FAZAIA BILQUIS COLLEGE
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ASSIGNMENT #: 02_DB

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LAB 2: SQL LAB TASK

INTRODUCTION TO SQL SERVER MANAGEMENT

SQL Server Management Studio (SSMS) is a tool for managing Microsoft SQL Server databases, allowing users to create, modify, and execute SQL queries.

INTRODUCTION TO SQL AND SQL QUERIES

SQL (Structured Query Language) is used to manage relational databases. It includes commands like SELECT, INSERT, UPDATE, and DELETE for data manipulation.

SQL TABLE CREATION & MODIFICATION WITH CONSTRAINTS

Instructions:

- Use Microsoft SQL Server to execute queries.
- Apply constraints: PRIMARY KEY, NOT NULL, UNIQUE, CHECK, and DEFAULT.
- Save query execution screenshots for submission.

SCENARIO 1: LIBRARY MANAGEMENT SYSTEM

😊**Problem:** Create a LibraryDB database.

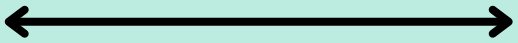
1. Create a Books table with:
2. BookID (unique, PRIMARY KEY)
3. Title, Author (NOT NULL)
4. PublishedYear (CHECK constraint for valid range)
5. ISBN (UNIQUE)
6. Add Genre column.
7. Modify PublishedYear constraint.
8. Remove the ISBN column.

- ## *Task 1: Create a LibraryDB Database*

```
CREATE DATABASE LibraryDB;
```

Explanation:

- This command creates a new LibraryDB database and sets it as the active database for subsequent operations.



- ## *Task 2: Create a Books Table*

```
CREATE TABLE Books (
    BookID INT PRIMARY KEY,
    Title VARCHAR(55) NOT NULL,
    Author VARCHAR(55) NOT NULL,
    PublishedYear INT CHECK (PublishedYear BETWEEN 1500 AND 2000),
    ISBN VARCHAR(20) UNIQUE NOT NULL
);
```

Explanation:

- **BookID:** Primary key to uniquely identify each book.
- **Title:** Cannot be empty (**NOT NULL**).
- **Author:** Cannot be empty (**NOT NULL**).
- **PublishedYear:** Must be between 1800 and the current year (**CHECK constraint**).
- **ISBN:** Must be unique (**UNIQUE**).

- ## *Task 3: Add a New Column Genre*

```
ALTER TABLE Books
ADD Genre VARCHAR(100);
```

Explanation:

- This command adds a new column named **Genre** to the **Books** table with a data type of **VARCHAR(50).**

- ## Task 4: Modify PublishedYear Column

```
ALTER TABLE Books
ADD CONSTRAINT PublishedYear CHECK (PublishedYear BETWEEN 1500 AND 2000
);
```

Explanation:

- This command modifies the **PublishedYear** column to enforce a stricter range constraint (1900 to the current year).

- ## Task 5: Remove the ISBN Column

```
ALTER TABLE Books
DROP COLUMN ISBN;
```

Explanation:

- This command removes the **ISBN** column from the Books table.

SCENARIO 2: HOSPITAL PATIENT RECORDS

- ## Task 1: Create a HospitalDB Database

```
CREATE DATABASE HospitalDB;
```

Explanation:

- This command creates a new database named **HospitalDB** and sets it as the active database for subsequent operations.

- ## *Task 2: Create a Patients Table*

```
CREATE TABLE Patients (
    PatientID INT PRIMARY KEY IDENTITY(1,1),
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Age INT CHECK (Age BETWEEN 0 AND 120),
    PhoneNumber VARCHAR(15) UNIQUE NOT NULL,
    AdmissionDate DATE DEFAULT GETDATE()
);
```

Explanation:

- **PatientID**: Primary key to uniquely identify each patient.
- **FirstName**: Cannot be empty (**NOT NULL**).
- **LastName**: Cannot be empty (**NOT NULL**).
- **Age**: Must be between 0 and 120 (**CHECK constraint**).
- **PhoneNumber**: Must be unique and cannot be empty (**UNIQUE** and **NOT NULL**).
- **AdmissionDate**: Defaults to the current date (**DEFAULT GETDATE()**).

- ## *Task 3: Add a New Column Address*

```
ALTER TABLE Patients
ADD Address VARCHAR(100);
```

Explanation:

- This command adds a new column named **Address** to the **Patients** table with a data type of **VARCHAR(100).**

- ## Task 4: Modify PhoneNumber Column

```
ALTER TABLE Patients
ADD CONSTRAINT PhoneNumber CHECK (LEN(PhoneNumber) = 10 AND PhoneNumber NOT LIKE '%[^0-9]%');
```

```
Command(s) completed successfully.
```

Explanation:

- This command modifies the PhoneNumber column to enforce a **length constraint (10 characters).**

- ## Task 5: Remove the LastName Column

```
ALTER TABLE Patients
DROP COLUMN LastName;
```

Output:

```
Command(s) completed successfully.
```

Explanation:

- This command removes the **LastName** column from the **Patients table**.

Conclusion

By completing this home task, you will gain hands-on experience in:

1. Creating and modifying databases and tables using SQL.
2. Applying constraints like **PRIMARY KEY**, **NOT NULL**, **UNIQUE**, **CHECK**, and **DEFAULT**.
3. Using SQL Server Management Studio to execute queries and manage databases.