TASK

A) Provision an Azure SQL Database

Description:

As part of this task, you will be required to provision an SQL server instance in

Microsoft Azure and create a database within it. This task will help us evaluate

your understanding of Azure subscriptions, resource groups, SQL Server

provisioning, and basic database management in the cloud.

We'll be using a serverless approach instead of a pre-provisioned cloud server for

ease of deployment. Azure SQL Serverless is a consumption-based model for

running SQL databases in Azure where computer resources are spun up on

demand in comparison to a pre-provisioned pool of resources (server approach)

where resources are up all the time.

Instructions:

1. Azure Account Setup: If you don't have an Azure account already, sign up for a free Azure trial at https://azure.microsoft.com/en-us/free/. You can use your private outlook email address for verification purposes.
2. Create an Azure Subscription: Once you've signed up for Azure, create a new Azure subscription. Navigate to the Azure portal and follow the instructions to create a new subscription. Ensure you select the appropriate subscription type – in this case Free Trial
3. Create a Resource Group: Before provisioning any resources, create a new resource group to organize your resources logically. Name the resource group "InternshipResources" or any other suitable name of your choice. Please choose the East US location.
4. Provision a single SQL database:

➢ From the search bar in Azure, look for Azure SQL, click on SQL databases, leave Resource type set to Single database, and select Create.

➢ Select the Resource Group and subscription you created during the previous steps and then give your database a name.

➢ For Server, select Create new, and fill out the New server form with the following values:

o Server name: any name would do as long as is unique

o Location: keep East US o Authentication method: select Use SQL authentication, create a Server admin loginand password below.

o Click OK to get back to the initial database creation page

➢ Select the Workload Environment to be Development and then click on Configure Database ➢ Select the Service Tier to be General Purpose and Compute tier to be Serverless. Apply the changes. Make sure the SQL elastic pool is set to No and Backup storage redundancy option is locally redundant storage.

➢ Next, click on Networking from the bottom of the page.

o For Connectivity method, select Public endpoint and for Firewall rules, set Add current client IP address to Yes.

o Leave Allow Azure services and resources to access this server set to No.

➢ Next, click on security to proceed.

 o Keep Enable Microsoft Defender for SQL set to No

➢ Next, click on additional settings. o Keep Use existing data set to None to create an empty database.

➢ Click on Review and Create and then on Create.

5. Wait for Deployment: Azure will now deploy your SQL Server instance and database. This may take a few minutes. You can monitor the deployment progress from the notification area in the upper right area of the portal.
6. Verify Deployment: Once the deployment is complete, visit the Azure SQL area again to ensure that both the SQL Server instance and the database are provisioned successfully and are in a running state.
7. As an additional task, please go to your newly create database, navigate to the Query editor and create a simple table using an SQL query

Task Submission

Once you have successfully provisioned the Azure SQL instance and created the database, take a screenshot of the Azure portal showing the overview page of your SQL Server instance and database and created table. Submit this screenshot along with a brief description of the steps you followed to complete the task.

B) In debt analysis of a dataset

DESCRIPTION

You have just received data from the restaurant Luigi's Pizza. You will need to analyze it in order to help the business make data driven decisions. In data.xlsx file you can find 5 sheets:

• **"data_dictionary"** sheet → explains the definition of each column and expected data type

• **"pizza_types"** sheet → the pizza that is offered by Luigi's Pizza and it's ingredients

 • **"pizzas"** sheet → the price of each pizza by size

• **"order_details"** sheet → the list of orders: pizza type & quantity sold

• **"orders"** sheet →the date and time when the order was placed Bellow you will have a series of questions that you will need to answer using the data provided.

NOTES

- You can answer the questions using any tool/s that you are comfortable. We recommend using python, Microsoft SQL server or Power BI

- It is not mandatory to answer using only 1 tool, you can use as many as you want/know

 - Each question will also mention the format we expect to see the answer: screenshots, code, table and so on.

- It is highly recommended to share your files or formulas or codes that you write in order to solve the requirements. They will help us to understand your answer better.

- We are more interested in how you are able to solve the requirements and that is why any materials or explanation you can give us will help us.

REQUIREMENTS

1. Using the data dictionary, please draw the entity–relationship model (ER model)
2. On the ER model, mention also the type of relationship you expect between tables.
3. Describe and summarize the data in each table. [deliver result in tables + explain how you calculated / share your code]
4. Parse the ingredients from the "pizza_types" sheet and find out which one is the most used.
5. How many types of cheese does the restaurant uses? Can you list them? [deliver result in tables + explain how you calculated / share your code]
6. How much pizza has the restaurant sold for each type and size? [deliver result in a table]
7. Which are the top 5 most ordered pizza? [deliver result in a table]
8. Which are the pizzas that the restaurant never sold in 2015? [deliver result in a table + explain how you calculated / share your code]
9. Calculate summary statistics for pizza prices (e.g., average, minimum, maximum) for each size category (small, medium, large). [deliver result in a table]
10. Show the distribution of prices. What do you observe? [deliver result in a graph + explanation]
11. What is the total revenue generated by the restaurant in 2015? [deliver result as a number + explain how you calculated / share your code]
12. What about the revenue generated each month of 2015? What can you observe? [deliver result in a graph + explanation]
13. Visualize the order frequency over time. What can you observe? [deliver result in a graph + explanation]
14. How many orders does the restaurant handles in a day on average? [deliver result as a number + explain how you calculated / share your code]
15. Is there a day of the week that is more crowded? [deliver result in a graph + explain how you calculated / share your code]
16. Is there a day of the week that generated more revenue? [deliver result in a graph + explain how you calculated / share your code]

17. Are there periods of time where the restaurant sold no pizza? Why is that? [deliver result in a table + explain how you calculated / share your code]