

Module 1 Lab

Notes:

Prior to beginning the lab, you're going to need:

1. A Microsoft account with an Azure subscription;
2. The contents of **SQLforDA.Zip** extracted into a local folder. While it doesn't matter to which local folder you extract them, we're going to use **C:\SQLForDA** throughout the lab instructions.
3. The most recent version of **SQL Server Management Studio (SSMS)** installed on your local machine. Available at <https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver16>.

Completed queries for **Section C. Create and execute basic SELECT queries** can be found in **C:\SQLForDA\Mod1_LabAnsweKey.sql**.

Goals:

1. Create an Azure SQL Database
2. Learn about the tables, columns, and table relationships in the CarDealer database.
3. Be able to create and execute queries in SQL Server Management Studio (SSMS).

Note: *The user interface on the Azure portal changes slightly from time to time.*

Exercise 1: Create an Azure SQL Database

1. Log into the **Azure portal** at <https://portal.azure.com>.
2. Click the "hamburger" icon (the three –'s in the upper left corner) and select **SQL databases > Create**.
3. On the **Basics** blade of the **Create SQL Database** dialog, select your **Subscription**.
4. Under **Resource Group**, click **Create new**, and create a resource group named **CarDealer**.
5. Enter **AdventureworksLT** for the database name.
6. Beside **Server**, click **Create new**, and in the **Create SQL Database Server** dialog, use the following:
 - a. Server Name: Use any unique server name, such as **petunia531** or **hotdog420**.
 - b. Choose the major Azure data center closest to your location, such as **East US** or **West Europe**.
 - c. Under **Authentication method** select **Use SQL Authentication**.
 - d. For the **Server admin login** use **Student**, and for the **Password** use **Pa55w.rd**.
 - e. Click **OK**.
7. Select **Development** beside **Workload environment** (*this will automatically select small, inexpensive sizing, which is all you need for this course*).
8. Beside **Compute + storage**, click **Configure database**.

- a. In the **Configure** dialog, in the **Service tier** drop-down list, select **Basic** under **DTU-based purchasing model**.
 - b. Click **Apply**.
9. Click **Next: Networking >**.
10. Beside **Connectivity method** select **Public endpoint**.
11. Beside **Allow Azure services and resources to access this server** choose **Yes**.
12. Beside **Add current client IP address** choose **Yes**.
13. Click **Next: Security >**.
14. Click **Next: Additional settings >**.
15. Beside **Use existing data**, select **Sample**. If the AdventureworksLT pop-up appears indicating a change will be made to the Compute + Storage settings, select **OK**.
16. Click **Review + create**, then click **Create** to submit the Azure SQL database for deployment.
17. When deployment has completed for the *AdventureworksLT* database above, navigate to your list of SQL databases by clicking **SQL databases** under the hamburger icon.
18. Click the *AdventureworksLT* database, and find the **Server name** on the **Overview** page. This is the name of your **logical SQL server**. Copy it to the clipboard.

Exercise 2: Importing the CarDealer Database

1. Open **SQL Server Management Studio** on your local desktop. When the SQL Server dialog appears:
 - a) Ensure **Database Engine** is selected as the **Server Type**.
 - b) Enter (or paste) the name of your logical SQL server in the **Server name** box;
 - c) Select **SQL Server Authentication** in the **Authentication** drop-down list
 - d) Enter *Student* for **Login** and *Pa55w.rd* for **Password**.
 - e) Click **Connect**.
2. In the **Object Explorer** window, click the small plus sign (+) to left of the server name to expand the hierarchy and expose the **Databases**, **Security**, and **Integration Services Catalogs** folders.
3. Right-click **Databases**, and select **Import Data-tier Application**.
4. Click **Next >** on the **Introduction** page.
5. On the **Import Settings** page, click **Browse**, then select *C:\SQLForDA\CarDealer.bacpac* and click **Open**. Click **Next >**.
6. On the **Database Settings** page, enter the following values and click **Next >** (**Note: there's no need to choose anything but the smallest, least expensive sizing**):
 - a) New database name: **CarDealer**.
 - b) Edition of Microsoft Azure SQL Database: **Basic**
 - c) Maximum database size (GB): **2**
 - d) Service Objective: **Basic**
7. On the **Summary** page click **Finish**. A new database named **CarDealer** will be added to your Azure SQL database logical server. It can sometimes take several minutes to complete. When **Operation Complete** appears, click **Close**.

8. In the **Object Explorer** window within SQL Server Management Studio, right-click the **Databases** folder and select **Refresh**. You should see the two databases you installed:
 1. **AdventureworksLT** – you installed this by selecting **Sample** at the **Use Existing Data** prompt during the setup of the first database within the Azure Portal.
 2. **CarDealer** – you installed this database by importing a **.bacpac** file from your local machine using SQL Server Management Studio.
9. Just to make sure everything installed correctly, expand the **CarDealer** database, expand **Tables**, right-click the **dbo.Customers** table and choose **Select Top 1000 Rows**. A query window should open and a **SELECT** query should automatically run against the **CarDealer** database, returning all the records from the **dbo.Customers** table. Close the query window but leave SSMS open.

Exercise 3: Create a diagram of the CarDealer database.

1. Launch SSMS and re-connect to the **CarDealer** database if not connected.
2. In Object Explorer, expand **Databases** to see the list of databases on the instance
3. Right-click the **Database Diagrams** folder under the CarDealer database and choose **New Database Diagram**. Click **Yes** if prompted to install support objects for database diagramming.
4. At the **Add Table** dialog, click the **Cars** table to highlight it. Then hold down the Shift key and click the **SalesPeople** table at the bottom of the list. This will select all tables.
5. Click the **Add** button to add the tables to the diagram, then click **Close** to close the Add Table dialog.
6. If needed, right-click in the empty space on the diagram, select **Zoom**, and zoom out until you can adequately see all tables and relationships.
7. Right-click the arrow leading from the **Sales** table to the **SalesPeople** table and choose **Properties**. This will display the properties of the foreign key relationship between the two tables.
8. In the **FK_Sales_SalesPeople** property page, click the ellipsis button to the right of **Tables and Columns Specification**. This shows you that the **EmployeeID** column in the **SalesPeople** table is a primary key, and that the **SalesPersonID** column in the **Sales** table is a foreign key that depends on it.
9. Repeat the two steps above for each of the arrows on the diagram, noting the primary and foreign key columns that create the relationship.
10. Click the **Save** icon in the upper left portion of the SSMS window. Name the diagram **CarDealer** and click **OK** to save it.
11. If you don't see the CarDealer diagram listed under the Database Diagrams folder, right-click the Database Diagrams folder and select **Refresh**.
12. Click the **X** at the top of the diagram window to close it. You can open the diagram at any time by double clicking it.

Exercise 4: Review the tables and columns in the CarDealer database.

1. Expand **CarDealer** in Object Explorer to see the subfolders containing objects in the CarDealer database.
2. Expand **Tables** to see the list of tables in CarDealer
3. Expand the **dbo.Sales** table, then **Columns**, to see the list of columns in the dbo.Sales table. Note the datatype of each column, and whether the column allows NULL values.
4. Repeat the two steps above for each table in CarDealer.

Exercise 5: Create and execute basic SELECT queries

Note: Solutions to the below can be found at C:\SQLForDA\Module1_LabAnswerKey.sql. You can open this file in SSMS and run each query.

1. Select the CarDealer database in Object Explorer, then click the **New Query** icon to open a new query window.
2. Write a query to return the SaleID, CarID, CustomerID, SalesPersonID, SalesDate, and SalesAmount column values for all rows in the dbo.Sales table. Your result set should contain 2100 rows.
3. Write a query to return the CarID, Make, Model, and Year column values of all rows in the dbo.Cars table. Your result set should have 2407 rows.
4. Write a query to return the CustomerID, PersonID, and DemographicsGroup column values for all rows in the dbo.Customers table. Your result set should have 1570 rows.
5. Write a query to return the EmployeeID, PersonID, and Active column values for all rows in the dbo.SalesPeople table. Your result set should have 97 rows.
6. Write a query to return the PersonID, FirstName, and LastName column values for all rows in the dbo.Person table. Your result set should have 93620 rows.
7. Write a query to return the CustomerID, SalesPerson, Memo, and NoteID column values for all rows in the dbo.CustomerNotes table. Your result set should contain 377 rows.
8. To save your script file (optional), select **File > Save SQLQuery1.sql As**, navigate to the C:\SQLForDA\MySavedScripts folder, and save your script file as Module1.sql.