SQL Server Lab Assignments

Data manipulation operations (DDL, DML, TCL)

Assignment 1: Create a Database and Table

Task:

1. Create a database named CompanyDB.
2. Create a table named Employees with the following columns:

    - EmployeeID (Primary Key, INT, Identity)
    - FirstName (VARCHAR(50))
    - LastName (VARCHAR(50))
    - Department (VARCHAR(50))
    - Salary (DECIMAL(10, 2))

Assignment 2: Insert Data into a Table

Task:

1. Insert the following records into the Employees table:

    - John Doe, HR, 50000
    - Jane Smith, IT, 60000
    - David Lee, Marketing, 55000

Assignment 3: Select and Query Data

Task:

1. Retrieve all employee records from the Employees table.
2. Retrieve the FirstName, LastName, and Salary of employees in the IT department and salary greater than 5000
3. Find the highest salary from the Employees table.

Assignment 4: Update Data in a Table

Task:

1. Update the salary of John Doe to 55000.
2. Change the department of Jane Smith to Marketing.

Assignment 5: Delete Data from a Table

Task:

1. Delete the record of David Lee from the Employees table.
2. Delete all employees in the Marketing department.

Assignment 6: Product Management

Task:

1. Create a tabled named Products and insert below records in the table.

ProductID	ProductName	Category	Price	Stock
1	Laptop	Electronics	1000	50
2	Mouse	Electronics	20	200
3	Keyboard	Electronics	30	150
4	Printer	Electronics	150	75

2. Select all columns from the Products table
3. Select products, sorted by their price in descending order.
4. Update the price of the "Mouse" to 25.
5. Delete the product with ProductID 2 (Mouse).
6. Select products sorted by ProductName in alphabetical order.

Assignment 7: Library Management

Task:

1. Create a tabled named Books with the below structure and insert below records in the table.

BookID	Title	Author	PublishedYear	AvailableCopies
1	The Great Gatsby	F. Scott Fitzgerald	1925	3
2	1984	George Orwell	1949	2
3	To Kill a Mockingbird	Harper Lee	1960	5
4	Brave New World	Aldous Huxley	1932	4

2. Update the available copies of "1984" to 5.
3. Delete the book with **BookID** 1 (The Great Gatsby).
4. Write a query to Select books published after 1950.

Assignment 8: Customer Management

Task:

1. Create a Customers table containing details about customers with the below details.

CustomerID	CustomerName	Email	PhoneNumber
201	Alice Johnson	alice@example.com	555-1234
202	Bob Smith	bob@example.com	555-5678
203	Charlie Brown	charlie@example.com	555-8765

2. Insert a new customer into the Customers table with the following details:
    a. **CustomerID**: 204
    b. **CustomerName**: David Wilson
    c. **Email**: david@example.com
    d. **PhoneNumber**: 555-4321
3. Update the phone number of "Alice Johnson" to "555-9999".

4. Delete the customer with **CustomerID** 202 (Bob Smith).

Assignment 9: Orders Management

Task:

1. Create an Orders table that contains information about customer orders with the below details:

OrderID	CustomerID	OrderDate	TotalAmount
301	201	2024-09-01	250.00
302	202	2024-09-02	150.00
303	203	2024-09-03	200.00

2. Insert a new order into the Orders table with the following details:
    a. **OrderID**: 304
    b. **CustomerID**: 204
    c. **OrderDate**: 2024-09-04
    d. **TotalAmount**: 300.00
3. Update the TotalAmount for OrderID 301 to 275.00.
4. Delete the order with **OrderID** 302.
5. Select orders with a total amount greater than 200.
6. Select only the OrderID and TotalAmount for all orders.

Types of keys

Assignment 10: Primary Key

Task:

Create a Students table with a StudentID as the primary key and include the following columns: FirstName, LastName, and Email. Insert three records into the table.

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(1, 'John', 'Doe', 'john.doe@example.com'),
(2, 'Jane', 'Smith', 'jane.smith@example.com'),
```

```
(3, 'Mike', 'Johnson', 'mike.johnson@example.com');
```

Assignment 11: Foreign Key

Task:

Create a Courses table with a CourseID as the primary key. Create a Enrollments table with a StudentID as a foreign key referencing the Students table and a CourseID as a foreign key referencing the Courses table. Insert sample data into both tables.

Assignment 12: Composite Key

Task:

Create an OrderDetails table that contains OrderID, ProductID, and Quantity. Define a composite primary key using OrderID and ProductID.

Assignment 13: Candidate Key and Alternate Key

Task:

Create a Users table with UserID as the primary key, and include Email and Username as candidate keys. Set the Email column as a unique key.

Assignment 14: Surrogate Key

Task:

Create a Products table with an AutoID as a surrogate key that automatically increments. Include ProductName and Price columns.

Assignment 15: Natural Key

Task:

Create a Employees table that uses SSN (Social Security Number) as a natural key. Include columns for FirstName, LastName, and Position.

Assignment 16: Unique Key

Task:

Create a Customers table with a CustomerID as the primary key and a PhoneNumber column that must be unique.

Views

Assignment 17: Basic View Creation

Task:

1. Create a simple view named EmployeeView that displays the FirstName, LastName, and Department columns from the Employees table.
2. Query the view to display the details

Assignment 18: Updating Data Through a View

Task:

1. Create a view named EditableEmployeeView that shows EmployeeID, FirstName, LastName, and Salary.
2. Update the salary of an employee using the view.
3. Verify the update

Assignment 19: View with Calculated Columns

Task:

1. Create a view named EmployeeSalaryBonusView that displays each employee's FirstName, LastName, Salary, and a calculated column Bonus (10% of the salary).
2. Query the view

Assignment 20: Altering a View

Task:

1. Alter the EmployeeView from Assignment 1 to include a new column Salary.
2. Verify the view with the updated column.

Assignment 21: View with Parameters (Simulated via Filters)

Task:

1. Create a view named FilteredEmployeeView from employees table that displays EmployeeID,FirstName,LastName & Department.
2. Use a query on the view to return employees in a specific department (e.g., DepartmentID = 2).

Assignment 22: Dropping a View

Task:

1. Drop the EmployeeView that was created in the previous assignments.
2. Try to query the view again.