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| Experiment No.3 |
| Create and populate database using Data Definition Language (DDL) and Apply Integrity Constraints for the specified system |
| Date of Performance:31/01/25 |
| Date of Submission:07/02/25 |

**Aim**: Create and populate database using Data Definition Language (DDL) and apply Integrity Constraints for the specified system

**Objective:** DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in the database.

Integrity constraints are used to ensure accuracy and consistency of data in a relational database. Data integrity is handled in a relational database through the concept of referential integrity

**Theory**: DDL Commands

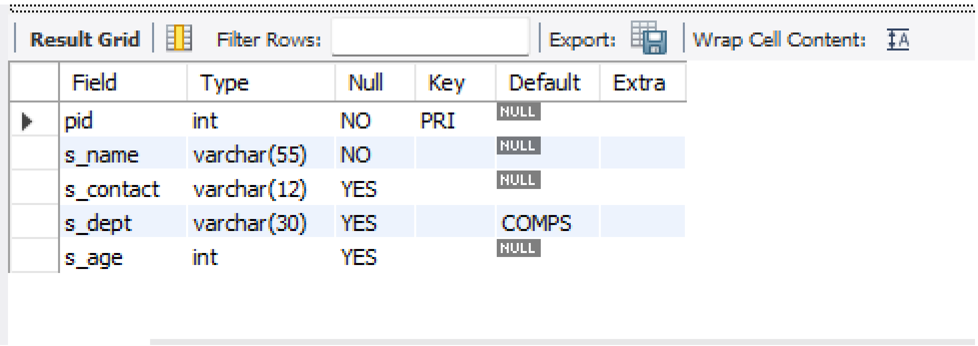
Create a table
Display the table description
Rename the table
Alter the table
Drop the table
Integrity constraints are:

1. PRIMARY KEY CONSTRAINTS
2. FOREIGN KEY CONSTRAINTS
3. NULL CONSTRAINTS
4. NOT NULL CONSTRAINTS
5. CHECK CONSTRAINTS
6. DEFAULT CONSTRAINTS

**Implementation:**

1. **Create Database , Table and Display Table description**

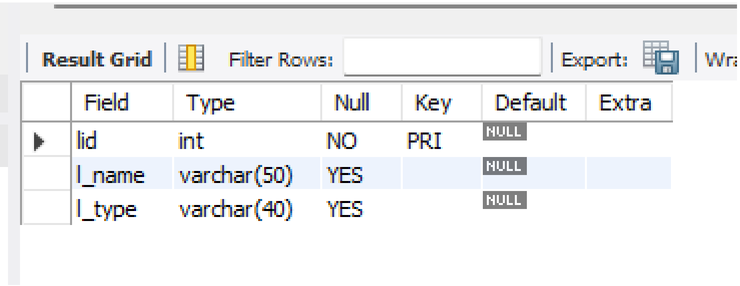
```
create database lib_DB;

-- drop database lib;

use lib_DB;



CREATE TABLE student(

pid int primary key,

   s_name varchar(55) NOT NULL,

   s_contact varchar(12),

   s_dept varchar(30) DEFAULT "COMPS",

   s_age int CHECK (s_age > 18)

);

desc student;
```



| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| pid | int | NO | PRI | NULL | |
| s_name | varchar(55) | NO | | NULL | |
| s_contact | varchar(12) | YES | | NULL | |
| s_dept | varchar(30) | YES | | COMPS | |
| s_age | int | YES | | NULL | |

2. **Create Table Lib_Infra**

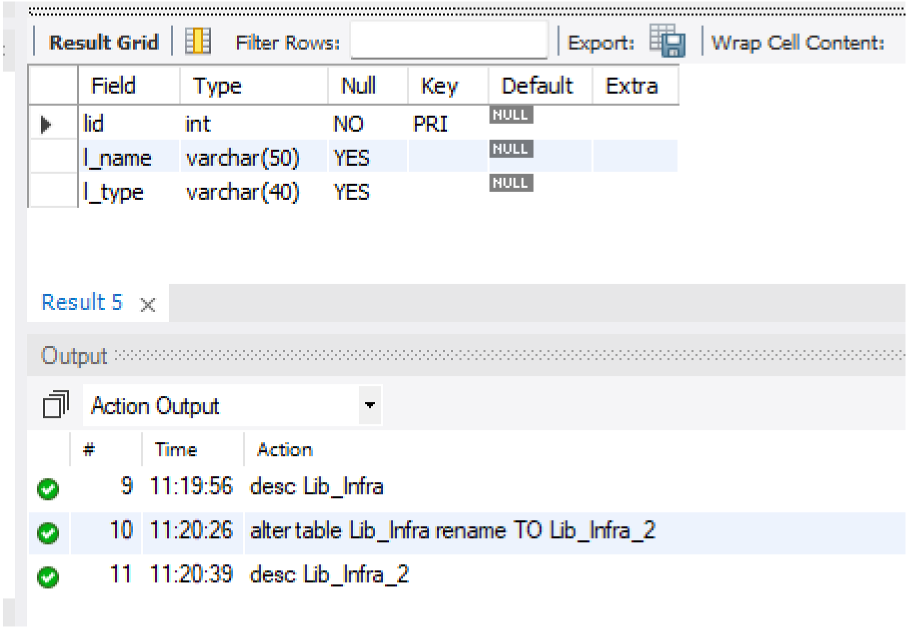
```
CREATE TABLE Lib_Infra(
lid int PRIMARY KEY,

  l_name varchar(50),

  l_type varchar(40)

);

desc Lib_Infra;
```



| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| lid | int | NO | PRI | NULL | |
| l_name | varchar(50) | YES | | NULL | |
| l_type | varchar(40) | YES | | NULL | |

### 3. Rename Table

```
alter table Lib_Infra rename TO Lib_Infra_2;

desc Lib_Infra_2;
```

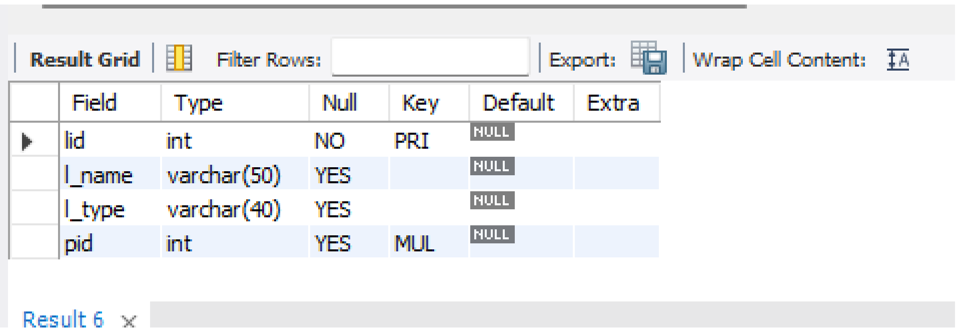


| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| lid | int | NO | PRI | NULL | |
| l_name | varchar(50) | YES | | NULL | |
| l_type | varchar(40) | YES | | NULL | |

| # | Time | Action |
|---|---|---|
| 9 | 11:19:56 | desc Lib_Infra |
| 10 | 11:20:26 | alter table Lib_Infra rename TO Lib_Infra_2 |
| 11 | 11:20:39 | desc Lib_Infra_2 |

### 4. Alter table & Adding Constraint

```
alter table Lib_Infra_2 ADD COLUMN pid int;

ALTER TABLE Lib_Infra_2

ADD CONSTRAINT si_fk

FOREIGN KEY (pid)

REFERENCES student(pid);

Desc Lib_Infra_2;
```



| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| lid | int | NO | PRI | NULL | |
| l_name | varchar(50) | YES | | NULL | |
| l_type | varchar(40) | YES | | NULL | |
| pid | int | YES | MUL | NULL | |

**Conclusion:**In this experiment, I learned to use DDL commands to create, modify, and manage database schemas efficiently. The implementation of integrity constraints such as PRIMARY KEY, FOREIGN KEY, NOT NULL, CHECK, and DEFAULT ensured data accuracy and consistency. Renaming and altering tables helped in modifying schema structures without data loss. Referential integrity was enforced using FOREIGN KEY constraints to maintain relationships between tables.