Employee Management System - SQL Server Exercises

Database Schema

The following schema defines the structure for an Employee Management System:

Departments

Column	Data Type	Description
DepartmentID	INT (PK)	Unique department ID
DepartmentName	VARCHAR(100)	Name of the department

Employees

Column	Data Type	Description
EmployeeID	INT (PK)	Unique employee ID
FirstName	VARCHAR(50)	Employee's first name
LastName	VARCHAR(50)	Employee's last name
DepartmentID	INT (FK)	Linked to Departments
Salary	DECIMAL(10,2)	Monthly salary
JoinDate	DATE	Date of joining

Sample Data

The following sample data can be used for testing purposes:

Departments

```
INSERT INTO Departments (DepartmentID, DepartmentName) VALUES
(1, 'HR'),
(2, 'Finance'),
(3, 'IT'),
(4, 'Marketing');
```

Employees

```
INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary,
JoinDate) VALUES
(1, 'John', 'Doe', 1, 5000.00, '2022-01-15'),
(2, 'Jane', 'Smith', 2, 6000.00, '2021-03-22'),
```

(3, 'Michael', 'Johnson', 3, 7000.00, '2020-07-30'),
(4, 'Emily', 'Davis', 4, 5500.00, '2019-11-05');

Hands-On Exercises

Exercise 1: Create an After Trigger

Goal: Create an AFTER trigger to log changes in the Employees table.

Steps:
1. Create a new table named EmployeeChanges to store change logs.
2. Create an AFTER trigger on the Employees table to insert a record into EmployeeChanges whenever an employee's salary is updated.

Exercise 2: Create an Instead of Trigger

Goal: Create an INSTEAD OF trigger to prevent deletions from the Employees table.

Steps:
1. Create an INSTEAD OF DELETE trigger on the Employees table.
2. The trigger should raise an error message and prevent the deletion of any employee record.

Exercise 3: Create a Logon Trigger

Goal: Create a LOGON trigger to restrict access to the database during maintenance hours.

Steps:
1. Create a LOGON trigger to check the current time.
2. If the current time is within the maintenance window (e.g., 2 AM to 3 AM), the trigger should prevent the login and raise an error message.

Exercise 4: Modify a Trigger using SSMS

Goal: Modify an existing trigger using SQL Server Management Studio (SSMS).

Steps:
1. Open SSMS and connect to the database.
2. Locate the trigger you want to modify in the Object Explorer.
3. Right-click the trigger and select Modify.

4. Make the necessary changes to the trigger's logic.
5. Save and execute the modified trigger.

Exercise 5: Delete a Trigger

Goal: Delete an existing trigger from the Employees table.

Steps:
1. Open SSMS and connect to the database.
2. Locate the trigger you want to delete in the Object Explorer.
3. Right-click the trigger and select Delete.
4. Confirm the deletion.

Exercise 6: Create a Trigger to Update a Computed Column

Goal: Create a trigger to update a computed column in the Employees table.

Steps:
1. Add a new column named AnnualSalary to the Employees table.
2. Create a trigger to update the AnnualSalary column whenever the Salary column is updated.
3. The AnnualSalary column should be computed as Salary * 12.