1. For an online purchasing database, create entity relationship diagrams. Create a database object from your entity diagram.

ER Models in Database Design

> They are widely used to design relational databases. The entities in the ER schema become tables, attributes and converted the database schema. Since they can be used to visualize database tables and their relationships it's commonly used for database troubleshooting as well.

2. Create a SQL store process to register the use of the database, complete it with proper validation and transaction rollback and commit.

Implicit SQL Server transaction:

SQL Server default behavior is Implicit transaction. It provides auto commits functionality, so you do not require to issue a COMMIT TRAN statement. It is a convenient solution, and we can avoid open transaction issues such as session holding resources, but it is not committed.

3. List the SQL aggregate function and demonstrate how to utilize it.

`COUNT` counts how many rows are in a particular column.
`SUM` adds together all the values in a particular column.
`MIN` and `MAX` return the lowest and highest values in a particular column, respectively.
`AVG` calculates the average of a group of selected values.

4. In SQL, create a pivot query.

```
SELECT
  category_name,
  product_id
FROM
```

```
production.products p
INNER JOIN production.categories c
    ON c.category_id = p.category_id
```

5. With an example, describe how to join in SQL.

1. How to locate the 4th highest value in a column in a row. Create your table.

```
SELECT DISTINCT ElectricityBill AS 3rdHighestElectricityBill
FROM Bill
ORDER BY ElectricityBill DESC
LIMIT 1
OFFSET 2;
```