This workbook provides an in-depth exploration of key topics essential for understanding and implementing effective cloud-based solutions using Microsoft Azure. The focus is on four critical areas: Azure Service Recommendations, Data Types and Data Modelling, and Data Storage Formats and Structures in Azure.

Cloud Computing and Related Concepts

Explore Non-Relational Data in Azure

Lab Overview:

Focus on working with non-relational (NoSQL) data using Azure Cosmos DB.
Explore Cosmos DB features such as document storage, partitioning, and indexing.

Outcome:

Gained hands-on experience with NoSQL databases and their capabilities in handling unstructured/semi-structured data.

Explore Data Analytics in Azure

- Lab Overview:
  - Create a workspace for data analytics using Azure Synapse Analytics or similar tools.
  - Perform data ingestion into a Lakehouse.
  - Query the Lakehouse using SQL analytics endpoints.
  - Visualize data using built-in visualization tools.
- Key Activities:
  1. Workspace Creation:
     - Set up an environment for analytics workflows.
  2. Data Ingestion:
     - Load data into a Lakehouse from various sources.
  3. Query Execution:
     - Use SQL analytics endpoints to query the ingested data.
  4. Data Visualization:
     - Create visualizations to derive insights from the data.

  Outcome:
  - Successfully demonstrated end-to-end data analytics pipeline in Azure.

Key Takeaways

- Relational Data:
  - Azure provides robust tools for managing and querying structured data.
- Non-Relational Data:
  - Cosmos DB is a powerful service for handling unstructured and semi-structured data.
- Data Analytics:
  - Azure Synapse Analytics and lake houses enable scalable data ingestion, querying, and visualization.
- Overall Learning:

    - Hands-on experience with Azure's diverse data services for different types of data and use cases.
- The labs provided practical exposure to Azure's data services, including relational databases, NoSQL databases, and data analytics platforms.
- These skills are essential for modern data technicians to manage, analyse, and derive insights from various data types effectively.

Writing a report based for a pet shop "Paws & Whiskers" based on:

1. Scenario Background: Contextual understanding of use cases.
2. Data Laws and Regulations: Compliance with GDPR, CCPA, etc.
- Azure Service Recommendations: Blob Storage, Synapse Analytics, Data Factory.
3. Data Modelling: Star schema with fact and dimension tables.
4. Storage Formats: CSV, JSON, Parquet for structured, semi-structured, and aggregated data.
5. Security and Scalability: Encryption, role-based access, and scalable storage solutions

Key Takeaways from the report

- Evaluate your organization's data governance policies.
- Explore Azure services that align with your business goals.
- Continuously refine data models and storage strategies as requirements evolve

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By adopting Azure, "Paws & Whiskers" can achieve operational excellence and drive sustainable growth!

Summary:

- Compliance with data laws is critical for protecting sensitive information.
- Azure offers a wide range of services tailored to specific data needs.
- Proper data modelling ensures efficient storage and retrieval.
- Choosing the right storage format and structure optimizes performance and cost.