Building Advanced Data Analytics Applications with Cloud

Module 4 - Azure SQL Database, Microsoft Azure Cloud for Data Analytics Managed Services

Lab Practical Manual

Unit 2 – SQL for Data Analytics

Topic: SQL

Basic SQL Commands

1. **Creating and Querying Tables:**

Creating a new table:

```
CREATE TABLE Customers (
    CustomerID INT PRIMARY KEY,
    FirstName VARCHAR(50),
    LastName VARCHAR(50),
    Email VARCHAR(100)
);
```

Query to retrieve all records:

```
SELECT * FROM Customers;
```

2. **Filtering and Sorting:**

Query to retrieve customers with purchases over $100:

```
SELECT * FROM Customers
WHERE CustomerID IN (SELECT CustomerID FROM Orders WHERE TotalAmount > 100);
```

Sorting results in ascending and descending order:

```
-- Ascending order
SELECT * FROM Products
ORDER BY ProductName ASC;
```

```
-- Descending order
SELECT * FROM Products
ORDER BY ProductName DESC;
```

3. **Updating and Deleting Records**:

Updating email address of a customer:

```
UPDATE Customers
SET Email = 'newemail@example.com'
WHERE CustomerID = 123;
```

Deleting orders placed before a certain date:

```
DELETE FROM Orders
WHERE OrderDate < '2023-01-01';
```

4. **Inserting Data**:

Query to insert a new customer:

```
INSERT INTO Customers (CustomerID, FirstName, LastName, Email)
VALUES (123, 'John', 'Doe', 'johndoe@example.com');
```

Inserting multiple records using a single statement:

```
INSERT INTO Products (ProductID, ProductName)

VALUES (101, 'Product A'), (102, 'Product B'), (103, 'Product C');
```

Practices Questions

1. How do you create a new table in a SQL database? Provide an example with column names and data types.
2. Write a SQL query to retrieve all records from a specific table.
3. Write a SQL query to retrieve all customers who have made a purchase of over $100.
4. How can you sort the results of a query in ascending and descending order?
5. Provide an example of a SQL query to update the email address of a customer with a specific ID.
6. Write a SQL query to delete all orders placed before a certain date.
7. Write a SQL query to insert in table.

Joins and aggregate in SQL

1. **Inner and Outer Joins:**

Inner join retrieves matching records from both tables:

```
SELECT Customers.FirstName, Orders.OrderDate
FROM Customers
INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID;
```

Left outer join retrieves all records from the left table and matching records from the right table:

```
SELECT Customers.FirstName, Orders.OrderDate
FROM Customers
LEFT JOIN Orders ON Customers.CustomerID = Orders.CustomerID;
```

2. **Grouping and Aggregating**:

Query to calculate total sales amount for each product category:

```
SELECT ProductCategory, SUM(UnitPrice * Quantity) AS TotalSales
FROM OrderDetails
INNER JOIN Products ON OrderDetails.ProductID = Products.ProductID
GROUP BY ProductCategory;
```

Query to find average age of customers in a city:

```
SELECT City, AVG(Age) AS AverageAge
FROM Customers
GROUP BY City;
```

Practice Questions

1. Write a SQL query to for Inner Join, Right Join, Left join.