Just IT

B2W group

Apprenticeships | Training | Recruitment

Data Technician

Name: Almas Mansuri

Course Date: 12/05/2025

Table of contents

Day 1: Task 1

Please research and complete the below questions relating to key concepts of cloud.

Be prepared to discuss the below in the group following this task.

<table>
<tr><td>What can cloud computing do for us in the real-world?</td><td>Cloud computing allow us to use the internet to access resources hosted by cloud service providers.

We own computer virtually and can store files, run programmes, manage servers on a local network.

We can store photos, files, documents, videos, movies in an online location. These files can be accessed from anywhere and from any device.</td></tr>
<tr><td>How can it benefit a business?</td><td>• A business doesn’t need expensive hardware and IT maintenance.
• Less Cyber security measures</td></tr>
<tr><td>What’s the alternative to cloud computing?</td><td>On Premises IT Infrastructures</td></tr>
<tr><td>What cloud providers can we use, what are their features and functions?</td><td>
<table>
<tr><td>Cloud Providers</td><td>Features</td><td>Functions</td></tr>
<tr><td>AWS</td><td>Storage,Networking,databases, Security</td><td>Scalability,Flexibility, Cost Effective,Data analytics</td></tr>
<tr><td>GCP</td><td>Databases: Cloud SQL,No SQL, Big Query, Firestore
Networking: VPC, Cloud Load balancing.
dataAnalytics and AI/ML</td><td>Pay as you go functions,</td></tr>
<tr><td>Azure</td><td>Cost-Effective, Scalability,serverless computing</td><td>Web APIs, data Processing, Database Interaction</td></tr>
</table>
</td></tr>
</table>

Day 1: Task 2

Please research the below cloud offerings, explain what they are and examples of use cases.

Cloud Offerings	Explain what it is	When / how might you use this service in the real-world?
IaaS (Infrastructure as a service)	IaaS is a cloud computing model that provides on demand servers, storage and networking without the need of physical hardware.	Microsoft Azure Virtual machines IBM Cloud Infrastructure
PaaS (Platform as a service)	PaaS is a cloud computing model that provides readymade platform for building, running and managing applications.	A company can build a website or mobile application without managing infrastructure. Microsoft Azure App Service Salesforce
SaaS (Software as a service)	SaaS is a cloud based software delivery model where people access applications over the internet and cloud service provider handles infrastructure, security and updates.	Google Drive Google Sheets Google Docs

Day 1: Task 3

Please research the below terms and explain what they are, when they would be appropriate and a real-world example of where it could be implemented (i.e. what type of organisation).

Public Cloud	This type of cloud computing services and infrastructure are provided by a third party and made available to the public over the internet. Example: Microsoft Azure
Private Cloud	This type of cloud computing is dedicated to a single organization. Example: On-Premises data centres
Hybrid Cloud	This type of cloud is a computing environment that combines a company's on-premises hardware and software with cloud computing services from multiple providers. Example: Uber
Community Cloud	A community cloud is a cloud infrastructure in which multiple organizations share resources and services based on common requirements. Example: Used by Industries with strict regulations such as healthcare, finance

Day 2: Task 1

Describe, with examples, the **three** major areas that the Computer Misuse Act deals with.

Area	Description	Example
Unauthorised access to computer material	The computer Misuse Act 1990 is the main legislation that criminalises unauthorised access to computer system and data,	If a student finds out teacher's password and then access the computer and opens any files.
Unauthorised access with intent to commit further offenses	Damaging and destroying of these.	Following above example If the student access the test result with intent to increase their marks
Unauthorised modification of computer material	Modification of these.	Following above example If the student access the test result with intent to increase their marks on some other tests as well

The computer misuse act 1990 is an act where an individual can be criminalised because of computer related offense. Describe three extra powers that the Police and Justice Act 2006 (Computer Misuse) has added.

Description
Making, supplying or obtaining Articles for Computer misuse. This includes viruses, malware to gain unauthorised access
Unauthorised Acts with intent to impair Computer system. This includes acts that damage computer system

Denial of service Attacks.

Look at the below website to answer the questions: https://www.gov.uk/personal-data-my-employer-can-keep-about-me

Write down three items of data which a company can store about an employee.
Name
Address
Date of Birth

Give three more examples of data that an employer can only store if they first get the employee's permission.
Race and ethnicity
religion
biometrics

Conduct further research to answer the below questions.

Question	Answer
Provide one example of: Copyright infringement	Sharing copyright content without permission Downloading music files
Provide one example of: Plagiarism	Copy and paste someone else work such as copying content from websites, articles

What are two consequences of copyright infringement and software piracy?	A person can face fines, criminal charges
Give three possible consequences for individuals when using pirated software	A person can face fines, lawsuits, criminal charges

Listed below are some laws which we have covered today:

1. Computer Misuse Act 1990
2. Police and Justice Act 2006 (Computer Misuse)
3. Copyright, Designs and Patents Act 1988
4. Copyright (Computer Programs) Regulations 1992
5. The Health and Safety (Display Screen Equipment) Regulations 1992
6. Data Protection Act 2018
7. Consumer Rights Act 2015

- Insert a number in the first column of each row to match each of the statements with one of the above Acts.

- One of statements is incorrect and not illegal. For this statement, write 'Not illegal'.

Act number	Clause
4	With some exceptions, it is illegal to use unlicensed software
7	Any product, digital or otherwise, must be fit for the purpose it is supplied for
1	Unauthorised modification of computer material is illegal
2	It is illegal to create or use a hacking tool for penetration testing
6	Personal data may only be used for specified, explicit purposes
5	Employers must provide their computer users with adequate health and safety training for any workstation they work at
1	It is illegal to distribute hacking tools for criminal purposes
4	It is illegal to distribute an illicit recording
6	Personal data may not be kept longer than necessary
1	Gaining unauthorised access to a computer system is illegal
5	Employers must ensure that employees take regular and adequate breaks from looking at their screens
2	It is illegal to prevent or hinder access (e.g. by a denial-of-service attack) to any program or data held in any computer
6	Personal data must be accurate and where necessary kept up to date

Day 3: Task 1

Please complete the below lab (3) *'Explore relational data in Azure'* and paste evidence of the completed lab in the box provided.

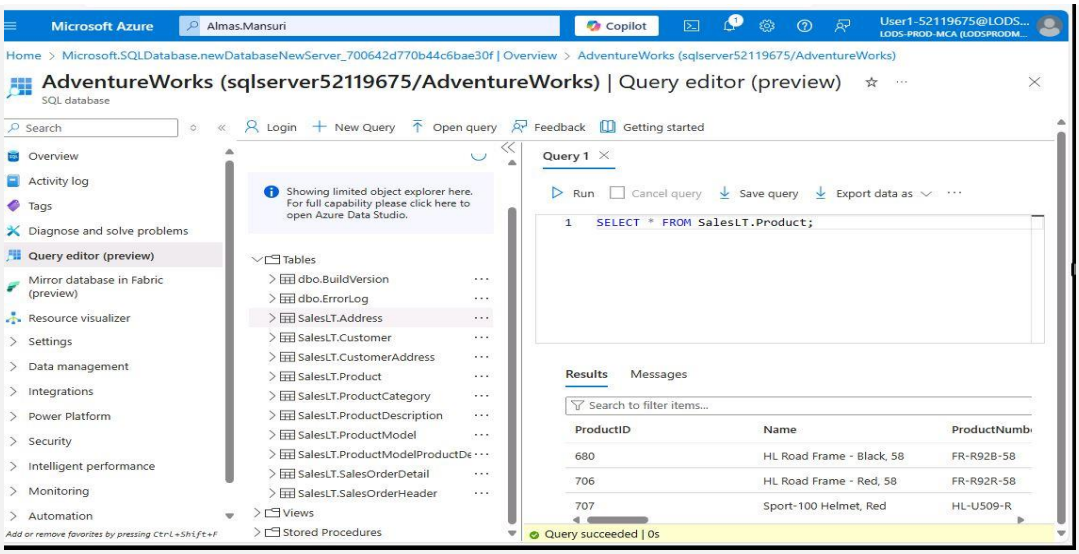
Explore relational data in Azure

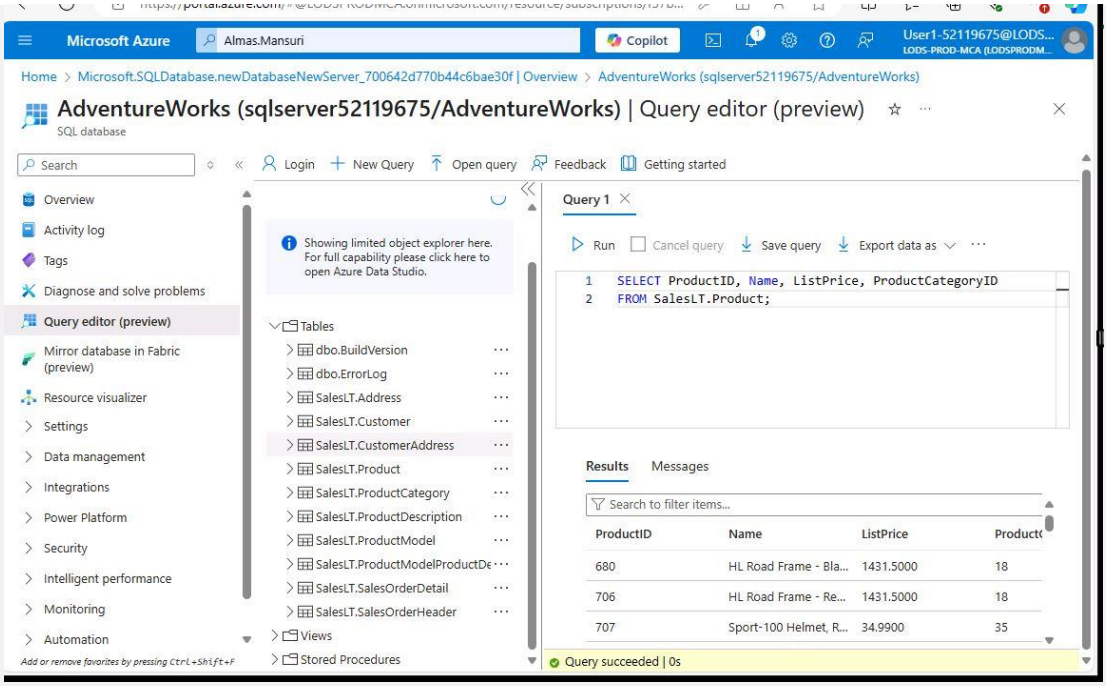
Learning Path 02 (CSS)

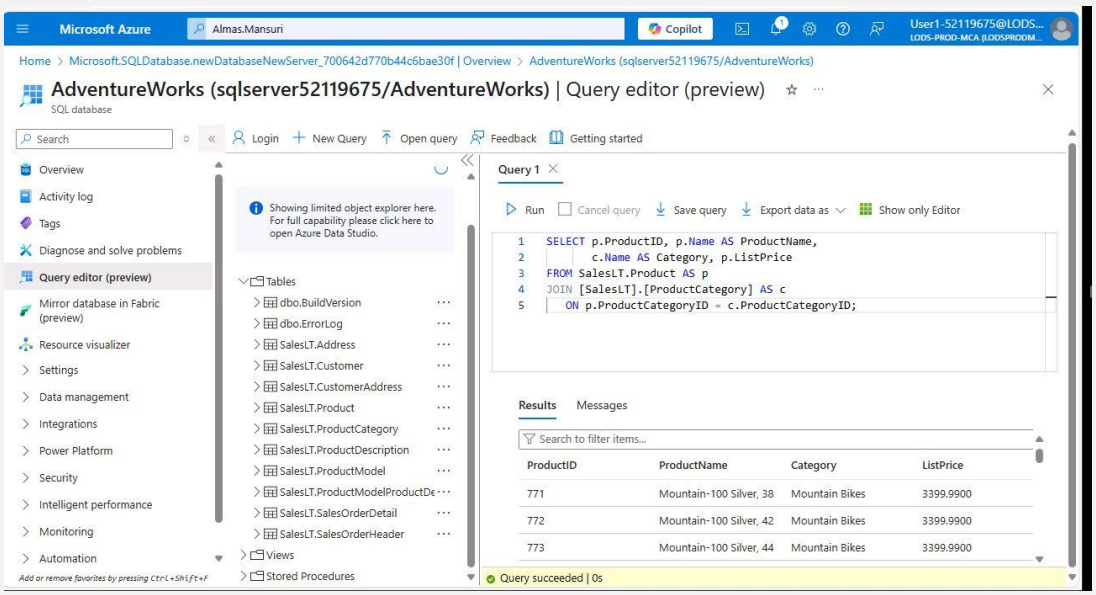
Duration:	2 Hours, 15 Minutes
Lab Series:	DP-900T00-A Microsoft Azure Data Fundamentals [Cloud Slice Provided]
Virtualization Platform:	Hyper-V
RAM:	6.5GB
Cloud Platform:	Azure
Content Version:	2
Is Exam:	No
Status:	Not Running

Launch

Complete d lab




Microsoft Azure
Almas.Mansuri
Copilot
Home > Microsoft.SQLDatabase.newDatabaseNewServer_700642d770b44c6bae30f | Overview > AdventureWorks (sqlserver52119675/AdventureWorks)
AdventureWorks (sqlserver52119675/AdventureWorks) | Query editor (preview)
SQL database
Search
Login
New Query
Open query
Feedback
Getting started
Overview
Activity log
Tags
Diagnose and solve problems
Query editor (preview)
Mirror database in Fabric (preview)
Resource visualizer
Settings
Data management
Integrations
Power Platform
Security
Intelligent performance
Monitoring
Automation
Showing limited object explorer here. For full capability please click here to open Azure Data Studio.
Tables
dbo.BuildVersion
dbo.ErrorLog
SalesLT.Address
SalesLT.Customer
SalesLT.CustomerAddress
SalesLT.Product
SalesLT.ProductCategory
SalesLT.ProductDescription
SalesLT.ProductModel
SalesLT.SalesOrderDetail
SalesLT.SalesOrderHeader
Views
Stored Procedures
Query 1
Run
Cancel query
Save query
Export data as
SELECT ProductID, Name, ListPrice, ProductCategoryID
FROM SalesLT.Product;
Results
Messages
Search to filter items...
ProductID
Name
ListPrice
680
HL Road Frame - Bla...
1431.5000
706
HL Road Frame - Re...
1431.5000
707
Sport-100 Helmet, R...
34.9900
Query succeeded | 0s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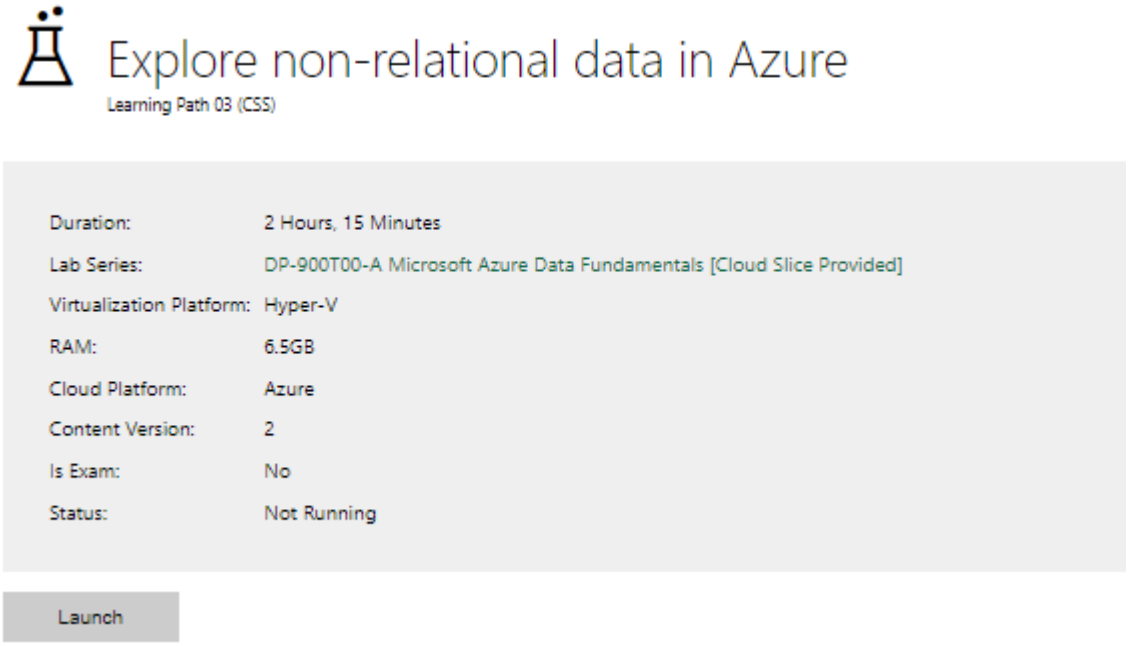
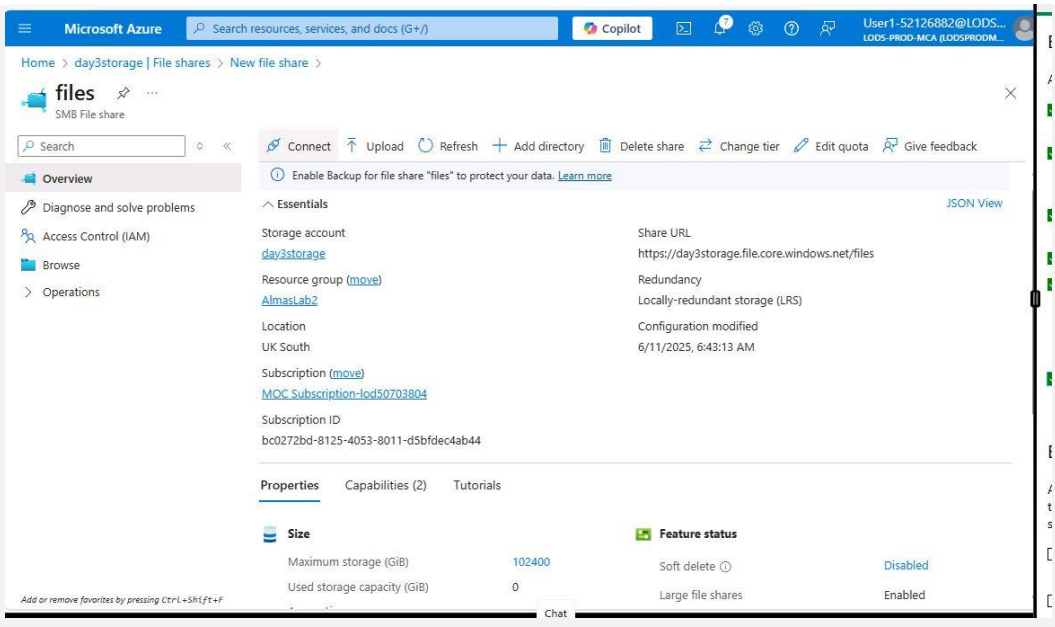
SalesLT.ProductDescription
SalesLT.ProductModel
SalesLT.SalesOrderDetail
SalesLT.SalesOrderHeader
Views
Stored Procedures
Query 1
Run
Cancel query
Save query
Export data as
Show only Editor
SELECT p.ProductID, p.Name AS ProductName,
c.Name AS Category, p.ListPrice
FROM SalesLT.Product AS p
JOIN [SalesLT].[ProductCategory] AS c
ON p.ProductCategoryID = c.ProductCategoryID;
Results
Messages
Search to filter items...
ProductID
ProductName
Category
ListPrice
771
Mountain-100 Silver, 38
Mountain Bikes
3399.9900
772
Mountain-100 Silver, 42
Mountain Bikes
3399.9900
773
Mountain-100 Silver, 44
Mountain Bikes
3399.9900
Query succeeded | 0s

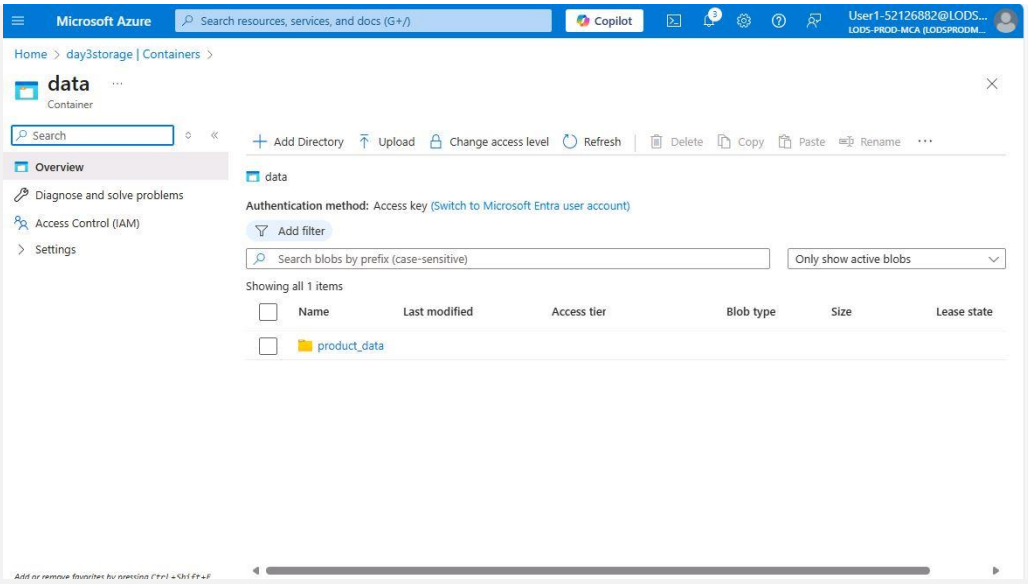
Day 3: Task 2

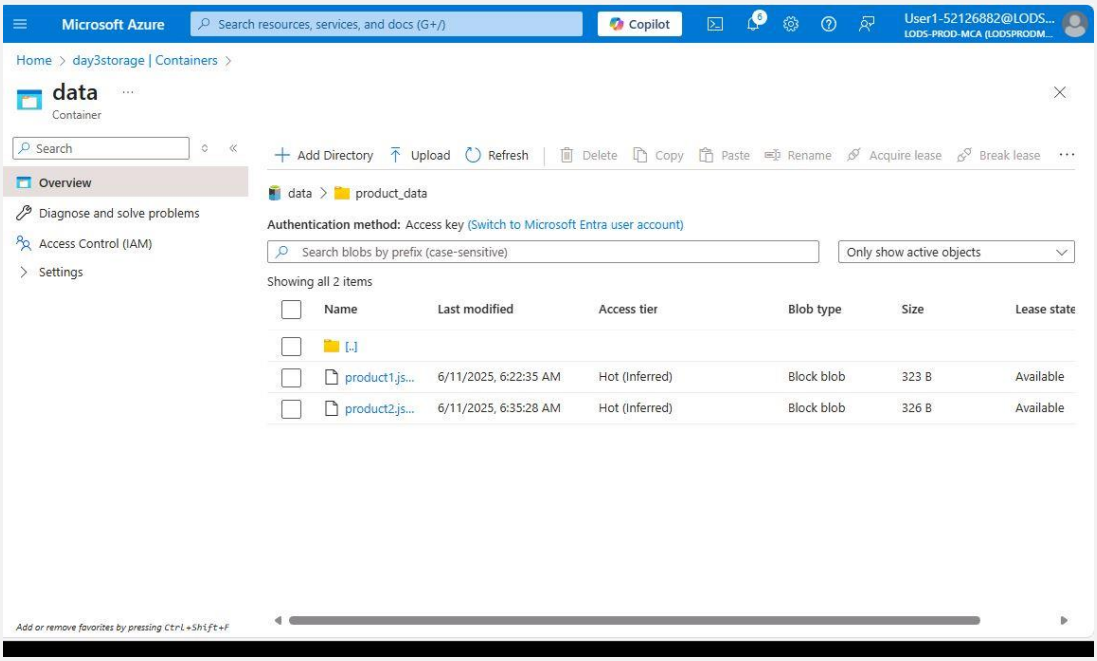
Please complete the below lab (4) *'Explore non-relational data in Azure'* and paste evidence of the completed lab in the box provided.



Completed lab




Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home > day3storage | Containers >
data
Container
Search
Overview
Diagnose and solve problems
Access Control (IAM)
Settings
Add Directory
Upload
Change access level
Refresh
Delete
Copy
Paste
Rename
data
Authentication method: Access key (Switch to Microsoft Entra user account)
Add filter
Search blobs by prefix (case-sensitive)
Only show active blobs
Showing all 1 items
Name
Last modified
Access tier
Blob type
Size
Lease state
product_data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data
Container
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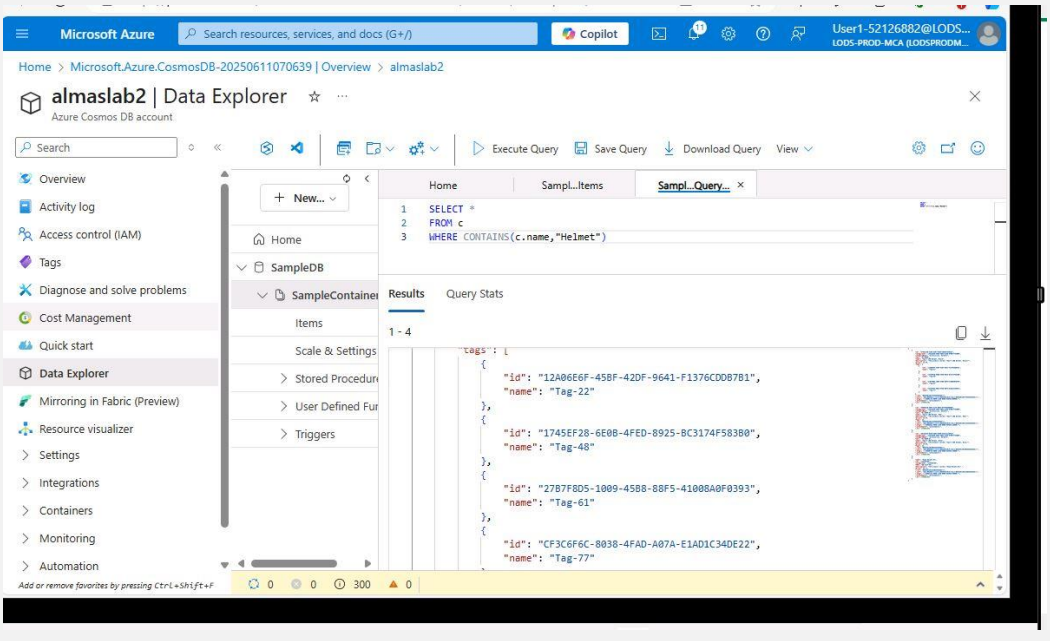
Overview
Diagnose and solve problems
Access Control (IAM)
Settings
Add Directory
Upload
Refresh
Delete
Copy
Paste
Rename
Acquire lease
Break lease
data > product_data
Authentication method: Access key (Switch to Microsoft Entra user account)
Search blobs by prefix (case-sensitive)
Only show active objects
Showing all 2 items
Name
Last modified
Access tier
Blob type
Size
Lease state
[..]
product1.js...
6/11/2025, 6:22:35 AM
Hot (Inferred)
Block blob
323 B
Available
product2.js...
6/11/2025, 6:35:28 AM
Hot (Inferred)
Block blob
326 B
Available
Add or remove favorites by pressing Ctrl+Shift+F


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home > Microsoft.Azure.CosmosDB-20250611070639 | Overview > almaslab2
almaslab2 | Data Explorer
Azure Cosmos DB account
Search
Execute Query
Save Query
Download Query
View
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Cost Management
Quick start
Data Explorer
Mirroring in Fabric (Preview)
Resource visualizer
Settings
Integrations
Containers
Monitoring
Automation
New...
Home
SampleDB
Items
Scale & Settings
Triggers
Home
Sampl...Items
Sampl...Query...
SELECT *
FROM c
WHERE CONTAINS(c.name,"Helmet")
Results
Query Stats
1 - 4
"id": "12A06E6F-45BF-42DF-9641-F1376CDDB7B1",
"name": "Tag-22"
"id": "1745EF28-6E0B-4FED-8925-BC3174F583B0",
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"name": "Tag-61"
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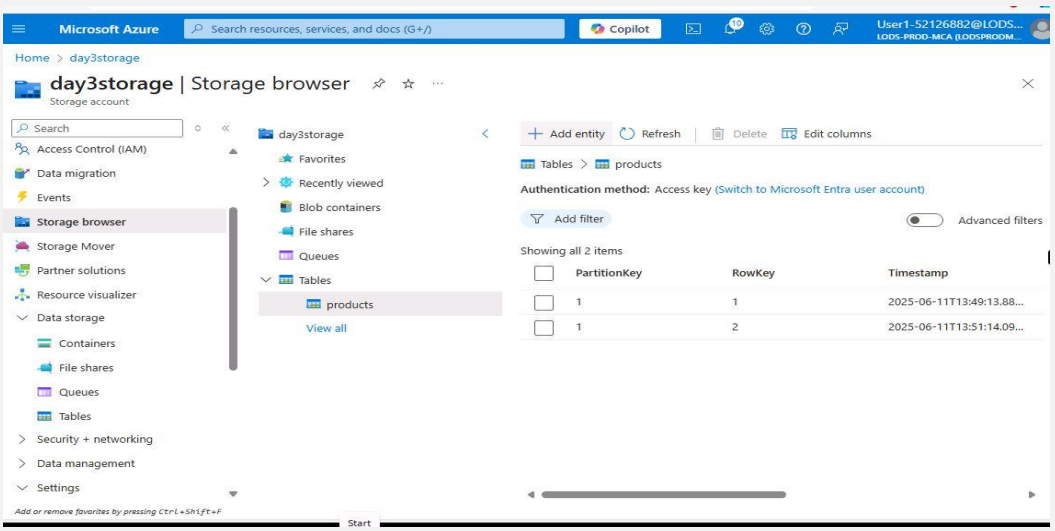
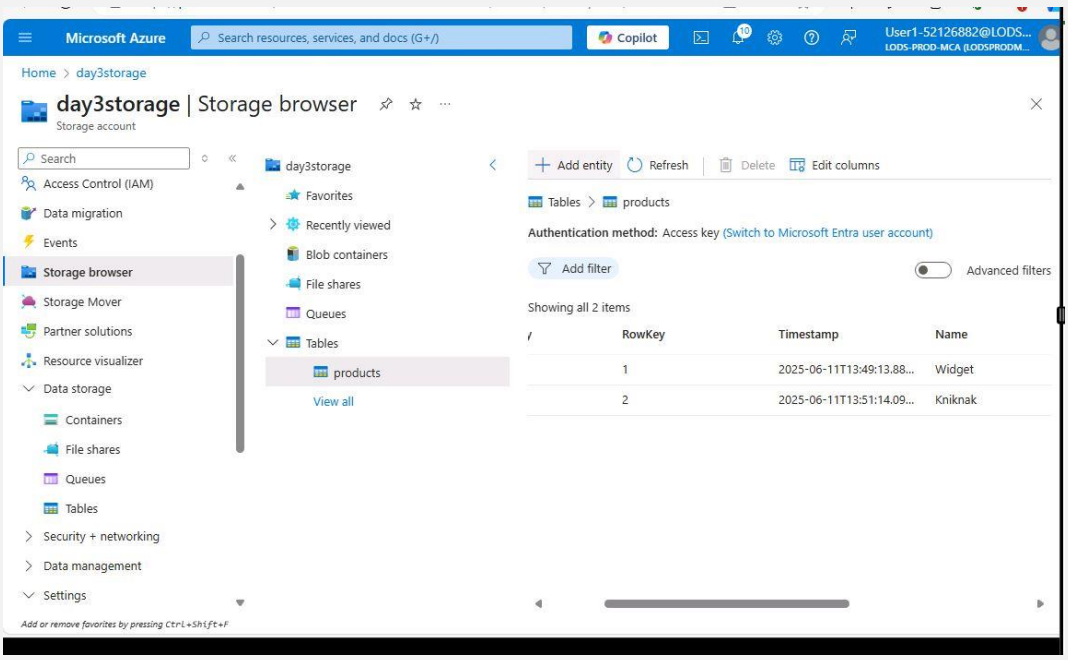
Add or remove favorites by pressing Ctrl+Shift+F


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home > day3storage
day3storage | Storage browser
Storage account
Search
Access Control (IAM)
Data migration
Events
Storage browser
Storage Mover
Partner solutions
Resource visualizer
Data storage
Containers
File shares
Queues
Tables
Security + networking
Data management
Settings
Add or remove favorites by pressing Ctrl+Shift+F
day3storage
Favorites
Recently viewed
Blob containers
File shares
Queues
Tables
products
View all
Add entity
Refresh
Delete
Edit columns
Tables > products
Authentication method: Access key (Switch to Microsoft Entra user account)
Add filter
Advanced filters
Showing all 2 items
PartitionKey
RowKey
Timestamp
1
1
2025-06-11T13:49:13.88...
1
2
2025-06-11T13:51:14.09...
Start


Microsoft Azure
Search resources, services, and docs (G+/)
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Home > day3storage
day3storage | Storage browser
Storage account
Search
Access Control (IAM)
Data migration
Events
Storage browser
Storage Mover
Partner solutions
Resource visualizer
Data storage
Containers
File shares
Queues
Tables
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Settings
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day3storage
Favorites
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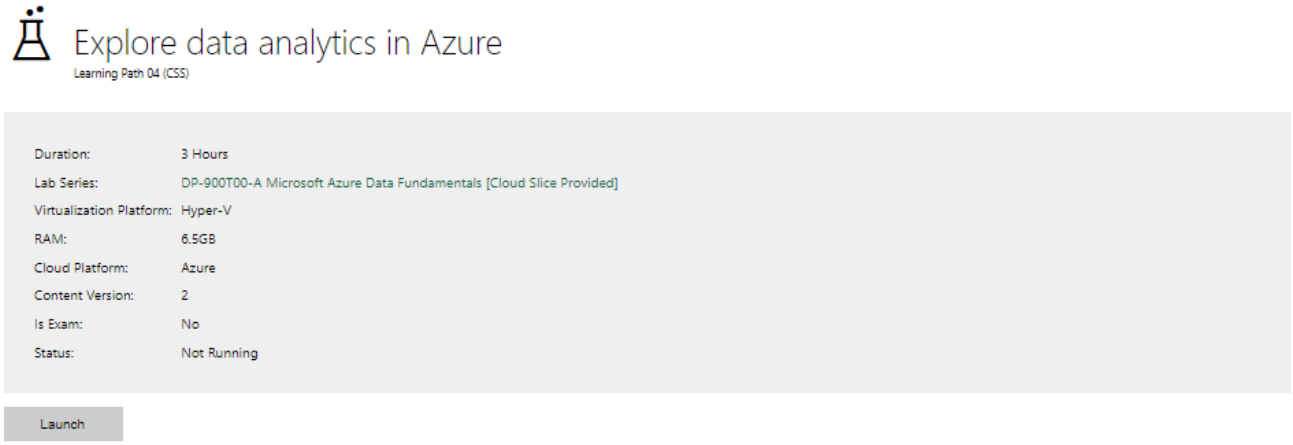
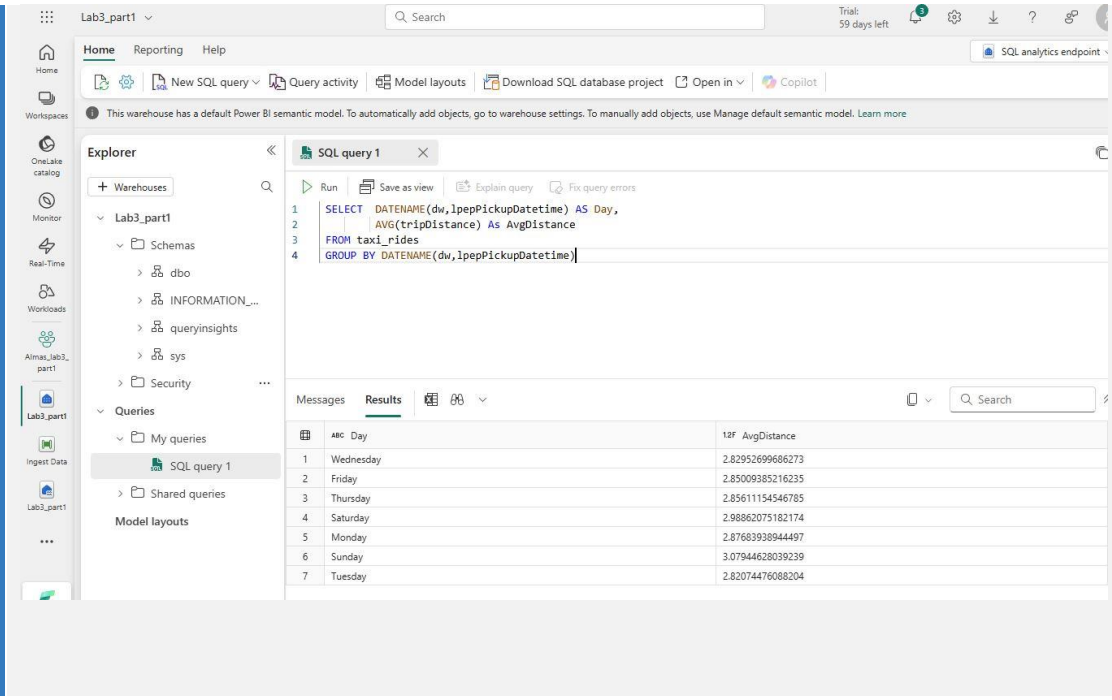
Blob containers
File shares
Queues
Tables
products
View all
Add entity
Refresh
Delete
Edit columns
Tables > products
Authentication method: Access key (Switch to Microsoft Entra user account)
Add filter
Advanced filters
Showing all 2 items
RowKey
Timestamp
Name
1
2025-06-11T13:49:13.88...
Widget
2
2025-06-11T13:51:14.09...
Kniknak

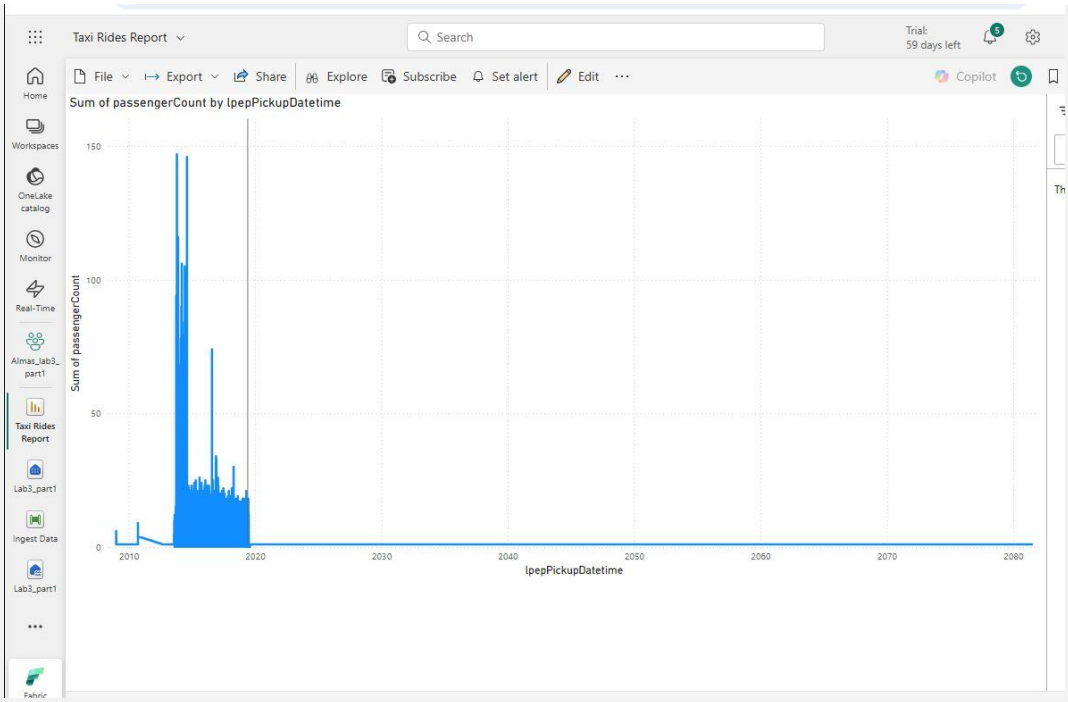
Day 3: Task 3

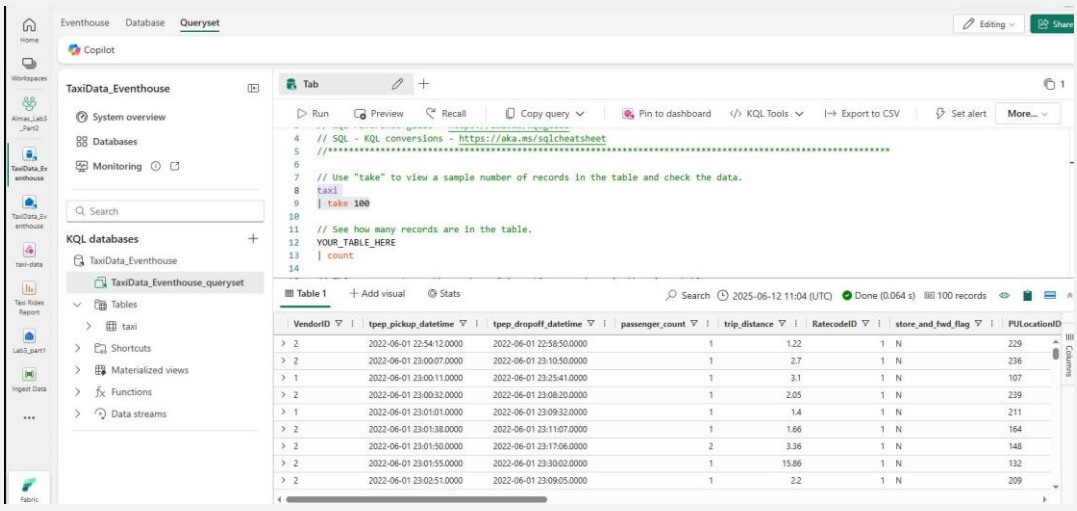
Please complete the below lab (5) 'Explore data analytics in Azure' and paste evidence of the completed lab in the box provided.

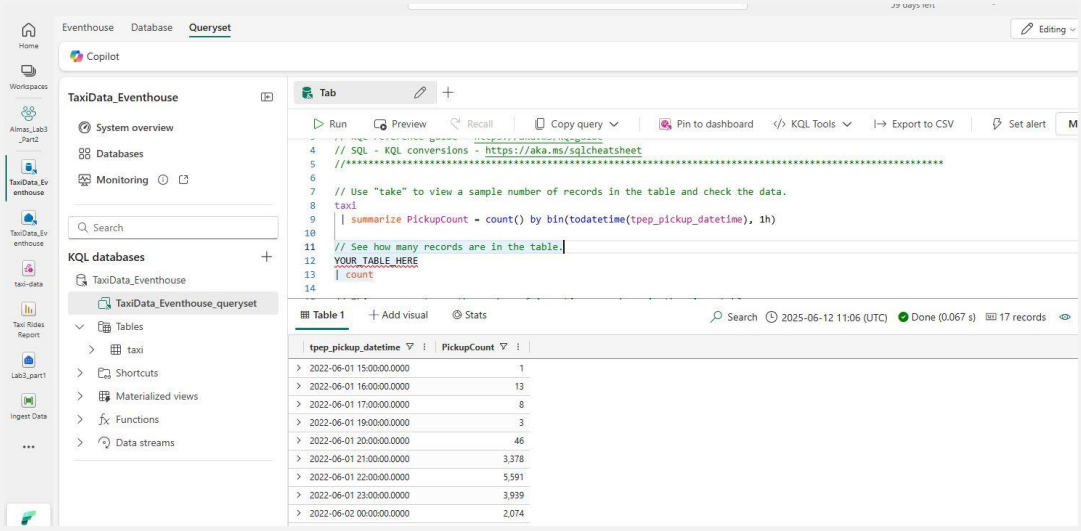


Complete d lab




Taxi Rides Report
Search
Trial: 59 days left
File
Export
Share
Explore
Subscribe
Set alert
Edit
Copilot
Sum of passengerCount by tpepPickupDatetime
Sum of passengerCount
tpepPickupDatetime
150
100
50
0
2010
2020
2030
2040
2050
2060
2070
2080


Eventhouse
Database
Queryset
Copilot
TaxiData_Eventhouse
System overview
Databases
Monitoring
KQL databases
TaxiData_Eventhouse
TaxiData_Eventhouse_queryset
Tables
taxi
Shortcuts
Materialized views
Functions
Data streams
Tab
Run
Preview
Recall
Copy query
Pin to dashboard
KQL Tools
Export to CSV
Set alert
More...
// SQL - KQL conversions - https://aka.ms/sqlcheatsheet
// Use "take" to view a sample number of records in the table and check the data.
taxi
| take 100
// See how many records are in the table.
YOUR_TABLE_HERE
| count
Table 1
Add visual
Stats
Done (0.064 s)
100 records
VendorID
tpep_pickup_datetime
tpep_dropoff_datetime
passenger_count
trip_distance
RatecodeID
store_and_fwd_flag
PULocationID


Eventhouse
Database
Queryset
Copilot
TaxiData_Eventhouse
System overview
Databases
Monitoring
KQL databases
TaxiData_Eventhouse
TaxiData_Eventhouse_queryset
Tables
taxi
Shortcuts
Materialized views
Functions
Data streams
Tab
Run
Preview
Copy query
Pin to dashboard
KQL Tools
Export to CSV
Set alert
// SQL - KQL conversions - https://aka.ms/sqlcheatsheet
// Use "take" to view a sample number of records in the table and check the data.
taxi
| summarize PickupCount = count() by bin(todatetime(tpep_pickup_datetime), 1h)
// See how many records are in the table.
YOUR_TABLE_HERE
| count
Table 1
Add visual
Stats
Done (0.067 s)
17 records
tpep_pickup_datetime
PickupCount
2022-06-01 15:00:00.0000 1
2022-06-01 16:00:00.0000 13
2022-06-01 17:00:00.0000 8
2022-06-01 19:00:00.0000 3
2022-06-01 20:00:00.0000 46
2022-06-01 21:00:00.0000 3,378
2022-06-01 22:00:00.0000 5,591
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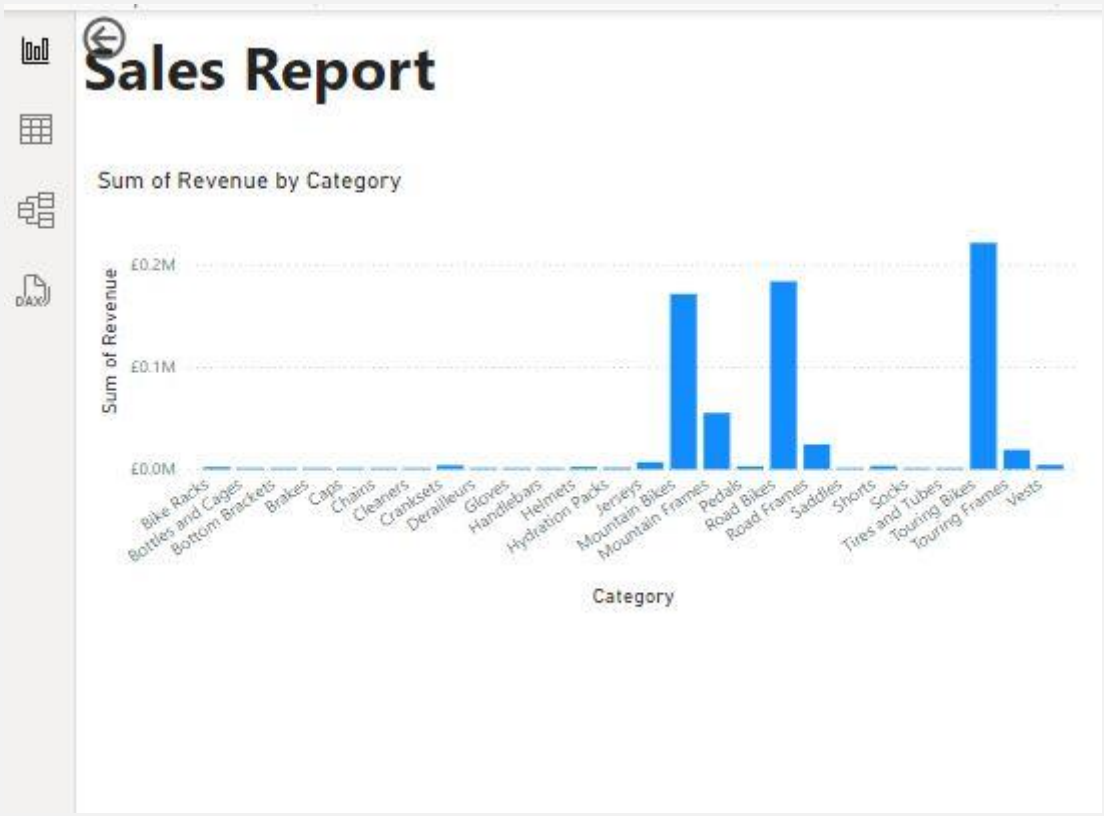
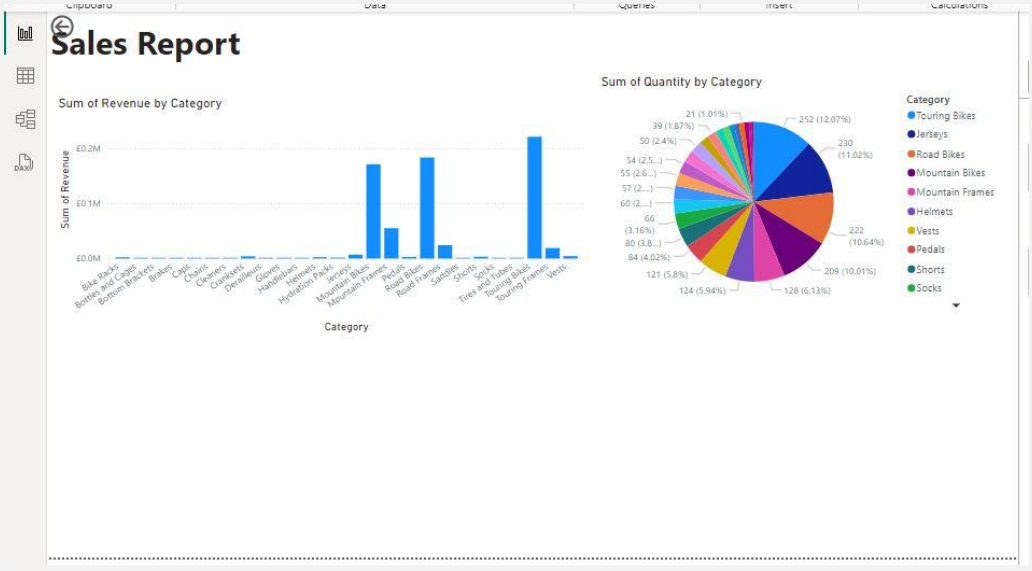
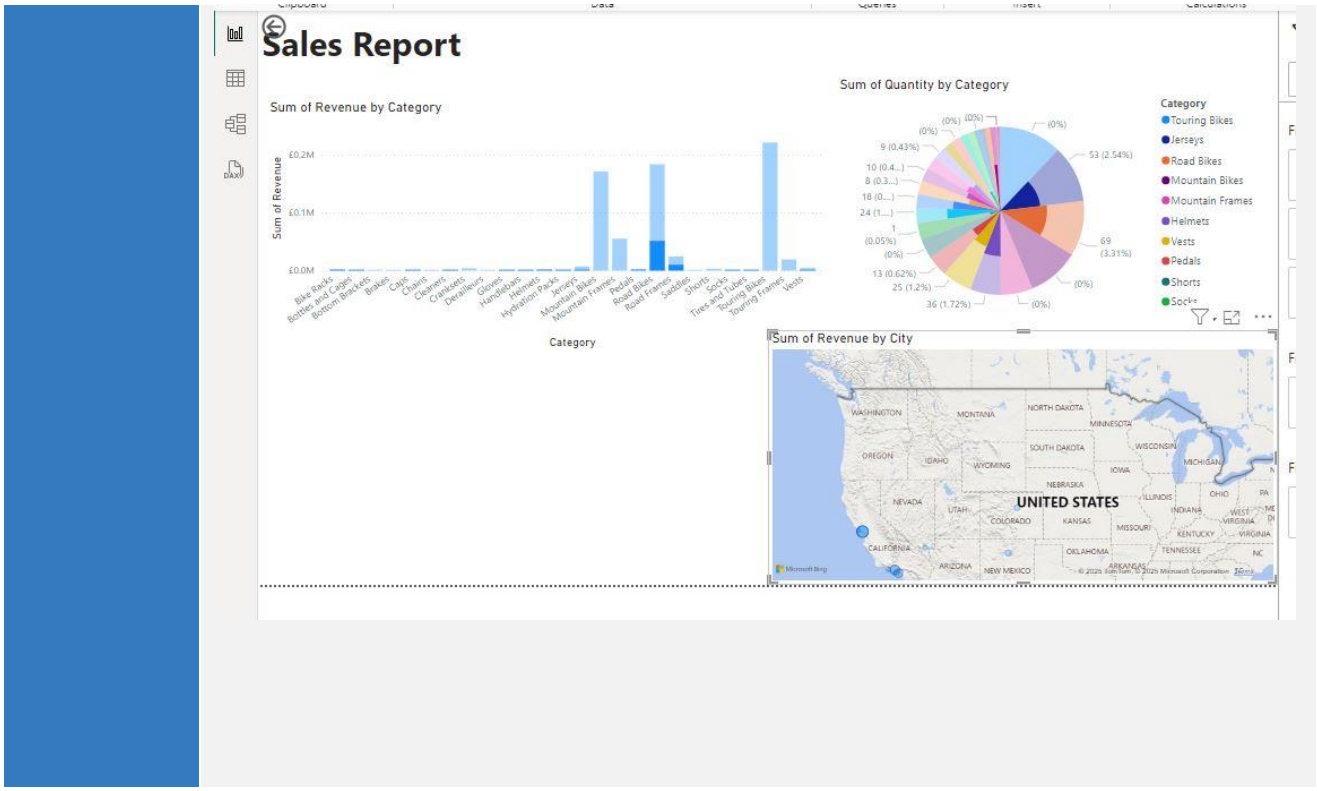

Sales Report
Sum of Revenue by Category
Sum of Revenue
£0.2M
£0.1M
£0.0M
Bike Racks
Bottles and Cages
Bottom Brackets
Brakes
Caps
Chains
Cleaners
Cranksets
Derailleurs
Gloves
Handlebars
Helmets
Hydration Packs
Jerseys
Mountain Bikes
Mountain Frames
Pedals
Road Bikes
Road Frames
Saddles
Shorts
Socks
Tires and Tubes
Touring Bikes
Touring Frames
Vests
Category


Sales Report
Sum of Revenue by Category
Sum of Quantity by Category
Category
Touring Bikes
Jerseys
Road Bikes
Mountain Bikes
Mountain Frames
Helmets
Vests
Pedals
Shorts
Socks



Day 4: Task 1

In your teams, complete the Azure DP-900 practice exam and paste your result below – this is open book and please research and discuss your answers as a team.

6

Practice Assessment: DP-900T00-A Microsoft Azure Data Fundamentals

Practice Assessment for Microsoft Certifications for DP-900T00-A

Additional Details

Required: No
Available Instructor-Led: Yes
Available Self-Paced: Yes

Result

Practice Assessment for Exam DP-900: Microsoft Azure Data Fundamentals

It took you 44 minutes to complete this assessment.

Overall Results

To be better prepared for the exam, aim to achieve a score of 80% or higher in multiple attempts.

Score: 80%

Show My Answers

Performance by assessment section

Day 4: Task 2

1. Scenario Background

"Paws & Whiskers" is a growing pet shop that aims to improve its business by analysing sales, customer information, and inventory data. Currently, the data is collected manually or stored in spreadsheets. Management is interested in transitioning to Microsoft Azure to streamline data storage, analysis, and reporting, enabling them to make data-driven decisions.

2. Data Laws and Regulations

Identify and explain the data laws and regulations relevant to handling customer data within the proposal. Ensure you cover the following points:

- **GDPR Compliance**: Highlight the importance of adhering to the General Data Protection Regulation (GDPR), particularly as it relates to storing and processing customer information.
- **Data Protection Act (DPA) 2018**: Outline how the DPA 2018 may affect the way "Paws & Whiskers" collects and stores data, ensuring compliance with UK laws on data privacy.
- **Other Industry Standards**: Research any additional data protection standards or regulations that may apply to pet shop data, particularly if they involve sensitive or payment information.

3. Azure Service Recommendations

Recommend Microsoft Azure services that would suit the company's data analysis needs and explain why these services are suitable. Your recommendations should include:

- **Data Storage**: Identify suitable storage options, such as **Azure Blob Storage** or **Azure SQL Database**, and discuss the benefits of each for storing large datasets, including inventory, sales transactions, and customer details.
- **Data Analysis Tools**: Recommend tools such as **Azure Machine Learning** for customer behaviour analysis or **Azure Synapse Analytics** for analysing sales trends.
- **Data Integration and Automation**: Explain how services like **Azure Data Factory** could automate data collection and integration processes, improving efficiency.

4. Data Types and Data Modelling

Define the types of data "Paws & Whiskers" will need to work with and describe your approach to data modelling:

- **Data Categories**: Identify key data types, such as customer demographics, transaction history, pet inventory, and product categories.
- **Data Modelling Approach**: Outline how you would structure this data using a relational model or a data warehouse approach, considering factors like tables, entities, relationships, and primary keys.

5. Data Storage Formats and Structures in Azure

Discuss how you would store data within Azure and the formats you would recommend:

- **Data Formats**: Specify recommended formats (e.g., CSV for raw data imports, JSON for structured data, Parquet for analytics) and explain why these formats are suitable for specific data types.
- **Data Security and Encryption**: Include recommendations for securing data using Azure's built-in encryption features and access controls to ensure compliance with data privacy regulations.

6. Additional Considerations

Provide any other considerations that might enhance data handling and efficiency in Azure, such as:

- **Backup and Disaster Recovery**: Outline a backup plan using **Azure Backup** or **Azure Site Recovery** to safeguard against data loss.
- **Data Visualisation**: Discuss potential use of **Power BI** within Azure for creating dashboards that provide management with real-time insights into sales and customer trends.
- **Future Scalability**: Comment on how Azure services can scale as the business grows, accommodating larger datasets and more complex analyses.

Submission Guidelines:

1. **Structure**: Ensure your report is well-organised, with sections for each task (e.g., Data Laws, Azure Services, Data Types, etc.).
2. **Formatting**: Include headings, bullet points where appropriate, and any visuals or diagrams that support your explanations.
3. **References**: Cite any resources or regulations referenced in the report.
4. **Length**: Aim for 1500-2000 words.

Data Laws and regulation relevant to handling customer data in a pet shop.

1. GDPR Compliance: The GDPR is the data regulation governing how individual's personal data is collected, stored and used. For "Paws and Whiskers" to use and process customer

data lawfully, transparently, and for a specific purpose. Here are the key points which the business owner need to aware of:

- Get the consent, a contract or show legitimate interest for data collection and usage.
- Show the purpose for data collection.
- Only the necessary data for the specific purpose should be collected
- Data should not be kept for longer than necessary and should be deleted when it is no longer required.

2. Data Protection Act 2018: Data protection act governs how personal data must be collected, handled and stored. The aim of this act is to ensure people have control over their data and is protected from misuse. Here are the key points which the business owner need to aware of:
   - The personal data should be processed lawfully, fairly and transparently by the business.
   - Individuals have right to know what personal data is held about them, and to have it removed when need to.

Azure Service Recommendations:

Below outlined are the Azure services which will require for the data analysis by the business

1. Data Storage:

Azure Blob Storage:

Suitable:

- For Pet shop it is best option to use Blob storage to store unstructured data such as images, videos, files.

Benefits:

- Blob storage can handle big amount of data, best for storing large files, images, videos and any other unstructured data.
- It can scale dynamically without impacting on the performance
- It offers different redundancy options, data availability in case of outage and data protection from disaster recovery.
- Integration with other Azure services is easy and the data can be encrypted for security purpose.

Azure SQL Database:

Suitable:

- To store the structured data such as inventory records, sales data, customer details.
- It gives high performance, scalability and built in security features.

Benefits:

- Can easily access reports on sales and customer data
- High scalability and flexibility. Scales easily with business growth.
- Can query the data in relation database to find out particular information from the database system.

2. Data Analysis Tools:

Azure Machine Learning

Suitable:

- It is Ideal for forecasting in future customer demand for specific products.
- Analyse historical sales data.
- Optimize inventory levels, reducing the risk of stock outs.
- Personalising marketing or product recommendations.

Benefits:

- Enables the development of predictive models using historical data.
- Helps forecast demand and optimise stock levels.
- AI can analyse data quickly to identify trends, enabling faster and more informed decision.
- AI can automate tasks, such as data entry, analysis, reducing human errors.

Azure Synapse Analytics

Suitable:

- A powerful analytics service for combining and analysing data across different sources.

Benefits:

- Helps identify sales trends, seasonal inventory changes, and customer purchasing patterns.
- Integrates with Power BI for easy visualisation of insights.
- Handles both large-scale structured and unstructured data.

3. Data Integration and Automation

Azure Data Factory

Suitable:

- Azure Data Factory is a cloud-based ETL tool that automates the process of moving, transforming and managing data movement from various sources.

Benefits:

- For Pet shop it is easy to connect data from spreadsheets, sales systems, or third-party platforms into one location.
- Automatically cleans, updates, and transforms data before storage or analysis.
- The process is Time saving and reduces human error by eliminating manual data entry.

Data Types and Modelling

Data Categories (Key data Types) & Data Modelling:

The Pet shop will have few different data types shown below along with Relational model as below:

1. Customer Demographics
   - Customer ID (Primary Key)
   - Name
   - Age
   - Contact Information
   - Pet detail
2. Transaction History
   - Transaction ID(Primary Key)
   - Customer ID(Foreign key)
   - Date of Purchase
   - Product Purchase
   - Total Amount
3. Pet Inventory
   - Pet ID(Primary Key)
   - Product ID(Foreign Key)
   - Pet Breed
   - Age
   - Availability
   - Health
4. Product Category
   - Product ID(primary Key)
   - Category
   - Stock
   - Price
   - Supplier information

Relationships:

One to Many: A customer can have multiple transactions
Many to Many: A transaction can involve multiple products, and a product can appear in

many transactions.
Many to One- A Product belong to a Category.
One to Many-A Customer can own multiple Pets.

Data Warehouse:

- Data warehouse approach involves a suitable schema like star or snowflake or consideration of dimensional modelling technique.
- Consider fact Table and Dimension Table approach. Where Fact Table can have sales (Total Prices, Quantity sold) and Dimension Table (Customer, product).

Data Storage Formats and Structures in Azure:

1. CSV Format:
   - This format is used for importing raw data from spreadsheets, sales reports.
   - CSV format is simple and easy to understand
   - Easy to export from current manual system in Pet shop
   - Ideal for ingestion in to Azure data factory pipelines.
2. JSON:
   - This format is used for storing structured and hierarchical data
   - Works well with Azure cosmos DB and Azure SQL for semi structure data

3. Parquet:
   - Is used for storing and managing data within data lakes and big data processing frameworks.
   - This option is best for storage and compression techniques leading to smaller file sizes.
   - Reduce storage costs and faster query execution time.

Data Security and Encryption:

Azure provides comprehensive data encryption and security with both at rest and in transit.

Encryption at Rest:

- (SSE) Azure storage system automatically encrypts data before writing it to storage.
- Azure data bricks offer to encrypt data twice with different keys and algorithms.
- Azure Disk encryption feature allows customers to encrypt their virtual machine disks, providing another layer of security.

Encryption at Transit:

- Enable **HTTPS** for secure data transmission between applications and Azure services.
- Provide further secure communication between their on-premises networks and Azure using VPNs

Role-Based Access Control:

- Grant Users only the necessary control.
- Define who can access what resources using roles like Reader, Contributor, or Owner.
- Limit access based on job roles (e.g., only analysts can access sales data).

Additional Considerations

To safeguard against data loss, system failure, backup plan is essential:
Azure Backup:

- Automatic Recovery of SQL database and restoration.
- Restoring Accidently deleted data
- Back up ensures data is safe even when hard drive fails.
- Azure backup provides Cost-effective, centralized backup solution.
- Supports long-term retention and recovery point objectives (RPO).

Azure Site recovery:

- Azure site recovery designed to protect applications and data in case of disaster.
- Azure Site Recovery service replicates and manages failover of virtual machines and workloads to secondary location.
- Minimize the downtime for critical systems such as sales or inventory database during outages.

Data visualization:
Power BI

- Power BI is powerful business intelligence tool for creating interactive dashboards and reports.
- enabling users to connect to and analyse data from various Azure services
- Enables real time dashboards showing inventory status, sales performance.
- Allows management people to make faster and data driven decision.
- It integrates with services like Azure Synapse Analytics, Azure Data Lake Storage, Azure Data bricks, and Azure Machine Learning.

Future scalability:

- Azure service offers robust scalability options through both vertical and horizontal scaling.
- Server less and Pay-as-You-go model.
-
- Azure offers scalable storage solutions like Blob storage, Data Lake storage and Cosmos DB.
- Analytics services like Azure data lake analytics, Azure Stream analytics for processing and analysing large datasets.
- Azure Kubernetes Service (AKS) and Azure Container Instances (ACI) allow businesses

to run containerized applications.

Course Notes

It is recommended to take notes from the course, use the space below to do so, or use the revision guide shared with the class:

We have included a range of additional links to further resources and information that you may find useful, these can be found within your revision guide.

END OF WORKBOOK

Please check through your work thoroughly before submitting and update the table of contents if required.

Please send your completed work booklet to your trainer.