



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

Experiment No.3
Create a database using Data Definition Language(DDL) and apply integrity constraints for the specified system
Date of Performance:
Date of Submission:



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Aim:- Write a query to create tables for each relation in the relational schema of experiment no.2. Apply drop and alter commands on those tables.

Objective:- To learn commands of Data Definition Language(DDL) to create and define databases, and also learn to apply integrity constraints for the specified system.

Theory:

DDL Commands & Syntax:-

Data Definition Language (DDL) is a subset of SQL and a part of DBMS(Database Management System). DDL consist of Commands to commands like CREATE, ALTER, TRUNCATE and DROP. These commands are used to create or modify the tables in SQL.

DDL Commands:

1. Create
2. Alter
3. truncate
4. drop
5. Rename

CREATE:

This command is used to create a new table in SQL. The user must give information like table name, column names, and their data types.

Syntax-

```
CREATE TABLE table name(  
column 1 datatype,  
column_2 datatype,  
column_3 datatype,  
....  
);
```



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ALTER:

This command is used to add, delete or change columns in the existing table. The user needs to know the existing table name and can add, delete, or modify tasks easily.

Syntax-

ALTER TABLE table_name

ADD column name datatype;

TRUNCATE :

This command is used to remove all rows from the table, but the structure of the table still exists.

Syntax_

TRUNCATE TABLE table_name;

DROP :

This command is used to remove an existing table along with its structure from the Database.

Syntax-

DROP TABLE table name;

RENAME :

It is possible to change name of table with or without data in it using simple RENAME command. We can rename any table object at any point of time.

Syntax-

RENAME TABLE <Table_Name> To <New_Table_Name>;

Implementation:

Database:



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```
1 USE HospitalMgmt;
2
3 CREATE TABLE Departments (
4     department_id INT PRIMARY KEY,
5     department_name VARCHAR(50)
6 );
7
8 CREATE TABLE Doctors (
9     doctor_id INT PRIMARY KEY,
10    name VARCHAR(50),
11    specialization VARCHAR(50),
12    phone_number VARCHAR(15),
13    department_id INT,
14    FOREIGN KEY (department_id) REFERENCES Departments(department_id)
15 );
16
17 CREATE TABLE Patients (
18     patient_id INT PRIMARY KEY,
19     name VARCHAR(50),
20     age INT,
21     gender VARCHAR(10),
22     address VARCHAR(100),
23     phone_number VARCHAR(15),
24     doctor_id INT,
25     FOREIGN KEY (doctor_id) REFERENCES Doctors(doctor_id)
26 );
27
28 CREATE TABLE Appointments (
29     appointment_id INT PRIMARY KEY,
30     patient_id INT,
31     doctor_id INT,
32     appointment_date DATE,
33     appointment_time TIME,
34     FOREIGN KEY (patient_id) REFERENCES Patients(patient_id),
35     FOREIGN KEY (doctor_id) REFERENCES Doctors(doctor_id)
36 );
37
38 CREATE TABLE Medications (
39     medication_id INT PRIMARY KEY,
40     medication_name VARCHAR(50),
41     dosage VARCHAR(20),
42     patient_id INT,
43     FOREIGN KEY (patient_id) REFERENCES Patients(patient_id)
44 );
45
46 CREATE TABLE Nurses (
47     nurse_id INT PRIMARY KEY,
48     name VARCHAR(50),
49     department_id INT,
50     FOREIGN KEY (department_id) REFERENCES Departments(department_id)
51 );
52
53 CREATE TABLE Rooms (
54     room_number INT PRIMARY KEY,
55     room_type VARCHAR(20),
56     availability BOOLEAN
57 );
58
```



Conclusion:

1. Explain the concept of constraints in DDL. How are constraints used to enforce data integrity?

Constraints in DDL (Data Definition Language) are rules or conditions applied to the columns in a database table to enforce data integrity. They ensure that the data stored in the database meets certain criteria, preventing invalid or inconsistent data from being entered. Constraints can enforce various rules such as uniqueness, referential integrity, and data validity. For example, a primary key constraint ensures that each row in a table has a unique identifier, while a foreign key constraint ensures that values in a column match values in another table's column. By enforcing these constraints, data integrity is maintained, ensuring the accuracy, consistency, and reliability of the database.

2. What is the significance of data types in DDL? Provide examples of commonly used data types in DDL.

Data types in DDL specify the type of data that can be stored in a column of a database table. They define the format and range of values that can be assigned to a column, ensuring proper storage and manipulation of data. Commonly used data types in DDL include:

INTEGER: Used for storing whole numbers.

VARCHAR(n): Variable-length character string with a maximum length of 'n' characters.

DATE: Used for storing dates in the format 'YYYY-MM-DD'.

DECIMAL(p, s): Exact numeric data type with 'p' total digits and 's' digits to the right of the decimal point.

BOOLEAN: Used for storing true/false or 1/0 values.

TIMESTAMP: Used for storing date and time values in the format 'YYYY-MM-DD HH:MM:SS'.

CHAR(n): Fixed-length character string with a length of 'n' characters.

FLOAT: Approximate numeric data type used for storing floating-point numbers.

TEXT: Variable-length character string for storing large blocks of text.

These data types allow database designers to define the structure of the database tables and ensure the appropriate handling of data.