., /address/zipCode My partition key is larger than 100 bytes

Unique keys + Add unique key

113

Question

At which two levels can you set the throughput for an Azure Cosmos DB account? Each correct answer presents a complete solution. (Choose two.)
 NOTE: Each correct selection is worth one point.

- A. database
- B. item
- C. container
- D. partition

114

Answer

At which two levels can you set the throughput for an Azure Cosmos DB account? Each correct answer presents a complete solution. (Choose two.)
NOTE: Each correct selection is worth one point.

- A. database
- B. item
- C. container
- D. partition

115



116

Answer

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

Which two settings can you configure at the container level? Each correct answer presents a complete solution. (Choose two.)

NOTE: Each correct selection is worth one point.

- A. the throughput
- B. the read region
- C. the partition key
- D. the API



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Query Azure Cosmos DB

Aggregation Function Basics

```
COUNT( <fields_to_count> )
SUM( <numeric_fields> )
AVG( <numeric_fields> )
MAX( <numeric_fields> )
MIN( <numeric_fields> )
```

SQL API examples

```
SELECT COUNT(*) FROM Products p
SELECT SUM(p.quantity) FROM Products p
WHERE p.expired = 0
SELECT AVG(p.price) AS 'Average Price'
FROM Products p
SELECT p1.ID, p.Name, p1.Description,
p1.Price FROM Products p1
WHERE p1.Price = (SELECT MIN(p2.Price) FROM
Product p2)
```

118

Question

Data Types	Answer Area	
Image files	Data type	Azure Blob storage
Key/value pairs	Data type	Azure Cosmos DB Gremlin API
Relationships between employees	Data type	Azure Table storage

119

Answer

Data Types	Answer Area	
Image files	Image files	Azure Blob storage
Key/value pairs	Relationships between employees	Azure Cosmos DB Gremlin API
Relationships between employees	Key/value pairs	Azure Table storage

120

Question

When using the Azure Cosmos DB Gremlin API, the container resource type is projected as a

graph.
table.
partition key.
document.

121



Answer

When using the Azure Cosmos DB Gremlin API, the container resource type is projected as a

graph.
table.
partition key.
document.

122



Question

Which type of non-relational data store supports a flexible schema, stores data as JSON files, and stores all the data for an entity in the same document?

- A. document
- B. columnar
- C. graph
- D. time series

123

Answer

Which type of non-relational data store supports a flexible schema, stores data as JSON files, and stores all the data for an entity in the same document?

- A. document**
- B. columnar
- C. graph
- D. time series

124

Question

APIs

- Cassandra API
- Gremlin API
- MongoDB API
- Table API

Answer Area

- Graph data
- JSON documents
- Key/value data

125

Answer

APIs

- Cassandra API
- Gremlin API
- MongoDB API
- Table API

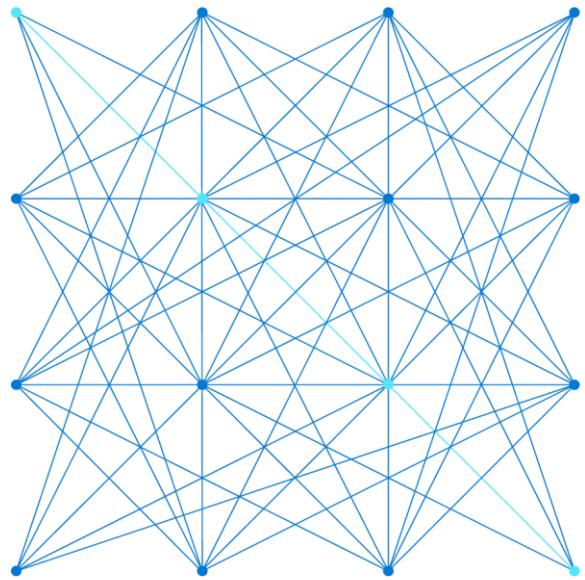
Answer Area

- Gremlin API Graph data
- MongoDB API JSON documents
- Table API Key/value data

126



Explore modern data warehouse analytics



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What to use for Data

-  →
 - When you need a **low cost, high throughput** data store
 - When you need to store **No-SQL** data
 - When you **do not need to query** the data directly. **No ad hoc query** support
 - Suits the storage of archive or **relatively static data**
 - Suits acting as a **HDInsight Hadoop** data store

-  →
 - When you need a **low cost, high throughput** data store
 - **Unlimited storage for No-SQL** data
 - When you **do not need to query** the data directly. **No ad hoc query** support
 - Suits the storage of archive or **relatively static data**
 - Suits acting as a **Databricks, HDInsight** and **IoT** data store

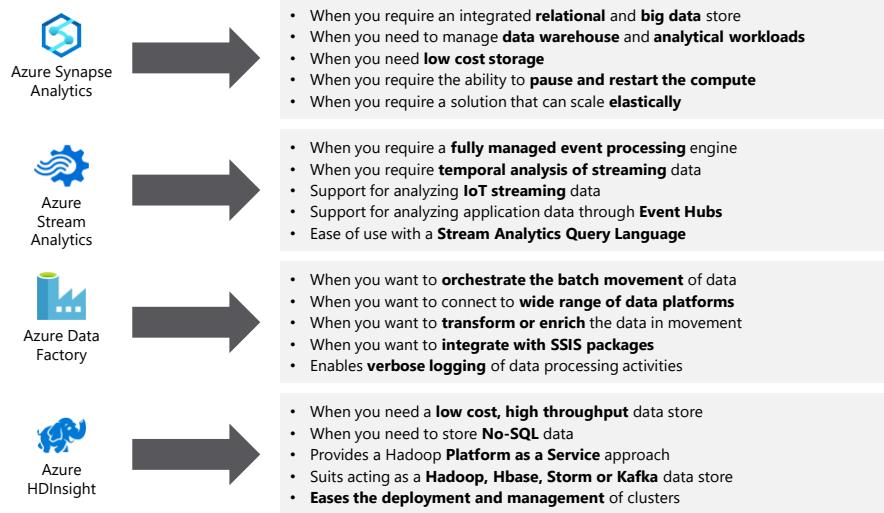
-  →
 - **Eases the deployment** of a Spark based cluster
 - Enables the **fastest processing** of Machine Learning solutions
 - **Enables collaboration** between data engineers and data scientists
 - Provides **tight enterprise security integration** with Azure Active Directory
 - **Integration with other Azure Services and Power BI**

-  →
 - Provides **global distribution** for both structured and unstructured data stores
 - **Millisecond query response** time
 - **99.999% availability** of data
 - **Worldwide elastic scale** of both the storage and throughput
 - **Multiple consistency levels** to control data integrity with concurrency

-  →
 - When you require a **relational** data store
 - When you need to manage **transactional workloads**
 - When you need to manage a **high volume on inserts and reads**
 - When you need a service that **requires high concurrency**
 - When you require a solution that can scale **elastically**

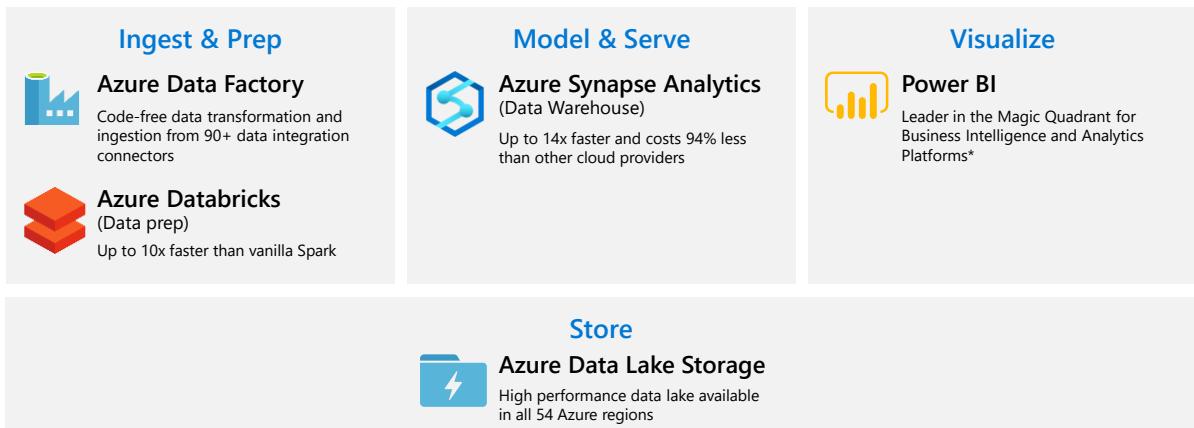
128

What to use for Data



129

What is modern data warehousing?



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130

Question

In a data warehousing workload, data

from a single source is distributed to multiple locations
from multiple sources is combined in a single location
is added to a queue for multiple systems to process
is used to train machine learning models

131



Answer

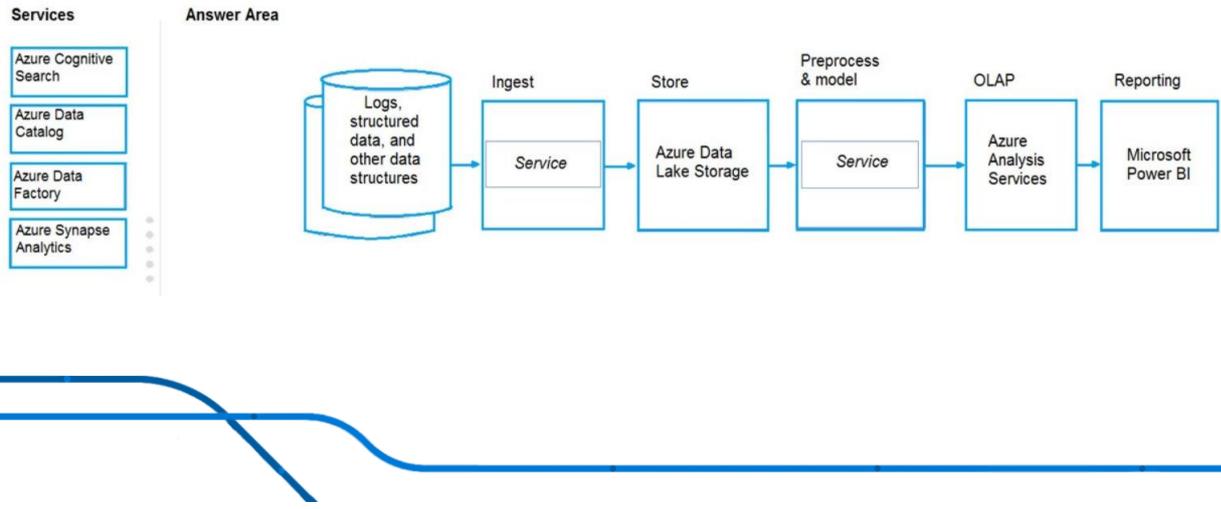
In a data warehousing workload, data

from a single source is distributed to multiple locations
from multiple sources is combined in a single location
is added to a queue for multiple systems to process
is used to train machine learning models

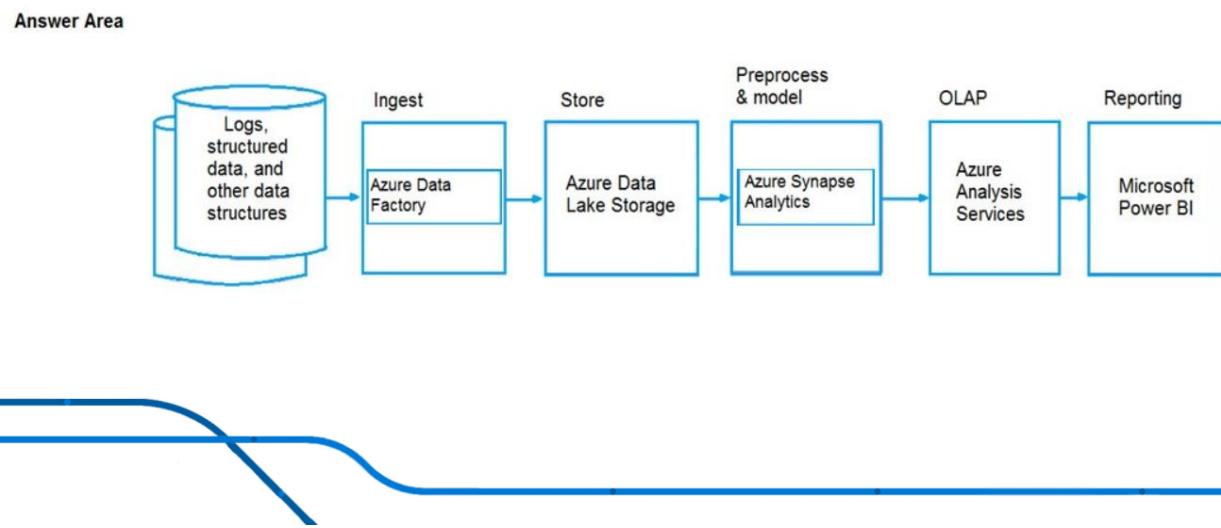
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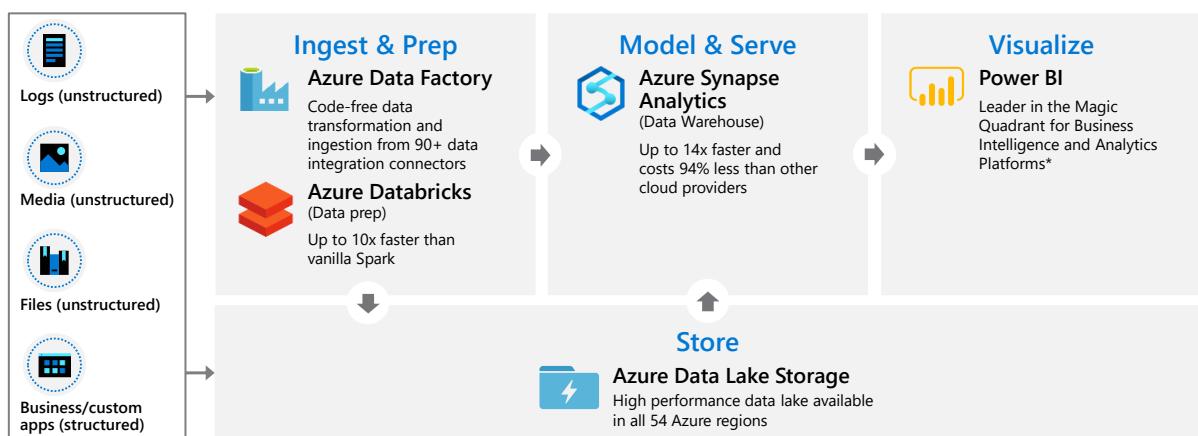
Question



Answer



Combine batch and stream processing



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135

Question

You need to gather real-time telemetry data from a mobile application. Which type of workload describes this scenario?

- A. Online Transaction Processing (OLTP)
- B. batch
- C. massively parallel processing (MPP)
- D. streaming



136

Answer

You need to gather real-time telemetry data from a mobile application. Which type of workload describes this scenario?

- A. Online Transaction Processing (OLTP)
- B. batch
- C. massively parallel processing (MPP)
- D. streaming



137

Question

Components

Dataset
Linked service
Mapping data flow
Pipeline

Answer Area

Component
Component
Component

A representation of data structures within data stores

The information used to connect to external resources

A logical grouping of activities that performs a unit of work and can be scheduled



138

Answer

Dataset	A representation of data structures within data stores
Linked service	The information used to connect to external resources
Pipeline	A logical grouping of activities that performs a unit of work and can be scheduled

139



Question

Activity Types	Answer Area
Control	<input type="text"/> Copy
Data movement	<input type="text"/> Mapping data flow
Data transformation	<input type="text"/> Until

140



Answer

Activity Types

Control
Data movement
Data transformation

Answer Area

Data movement
Data transformation
Control

Copy

Mapping data flow

Until

141



Question

In Azure Data Factory, you can use

a control flow
a dataset
a linked service
an integration runtime

▼ to orchestrate pipeline

activities that depend on the output of other pipeline activities.



142

Answer

In Azure Data Factory, you can use

▼
a control flow
a dataset
a linked service
an integration runtime

to orchestrate pipeline

activities that depend on the output of other pipeline activities.

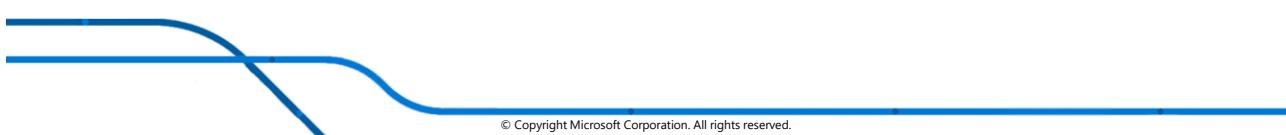
143



Question

Statements	Yes	No
Azure Databricks is an Apache Spark-based collaborative analytics platform.	<input type="radio"/>	<input type="radio"/>
Azure Analysis Services is used for transactional workloads.	<input type="radio"/>	<input type="radio"/>
Azure Data Factory orchestrates data integration workflows.	<input type="radio"/>	<input type="radio"/>

144



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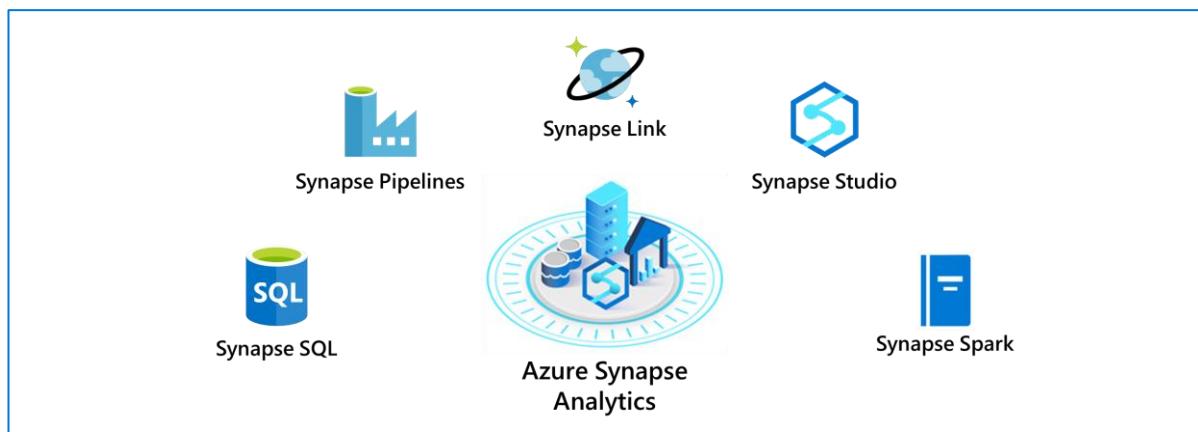
Answer

Statements	Yes	No
Azure Databricks is an Apache Spark-based collaborative analytics platform.	<input type="radio"/>	<input type="radio"/>
Azure Analysis Services is used for transactional workloads.	<input type="radio"/>	<input checked="" type="radio"/>
Azure Data Factory orchestrates data integration workflows.	<input checked="" type="radio"/>	<input type="radio"/>

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145

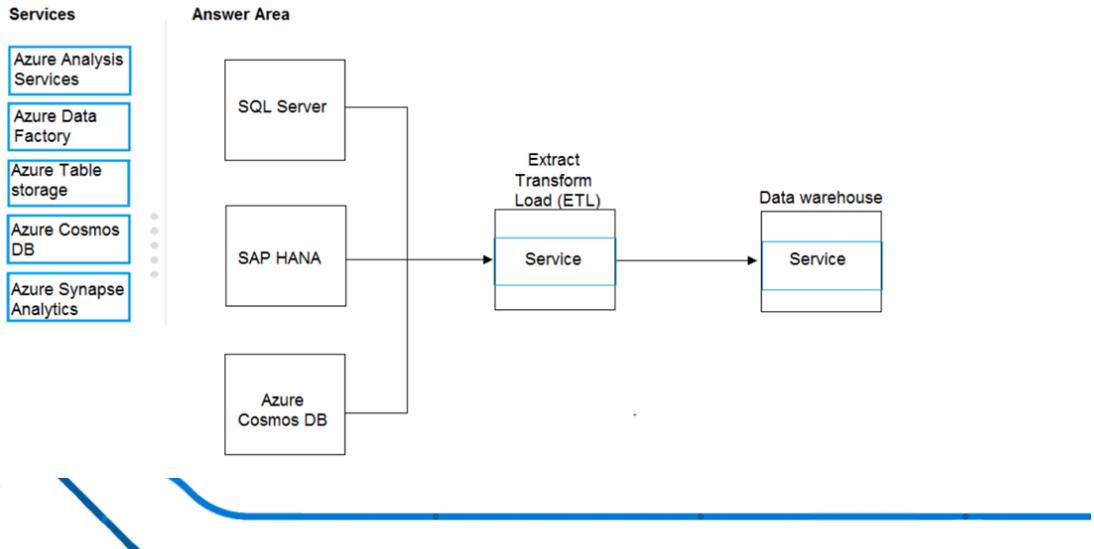
What is Azure Synapse Analytics?



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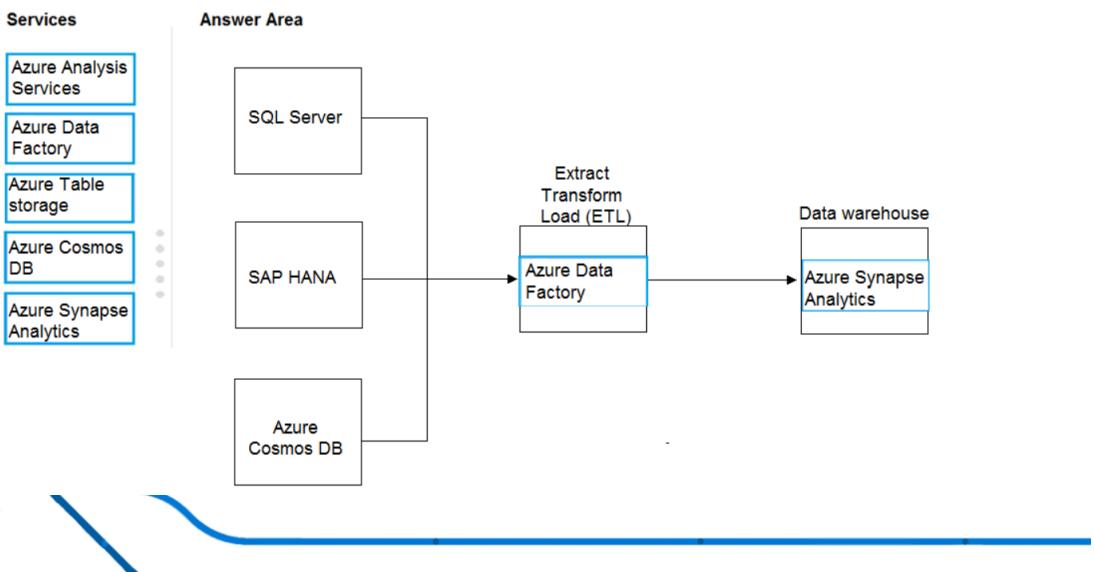
146

Question



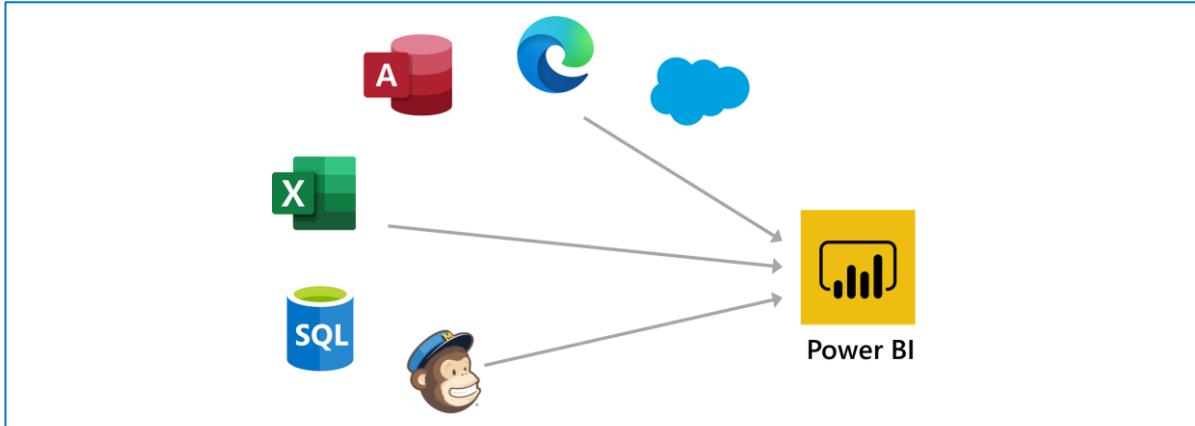
147

Answer



148

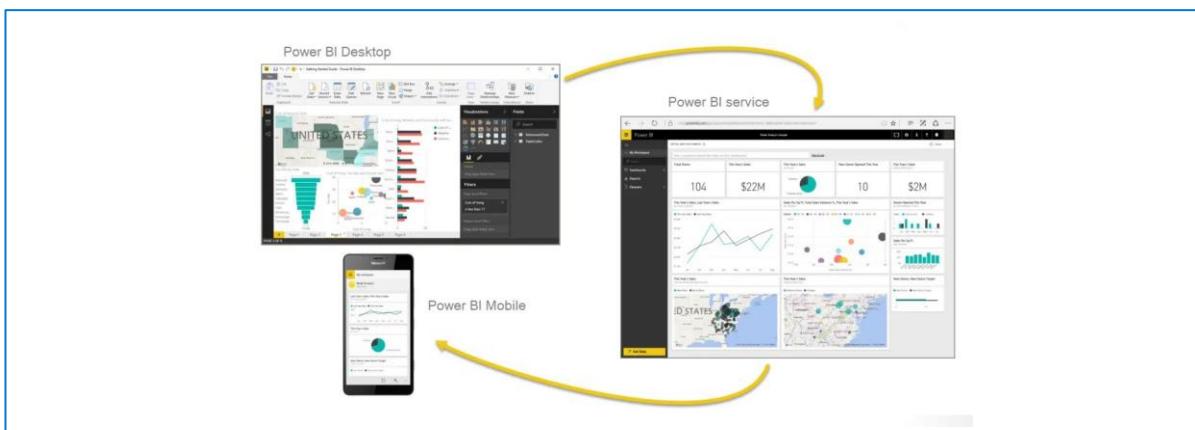
Learn how Power BI services and applications work together



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149

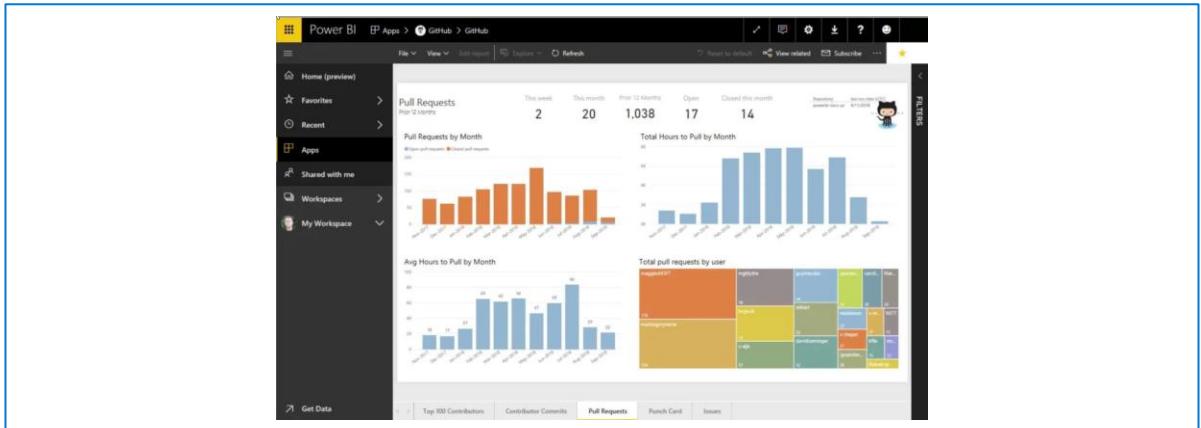
Explore how Power BI can make your business more efficient



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150

Learn how to create compelling visuals and reports



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151

Question

Which three objects can be added to a Microsoft Power BI dashboard? Each correct answer presents a complete solution. (Choose three.)
NOTE: Each correct selection is worth one point.

- A. a report page
- B. a Microsoft PowerPoint slide
- C. a visualization from a report
- D. a dataflow
- E. a text box

152

Answer

Which three objects can be added to a Microsoft Power BI dashboard? Each correct answer presents a complete solution. (Choose three.)

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- A. a report page
- B. a Microsoft PowerPoint slide
- C. a visualization from a report
- D. a dataflow
- E. a text box



153

Question

What should you use to build a Microsoft Power BI paginated report?

- A. Charticulator
- B. Power BI Desktop
- C. the Power BI service
- D. Power BI Report Builder



154

Answer

What should you use to build a Microsoft Power BI paginated report?

- A. Charticulator
- B. Power BI Desktop
- C. the Power BI service
- D. Power BI Report Builder



155

Explore data analytics



Descriptive



Diagnostic



Predictive



Prescriptive



Cognitive

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156

Question

Descriptive analytics tells you

what is most likely to occur in the future.
what occurred in the past.
which actions you can perform to affect outcomes.
why something occurred in the past.

157

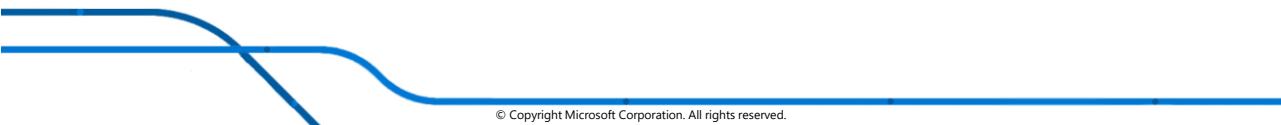
A decorative graphic consisting of several thick blue lines. One horizontal line at the top is followed by a shorter line below it. A third line starts from the right, moves down and to the left, then turns back towards the right. A fourth line follows a similar path below the third. All lines are a solid medium blue color.

Answer

Descriptive analytics tells you

what is most likely to occur in the future.
what occurred in the past.
which actions you can perform to affect outcomes.
why something occurred in the past.

158

A decorative graphic consisting of several thick blue lines. One horizontal line at the top is followed by a shorter line below it. A third line starts from the right, moves down and to the left, then turns back towards the right. A fourth line follows a similar path below the third. All lines are a solid medium blue color.

Question

Transcribing audio files is an example of

	▼
cognitive	
descriptive	
predictive	
prescriptive	

analytics.

159



Answer

Transcribing audio files is an example of

	▼
cognitive	
descriptive	
predictive	
prescriptive	

analytics.

160



Question

A visualization that shows a university's current student enrollment versus the maximum capacity is an example of



analytics.

cognitive
descriptive
predictive
prescriptive

161

Answer

A visualization that shows a university's current student enrollment versus the maximum capacity is an example of



analytics.

cognitive
descriptive
predictive
prescriptive

162



Thank You and Good Luck

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