

Student's Full Name: Anand Ramaswamy Jayshree

Course Title: INFO531

Term name and year: Summer 2024

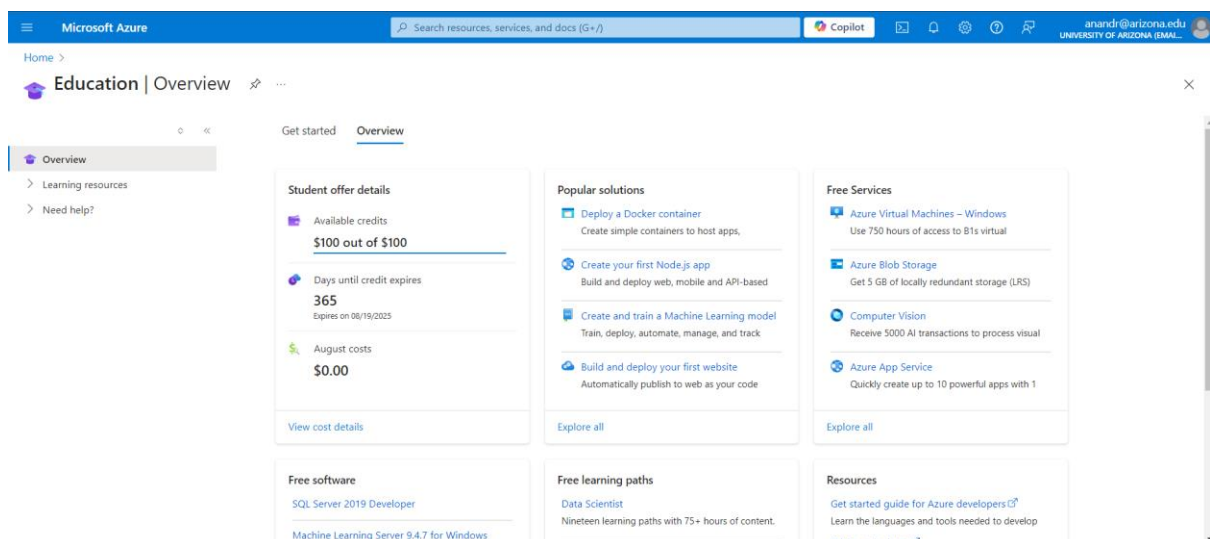
Submission Week: Week 6- Assignment 4

Instructor's Name: Dr. Nayem Rahman

Date of Submission: August 11, 2024

## Q1. Create your Azure free account

Go to the address <https://azure.microsoft.com/en-us/free/students/> and create a free Azure account using your university email address. Note that you do NOT need a credit card to create the account. If you find yourself entering your credit card information know that you are doing it wrong.



*Azure Account Created in my name with respect to university mail id*

## Q2. Create a container in Azure Storage, and to upload and download block blobs in that container.

Follow the instructions here to create a container in Azure Storage, and to upload and download block blobs in that container. <https://learn.microsoft.com/en-us/azure/storage/blobs/storage-quickstart-blobs-portal> Assumption: You already have an account using your university email address. Go to the portal and login.

Microsoft Azure

Search resources, services, and docs (G+/I)

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Home > Storage accounts >

Create a storage account

Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription \*

Azure for Students

Resource group \*

Select existing item...

Create new

Instance details

Storage account name \*

anandstorageaccount

Region \*

(US) East US

Deploy to an Azure Extended Zone

Performance \*

☒ Standard: Recommended for most scenarios (general-purpose v2 account)

☐ Premium: Recommended for scenarios that require low latency.

Redundancy \*

Locally-redundant storage (LRS)

Previous

Next

Review + create

Give feedback

## Create Storage Account

Microsoft Azure

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Home > Storage accounts >

Create a storage account

Basics

Advanced

Networking

Data protection

Encryption

Tags

Review + create

[View automation template](#)

Basics

Subscription

Azure for Students

Resource group

Assingment\_week5\_Datawarehousing\_Anand

Location

East US

Storage account name

anandstorageaccount

Performance

Standard

Replication

Locally-redundant storage (LRS)

Advanced

Enable hierarchical namespace

Disabled

Enable SFTP

Disabled

Enable network file system v3

Disabled

Allow cross-tenant replication

Disabled

Access tier

Hot

Previous

Next

Create

Give feedback

## Review the created storage account

Microsoft Azure

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Home > Storage accounts >

### Create a storage account

Default routing tier: Microsoft network routing

#### Data protection

|                                      |          |
|--------------------------------------|----------|
| Point-in-time restore                | Disabled |
| Blob soft delete                     | Enabled  |
| Blob retainment period in days       | 7        |
| Container soft delete                | Enabled  |
| Container retainment period in days  | 7        |
| File share soft delete               | Enabled  |
| File share retainment period in days | 7        |
| Versioning                           | Disabled |
| Blob change feed                     | Disabled |
| Version-level immutability support   | Disabled |

#### Encryption

|  |                              |
|--|------------------------------|
| Encryption type                          | Microsoft-managed keys (MMK) |
| Enable support for customer-managed keys | Blobs and files only         |
| Enable infrastructure encryption         | Disabled                     |

Previous Next Create

Give feedback

Review the created storage account

Microsoft Azure

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Home >

### anandstorageaccount\_1724098547463 | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

**Your deployment is complete**

Deployment name: anandstorageaccount\_1724098547463  
Subscription: Azure for Students  
Resource group: Assignment\_week5\_Datawarehousing\_Anand

Start time: 19/8/2024, 1:17:26 pm  
Correlation ID: 7ae783bc-09be-4158-bf9a-7fb40474c9cc

Deployment details

Next steps

Go to resource

Give feedback

Tell us about your experience with deployment

**Cost Management**  
Get notified to stay within your budget and prevent unexpected charges on your bill.  
Set up cost alerts >

**Microsoft Defender for Cloud**  
Secure your apps and infrastructure  
Go to Microsoft Defender for Cloud >

**Free Microsoft tutorials**  
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**Work with an expert**  
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Confirmation of Deployment of Storage account

Microsoft Azure

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Home > anandstorageaccount\_1724098547463 | Overview

### anandstorageaccount

Storage account

Search

Upload Open in Explorer Delete Move Refresh Open in mobile CLI / PS Feedback

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Data storage

Security + networking

Data management

Settings

Monitoring

Monitoring (classic)

Automation

Essentials

Resource group (move): Assignment\_week5\_Datawarehousing\_Anand

Location: eastus

Subscription (move): Azure for Students

Subscription ID: 39ae6140-51ce-47ea-9265-e8653fb1a99c

Disk state: Available

Tags (edit): Add tags

Performance: Standard

Replication: Locally-redundant storage (LRS)

Account kind: StorageV2 (general purpose v2)

Provisioning state: Succeeded

Created: 8/19/2024, 1:17:27 PM

Properties Monitoring Capabilities (7) Recommendations (0) Tutorials Tools + SDKs

**Blob service**

|                        |                  |
|------------------------|------------------|
| Hierarchical namespace | Disabled         |
| Default access tier    | Hot              |
| Blob anonymous access  | Disabled         |
| Blob soft delete       | Enabled (7 days) |
| Container soft delete  | Enabled (7 days) |
| Versioning             | Disabled         |
| Change feed            | Disabled         |

**Security**

|   |             |
|---|-------------|
| Require secure transfer for REST API operations | Enabled     |
| Storage account key access                      | Enabled     |
| Minimum TLS version                             | Version 1.2 |
| Infrastructure encryption                       | Disabled    |

**Networking**

|                   |              |
|-------------------|--------------|
| Allow access from | All networks |
|-------------------|--------------|

## Storage Account Details

Home > anandstorageaccount\_1724098547463 | Overview > anandstorageaccount

anandstorageaccount | Containers

Search containers by prefix

| Name   | Last modified         | Anonymous access level | Lease state |
|--|-----------------------|------------------------|-------------|
| <input type="checkbox"/> logs                      | 19/8/2024, 1:17:50 pm | Private                | Available   |
| <input checked="" type="checkbox"/> anandcontainer | 19/8/2024, 1:22:12 pm | Private                | Available   |

## Container Created

Home > anandstorageaccount | Containers > anandcontainer

anandcontainer

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: anandcontainer

Search blobs by prefix (case-sensitive)

1 file(s) selected: CustomerChurn2.csv

Drag and drop files here or Browse for files

Upload

## Upload a blob in the container

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Home > anandstorageaccount | Containers >

anandcontainer

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot Give feedback

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: anandcontainer

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

| Name  | Modified                | Access tier    | Archive status | Blob type  | Size     | Lease state |
|---|-------------------------|----------------|----------------|------------|----------|-------------|
| <input type="checkbox"/> CustomerChurn1 (1).csv | 21/8/2024, 12:56:25 ... | Hot (Inferred) |                | Block blob | 4.55 KiB | Available   |

Check the container for the blob

### Q3. Create a SQL database on Azure

Microsoft Azure

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Home >

SQL databases

University of Arizona

Create Reservations Manage view Refresh Export to CSV Open query Assign tags Delete

Filter for any field...

Subscription equals all Resource group equals all Location equals all Add filter

Showing 0 to 0 of 0 records.

No grouping List view

| Name | Server | Replica type | Pricing tier | Location | Subscription |
|------|--------|--------------|--------------|----------|--------------|
|------|--------|--------------|--------------|----------|--------------|

No SQL databases to display

Utilize a fully managed relational database service, perfect for accelerating application development and simplifying management tasks.

Create SQL database

Learn more

Give feedback

Create SQL Database

Microsoft Azure

Search resources, services, and docs (G+)

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[Home](#) > [SQL databases](#) > [Create SQL Database](#) >

Create SQL Database Server

Microsoft

Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name \*

serveranand

✓

.database.windows.net

Location \*

(US) Central US

✓

Authentication

Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) or using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#), or select both SQL and Microsoft Entra authentication.

Authentication method

Use Microsoft Entra-only authentication

Use both SQL and Microsoft Entra authentication

Use SQL authentication

Server admin login \*

Anand

✓

Password \*

\*\*\*\*\*

✓

Confirm password \*

\*\*\*\*\*

✓

OK

## Create SQL Database Server - 1

Microsoft Azure

Search resources, services, and docs (G+)

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[Home](#) > [SQL databases](#) > [Create SQL Database](#) >

Create SQL Database Server

Microsoft

Authentication

Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) or using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#), or select both SQL and Microsoft Entra authentication.

Authentication method

Use Microsoft Entra-only authentication

Use both SQL and Microsoft Entra authentication

Use SQL authentication

Server admin login \*

Anand

✓

Password \*

\*\*\*\*\*

✓

Confirm password \*

\*\*\*\*\*

✓

OK

## Create SQL Database Server - 2

Microsoft Azure

Search resources, services, and docs (G+)

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[Home](#) > [SQL databases](#) >

Create SQL Database

Microsoft

Workload environment

Development

Production

Default settings provided for Development workloads. Configurations can be modified as needed.

Compute + storage \*

**General Purpose - Serverless**  
Standard-series (Gen5), 1 vCore, 32 GB storage  
[Configure database](#)

Backup storage redundancy

Choose how your PITR and LTR backups are replicated. Geo restore or ability to recover from regional outage is only available when geo-redundant storage is selected.

Backup storage redundancy

Locally-redundant backup storage

Zone-redundant backup storage

Geo-redundant backup storage

Review + create

Next: Networking >

## Create SQL Database Server - 3

The screenshot shows the 'Review + create' step of the 'Create SQL Database' wizard in the Microsoft Azure portal. The left sidebar contains tabs for 'Basics', 'Networking', 'Security', 'Additional settings', 'Tags', and 'Review + create'. The main content area is divided into three sections: 'Product details', 'Terms', and 'Basics'. The 'Product details' section shows the 'SQL database by Microsoft' offering with an 'Estimated cost' of 5.74 USD / month + Compute cost 0.000174 USD / vCore second. The 'Terms' section contains a legal disclaimer. The 'Basics' section shows the subscription 'Azure for Students', resource group 'Assignment\_week5\_Datawarehousing\_Anand', and region 'Central US'. A 'Cost summary' panel on the right provides a breakdown: General Purpose (GP\_S\_Gen5\_1) at 0.14 USD per GB, Max storage at 41.6 GB, Estimated storage cost at 5.74 USD per month, and Compute cost at 0.000174 USD per vCore second. A 'Create' button is at the bottom left.

Microsoft Azure

Home > SQL databases >

### Create SQL Database

Microsoft

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

**Product details**

SQL database by Microsoft

Terms of use | Privacy policy

**Estimated cost**

Storage cost 5.74 USD / month + Compute cost 0.000174 USD / vCore second

**Terms**

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. For additional details see [Azure Marketplace Terms](#).

**Basics**

Subscription: Azure for Students

Resource group: Assignment\_week5\_Datawarehousing\_Anand

Region: Central US

**Cost summary**

**General Purpose (GP\_S\_Gen5\_1)**

Cost per GB (in USD): 0.14

Max storage selected (in GB): x 41.6

**ESTIMATED STORAGE COST / MONTH: 5.74 USD**

**COMPUTE COST / VCORE SECOND: 0.000174 USD**

**NOTES**

<sup>1</sup> Serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. [Learn more about serverless billing](#)

Create < Previous Download a template for automation

## SQL Database Cost estimation

The screenshot shows the 'Additional settings' step of the 'Create SQL Database' wizard. The left sidebar has tabs for 'Security' and 'Additional settings'. The 'Security' section lists various security features and their status: Identity (Not enabled), Transparent data encryption (Service-managed key selected), Database level customer-managed key (Not configured), Database level user assigned managed identity (Not configured), Advanced data security (Not now), Always encrypted with secure enclaves (Not configured), Sql Ledger (Disabled), and Digest Storage (Disabled). The 'Additional settings' section shows 'Use existing data' (Blank), 'Collation' (SQL\_Latin1\_General\_CP1\_CI\_AS), and 'Maintenance window' (System default (5pm to 8am)). A 'Create' button is at the bottom left.

Microsoft Azure

Home > SQL databases >

### Create SQL Database

Microsoft

**Security**

Identity: Not enabled

Transparent data encryption (Server level): Service-managed key selected

Database level customer-managed key: Not configured

Database level user assigned managed identity: Not configured

Advanced data security: Not now

Always encrypted with secure enclaves: Not configured

Sql Ledger (Database): Disabled

Digest Storage: Disabled

**Additional settings**

Use existing data: Blank

Collation: SQL\_Latin1\_General\_CP1\_CI\_AS

Maintenance window: System default (5pm to 8am)

**Tags**

Create < Previous Download a template for automation

## Review the SQL Database

Microsoft Azure

Search resources, services, and docs (G+)

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Home >

Microsoft.SQLDatabase.newDatabaseNewServer\_159f211022784673bf54c | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

Deployment is in progress

Deployment name : Microsoft.SQLDatabase.newDatabaseNewServer\_159f... Start time : 21/8/2024, 4:41:07 am  
Subscription : Azure for Students Correlation ID : abea4f5b-7cbb-4035-a1cd-8a0c889dd29b  
Resource group : Assingment\_week5\_Datawarehousing\_Anand

Deployment details

| Resource    | Type                  | Status   | Operation details                 |
|-------------|-----------------------|----------|-----------------------------------|
| serveranand | Microsoft.Sql/servers | Accepted | <a href="#">Operation details</a> |

Give feedback

Tell us about your experience with deployment

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## Deploy SQL Database

Microsoft Azure

Search resources, services, and docs (G+)

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Home >

Microsoft.SQLDatabase.newDatabaseNewServer\_159f211022784673bf54c | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

Deployment is in progress

Deployment name : Microsoft.SQLDatabase.newDatabaseNewServer\_159f... Start time : 21/8/2024, 4:41:07 am  
Subscription : Azure for Students Correlation ID : abea4f5b-7cbb-4035-a1cd-8a0c889dd29b  
Resource group : Assingment\_week5\_Datawarehousing\_Anand

Deployment details

| Resource                  | Type                             | Status   | Operation details                 |
|---------------------------|----------------------------------|----------|-----------------------------------|
| serveranand/databaseanand | Microsoft.Sql/servers/databases  | Accepted | <a href="#">Operation details</a> |
| serveranand/Default       | Microsoft.Sql/servers/connection | OK       | <a href="#">Operation details</a> |
| serveranand               | Microsoft.Sql/servers            | OK       | <a href="#">Operation details</a> |
| serveranand               | Microsoft.Sql/servers            | Created  | <a href="#">Operation details</a> |

Give feedback

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Microsoft Azure

Search resources, services, and docs (G+)

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Home >

Microsoft.SQLDatabase.newDatabaseNewServer\_159f211022784673bf54c | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

Your deployment is complete

Deployment name : Microsoft.SQLDatabase.newDatabaseNewServer\_159f... Start time : 21/8/2024, 4:41:07 am  
Subscription : Azure for Students Correlation ID : abea4f5b-7cbb-4035-a1cd-8a0c889dd29b  
Resource group : Assingment\_week5\_Datawarehousing\_Anand

Deployment details

Next steps

[Go to resource](#)

Give feedback

Tell us about your experience with deployment

Cost management

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## Deployment of SQL Database Completed



Microsoft Azure

Home > Microsoft.SqlDatabase.newDatabaseNewServer\_159f211022784673bf54c | Overview

databaseanand (serveranand/databaseanand)

SQL database

Search

Copy Restore Export Set server firewall Delete Connect with... Feedback

Overview

Activity log

Tags

Diagnose and solve problems

Query editor (preview)

Mirror database in Fabric (preview)

Settings

Data management

Integrations

Power Platform

Security

Intelligent performance

Monitoring

Automation

Help

Essentials

Resource group (move) : Assignment\_week5\_Datawarehousing\_Anand

Status : Online

Location : Central US

Subscription (move) : Azure for Students

Subscription ID : 39ae6140-51ce-47ea-9265-e8653fb1a99c

Tags (edit) : Add tags

Server name : serveranand.database.windows.net

Connection strings : Show database connection strings

Pricing tier : General Purpose - Serverless: Gen5, 1 vCore

Auto-pause delay : 1 hour

Earliest restore point : No restore point available

Getting started Monitoring Properties Features Notifications (0) Integrations Tutorials

Start working with your database

Connect to your database and start working with data with a few simple steps. Learn more

Configure access Connect to application Start developing Mirror database in Fabric

## Reviewing the Database

Microsoft Azure

Home > Resource groups > Assingment\_week5\_Datawarehousing\_Anand

Resource groups

University of Arizona

Create Group by none

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Name 1

Assingment\_week5\_Datawarehousing\_Anand

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Cost Management

Monitoring

Automation

Help

Essentials

Resources Recommendations

Filter for any field... Type equals all Location equals all Add filter

Showing 1 to 3 of 3 records. Show hidden types

No grouping List view

| Name                                      | Type            | Location   |
|---|-----------------|------------|
| anandstorageaccount                       | Storage account | East US    |
| databaseanand (serveranand/databaseanand) | SQL database    | Central US |
| serveranand                               | SQL server      | Central US |

Showing 1 - 1 of 1. Display count: 10

Previous Page 1 of 1 Next

Give feedback

## Resource group

Microsoft Azure

Home > Resource groups > Assingment\_week5\_Datawarehousing\_Anand > databaseanand (serveranand/databaseanand)

databaseanand (serveranand/databaseanand) | 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)

Settings

Compute + storage

Connection strings

Properties

Locks

Data management

Integrations

Power Platform

Security

Intelligent performance

databaseanand (Anand)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

Tables

Views

Stored Procedures

Query 1

Run Cancel query Save query Export data as Show only Editor Launch inline copilot

Results Messages

Search to filter items...

Ready

## Query Editor Platform

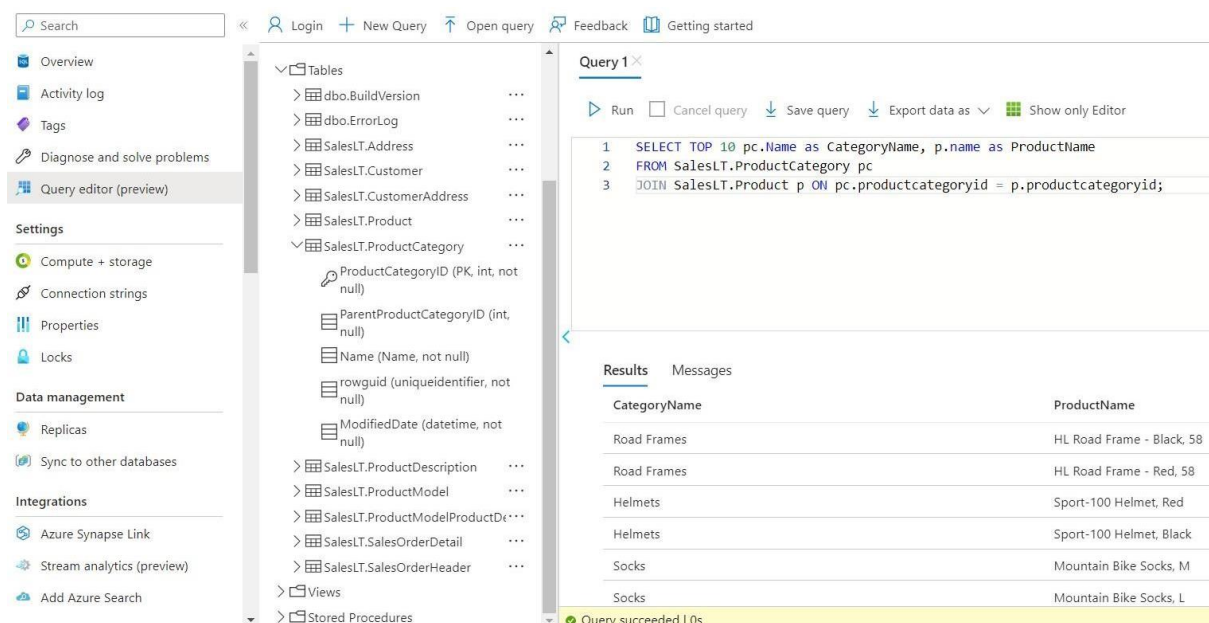
#### Q4. Summarize SQL database creation in Azure

Write in one or two paragraphs what you have done and learned by creating a single database - Azure SQL Database – in Azure Portal.

1. **Create a Resource Group:** Organize Azure resources for better management.
2. **Choose SQL Database:** Select this option from the available services.
3. **Configure Settings:** Provide details like resource group, storage account, replication, network connectivity, performance tier, and storage size.
4. **Optional: Sample Data:** Use sample data to practice queries in the editor.
5. **Learn and Configure:** Understand performance tiers, backup options, and security features to optimize your database.

#### Q5. Query the SQL database in Azure

Query the database you created in Azure. You can use the Query editor (preview) in the Azure portal to connect to the database and query data. Run the following query in the query editor of the database on the Azure portal and take a screenshot of the result of the query. `SELECT TOP 10 pc.Name as CategoryName, p.name as ProductName FROM SalesLT.ProductCategory pc JOIN SalesLT.Product p ON pc.productcategoryid = p.productcategoryid;`



The screenshot shows the Azure SQL Database Query Editor interface. The query editor is open, displaying the following SQL query:

```
1 SELECT TOP 10 pc.Name as CategoryName, p.name as ProductName
2 FROM SalesLT.ProductCategory pc
3 JOIN SalesLT.Product p ON pc.productcategoryid = p.productcategoryid;
```

The query has been executed successfully, and the results are displayed in a table format. The table has two columns: CategoryName and ProductName. The results show the top 10 products from the SalesLT.ProductCategory table, joined with the SalesLT.Product table.

| CategoryName | ProductName               |
|--------------|---------------------------|
| Road Frames  | HL Road Frame - Black, 58 |
| Road Frames  | HL Road Frame - Red, 58   |
| Helmets      | Sport-100 Helmet, Red     |
| Helmets      | Sport-100 Helmet, Black   |
| Socks        | Mountain Bike Socks, M    |
| Socks        | Mountain Bike Socks, L    |

*Using SQL Query given in the question we get the following table output*

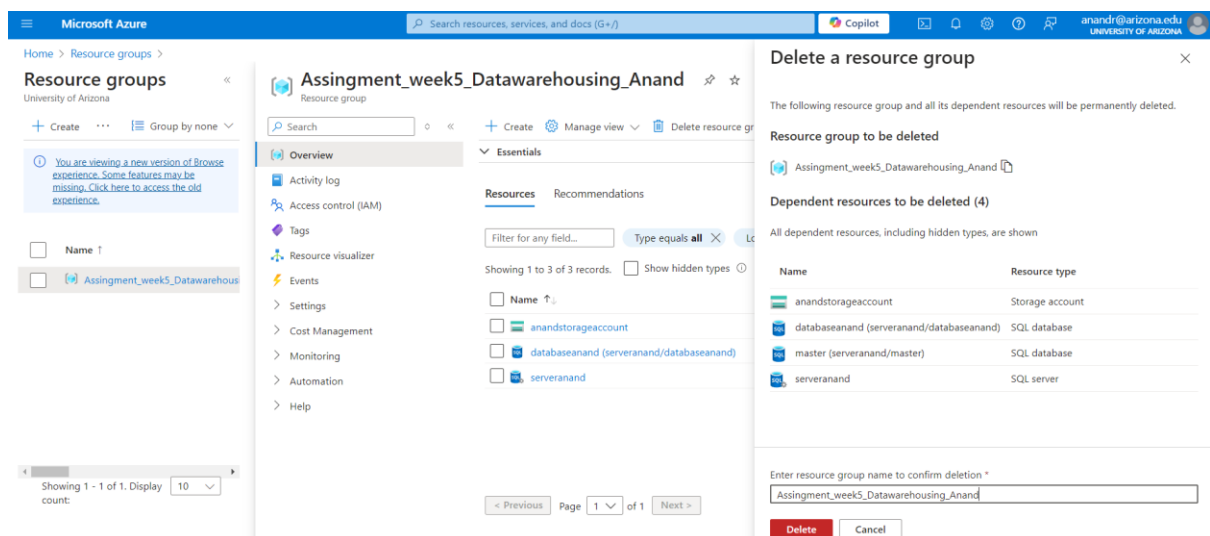
## Q6. Describe the SQL database "SalesLT" on Azure.

Analyze data in the tables in the SalesLT database schema using the Azure Query editor. Identify the primary key (PK) columns, and different data types, and observe the relationships among these tables. Write at least one paragraph.

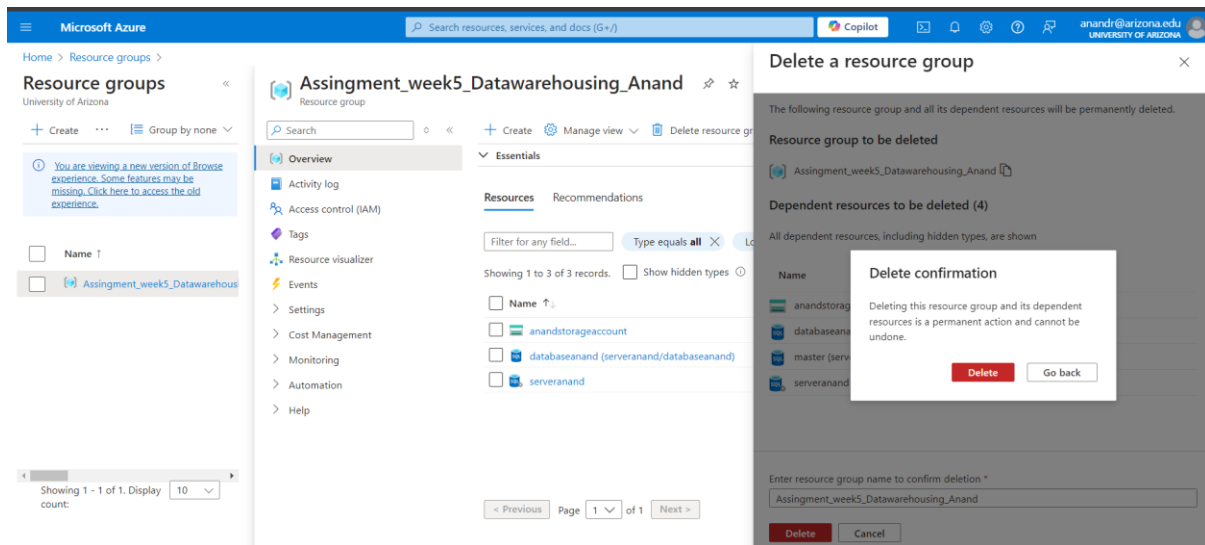
The SalesLT database is a structured relational database designed for e-commerce. Its tables, linked by primary and foreign keys, model products, sales, and customer interactions. For instance, each customer can have multiple sales orders, and each order can contain multiple product details. This structure ensures data consistency and enables complex queries to analyze sales patterns and gain valuable insights.

## Q7. Clean up resources in Azure

When you're finished using these resources, delete the resource group you created, which will also delete the blob storage, server and single database within it. Show the screenshot that you deleted the resource group.



*Deleting the resource Group*



### Deleting Confirmation

**Q8. Summarize the article on "Understanding Data Store Models" . Link -->**

<https://learn.microsoft.com/en-us/azure/architecture/guide/technology-choices/data-store-overview>

**This article explores data storage models and their applications.** It distinguishes between relational and non-relational databases, highlighting their unique structures and querying methods. Relational databases, like SQL Server and MySQL, excel in handling structured data and complex queries. Non-relational databases, such as Azure Cosmos DB, MongoDB, and Cassandra, are designed for unstructured or semi-structured data and offer flexibility and scalability. The choice of data store depends on factors like data structure, scalability needs, transaction requirements, and query complexity. Understanding these differences is essential for optimizing performance and meeting application needs.

**Q9. Summarize the article on "Understanding the differences between NoSQL and relational databases". Link -->** <https://learn.microsoft.com/en-us/azure/cosmos-db/relational-nosql>

This article on Microsoft Learn compares NoSQL and relational databases, exploring their design, performance, and ideal applications.

### Relational Databases

**Structure:** Employ relational databases with predefined table structures and relationships defined by foreign keys.

**Data Model:** Data is organized into rows and columns within the tables with respect to the Schema

**Consistency:** they prove to support complex queries and transaction using SQL and strong Consistency.

**Scalability:** They are scaled vertically by adding more resources to a single server though modern relational databases are increasingly supporting horizontal scaling.

### NoSQL Databases

**Structure:** flexible schemas available and store data in multiple format such as documents, pairs, columns or graphs.

**Data Model:** They typically deal with the unstructured or semi structured data and often don't require predefined schema.

**Consistency:** They provide enhanced performance and scalability and optimizing for fast access.

**Scalability:** They are designed for the Horizontal scaling and deal with large volumes of data and high velocity workloads.

NoSQL databases excel in applications requiring high scalability and flexibility, while relational databases are better suited for applications needing complex transactions and strong data consistency. Businesses should carefully consider their specific needs when selecting a database model.

**Q10. Summarize the article on "Understanding Azure Cosmos DB". Link -->**

<https://learn.microsoft.com/en-us/azure/cosmos-db/introduction>

### **Azure Cosmos DB: A Versatile Database Service**

- **Global Distribution:** Seamlessly deploy databases in multiple regions for enhanced availability and performance.
- **Multi-Model Support:** Accommodate various data models, including document, key-value, column-family, and graph.
- **Consistency and Performance:** Choose from five consistency levels and benefit from low latency and high throughput.
- **Scalability:** Easily scale throughput and storage across global regions to handle varying workloads.
- **Integrated Security:** Protect your data with built-in security features, including encryption and role-based access control

**Q11. Summarize the article on "Azure Cosmos DB API for MongoDB". Link -->**

<https://learn.microsoft.com/en-us/azure/cosmos-db/mongodb/mongodb-introduction>

### **Azure Cosmos DB: Leveraging MongoDB API**

- **Seamless Integration:** Azure Cosmos DB provides compatibility with the MongoDB API, allowing users to migrate existing MongoDB applications with minimal changes.
- **Global Reach:** Enjoy global distribution and scalability, ensuring data replication across multiple regions and efficient handling of high-throughput workloads.

- **Performance and Consistency:** Choose from various consistency levels to balance data consistency and performance, while benefiting from automatic indexing and query optimization.
- **Security and Compliance:** Protect your data with robust security features and ensure compliance with industry standards.
- **Integrated Management:** Utilize Azure's management tools for efficient monitoring, diagnostics, and backup of your MongoDB workloads.

**Q12. Summarize the article on "Nodes and tables in Azure Database for PostgreSQL – Hyperscale".**

Link --> <https://learn.microsoft.com/en-us/azure/postgresql/hyperscale/concepts-nodes>

#### **Azure Database for PostgreSQL - Hyperscale**

- **Horizontal Scaling:** Hyperscale enables data distribution across multiple nodes for improved scalability.
- **Nodes:** The architecture includes coordinator and worker nodes, each with specific roles in query processing and data management.
- **Distributed Tables:** Data is divided into shards and distributed across worker nodes for enhanced performance and scalability.
- **Data Distribution:** The distribution method (hash or range) determines how data is partitioned and queried.
- **Performance and Scalability:** Hyperscale offers significant improvements in query performance and scalability, allowing users to handle large datasets and high transaction volumes effectively.

**Q13. Summarize the article on "Overview - Azure Database for PostgreSQL - Flexible Server".** Link -

-> <https://learn.microsoft.com/en-us/azure/postgresql/flexible-server/overview>

#### **Azure Database for PostgreSQL – Flexible Server**

- **Enhanced Control:** Flexible Server offers a high level of control over database configuration and management.
- **Granular Configuration:** Customize server parameters for performance tuning, maintenance windows, and backup schedules.
- **High Availability:** Ensure continuous operation with built-in replication and automatic failover.
- **Flexible Scaling:** Adjust compute and storage resources independently to match workload demands.
- **Cost Optimization:** Benefit from burstable compute and demand-based scaling for cost savings.

- **Robust Security:** Protect data with network isolation, encryption, and compliance with industry standards.
- **Automated Management:** Simplify database administration with automated backups, updates, and patching.

**Q14. Summarize the article on "Azure Database for PostgreSQL - Single Server". Link-->**  
<https://learn.microsoft.com/en-us/azure/postgresql/single-server/concepts-servers>

#### Azure Database for PostgreSQL – Single Server

- **Managed PostgreSQL:** Enjoy a simplified setup and management with a single-instance PostgreSQL database.
- **High Availability:** Benefit from built-in high availability with automatic failover for minimal downtime.
- **Scalability:** Adjust compute and storage resources independently to meet workload demands.
- **Automated Management:** Simplify database administration with automated backups, patching, and updates.
- **Robust Security:** Protect data with encryption, virtual network integration, and advanced threat protection.
- **Monitoring and Alerts:** Track performance metrics and receive alerts to maintain optimal database health.
- **Flexible Pricing:** Choose from various pricing tiers to align with your budget and performance needs.

**Q15. Summarize the article on "What is Azure Database for PostgreSQL?". Link -->**  
<https://learn.microsoft.com/en-us/azure/postgresql/single-server/overview>

#### Azure Database for PostgreSQL: A Managed PostgreSQL Service

- **Managed Service:** Simplify database deployment, management, and scaling with automated features.
- **Deployment Options:** Choose from Single Server, Flexible Server, or Hyperscale (Citus) based on your application needs.
- **Performance and Scaling:** Adjust compute and storage resources to meet workload demands.
- **Security and Compliance:** Protect data with encryption, network isolation, and compliance with industry standards.
- **High Availability:** Ensure minimal downtime with built-in high availability and automatic failover.
- **Monitoring and Management:** Utilize tools for performance monitoring, alerts, and backup management.

Q16. Summarize the article on "Azure Database for MySQL - Flexible Server". Link -->

<https://learn.microsoft.com/en-us/azure/mysql/flexible-server/overview>

#### Azure Database for MySQL – Flexible Server

- **Enhanced Configurability:** Enjoy greater control over database settings and management.
- **High Availability:** Ensure continuous operation with built-in replication and automatic failover.
- **Scalability:** Adjust compute and storage resources to meet varying workload demands.
- **Cost-Effective Pricing:** Benefit from burstable compute and demand-based scaling for optimized costs.
- **Robust Security:** Protect data with encryption, network isolation, and compliance with industry standards.
- **Automated Management:** Simplify database administration with automated tasks like backups, patching, and updates.

Q17. Summarize the article on "Azure Database for MySQL Single Server". Link -->

<https://learn.microsoft.com/en-us/azure/mysql/single-server/single-server-overview>

#### Azure Database for MySQL – Single Server

- **Managed MySQL:** Enjoy simplified deployment, management, and maintenance of MySQL databases.
- **High Availability:** Benefit from built-in high availability with automatic failover for minimal downtime.
- **Scalability:** Adjust compute and storage resources to meet workload demands.
- **Automated Management:** Simplify database administration with automated backups, monitoring, and security updates.
- **Robust Security:** Protect data with encryption, network isolation, and compliance with industry standards.
- **Flexible Pricing:** Choose from various pricing tiers to align with your budget and performance needs.