Course:  INFO 531/ISTA 431: Data Warehousing and Analytics in the Cloud

Module/Week: 4 - Week of February 1, 2023

Topic:  Introduction to Cloud Computing

NOTE: The assignment document must provide the below information. Up to 10 points may be deducted due to the lack of the below information.

Student’s Full Name:

Course Number and Title:

Term name and year: Example, Spring 2023

Submission Week: [example, Week 4 Assignment]

Instructor’s Name:

Date of Submission:

The above information must be provided at the upper left corner of the first page of the document.

Each answer(s) must be preceded by the question/ title of the topic/article of the assignment.

Acceptable File: Word or PDF

File Name Format: Name your file according to this convention: INFO531\_Week4\_Lastname.pdf. Submission must be made in a single document.

**Week 4 Assignment: Part-1**: Create a single database - Azure SQL Database

PURPOSE:

Part-1 assignment introduces you to the Microsoft Azure portal, how to create Azure Resource Group, Azure SQL databases using the Azure portal, and how to connect to the database and query data using the Query editor (preview) in the Azure portal. This also shows you how to delete resource groups when you are finished with all these activities. You will perform activities to delete the resource group you created, which will also delete the server and single database within it.

**The Part-1 assignment will consist of 20 points.**

## Part I: Environment setup

### Step 1: Create your Azure free account (2.5 points)

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.

### Step 2: Download and install DBeaver (2.5 points)

DBeaver is a free multi-platform database tool. Download it from here: <https://dbeaver.io/>

## Part II: Create an Azure SQL Database single database

### Step 1: Create a SQL database on Azure (5 points)

Follow the steps in the quickstart available [here](https://docs.microsoft.com/en-us/azure/azure-sql/database/single-database-create-quickstart?tabs=azure-portal).

[Create a single database - Azure SQL Database | Microsoft Learn](https://learn.microsoft.com/en-us/azure/azure-sql/database/single-database-create-quickstart?tabs=azure-portal&view=azuresql)

This step consists of the major part of assignment part 1. All steps need to be completed in it except for the section, “Clean up resources” which you will do in Step 5 below. Submit a screenshot of each of the steps. Feel free to redact any personal information in the screenshot.

### Step 2: Summary of SQL database creation in Azure (2.5 points)

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

### Step 3: Query the SQL database in Azure (2.5 points)

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;

### Step 4: Describe the SQL database on Azure (2.5 points)

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.

### Step 5: Clean up resources in Azure (2.5 points)

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

Upload your submission to the Week 4 Assignment Dropbox in D2L. The file name should be: Week4\_Assignment\_Part1\_YourLastName.docx/pdf

**Week 4 Assignment: Part-2**: MS Azure and related Database Technologies

PURPOSE:

Part-2 assignment introduces you to MS Azure, related databases, tools, and technologies.

**This part of the assignment consists of 30-grade points.**

Read the below topics and summarize the learnings from these articles. For each topic, you need to list 3 to 5 key takeaways from the articles.

**#1. Understand data store models**

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

**#2. Understanding the differences between NoSQL and relational databases**

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

**#3. What are NoSQL databases?**

<https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-nosql-database/>

**#4. Understanding Azure Cosmos DB**

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

**#5. Introduction to Gremlin API in Azure Cosmos DB**

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

**#6. Azure Cosmos DB API for MongoDB**

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

**#7. Nodes and tables in Azure Database for PostgreSQL – Hyperscale**

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

**#8. Overview - Azure Database for PostgreSQL - Flexible Server**

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

**#9. Azure Database for PostgreSQL - Single Server**

<https://learn.microsoft.com/en-us/azure/postgresql/single-server/concepts-servers>

**#10. What is Azure Database for PostgreSQL?**

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

**#11. Azure Database for MySQL - Flexible Server**

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

**#12. Azure Database for MySQL Single Server**

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

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