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:

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,
….
);
```

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 :

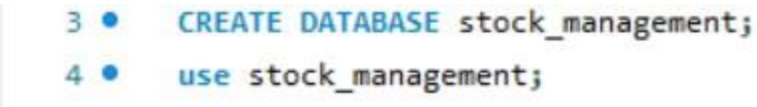
It is possible to change name of table with or without data in it using simple RENAME command. We can rename any table object at any point of time.

Syntax-

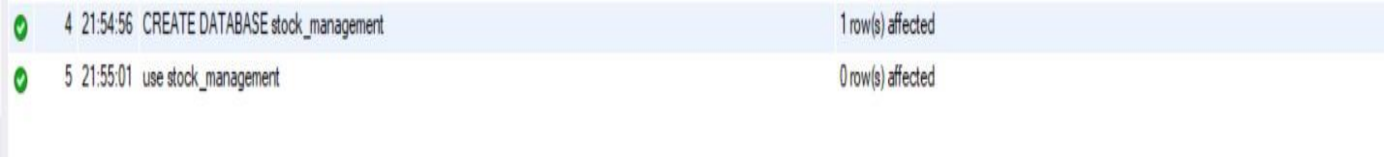
RENAME TABLE <Table_Name> To <New_Table_Name>;

Implementation:

Database:

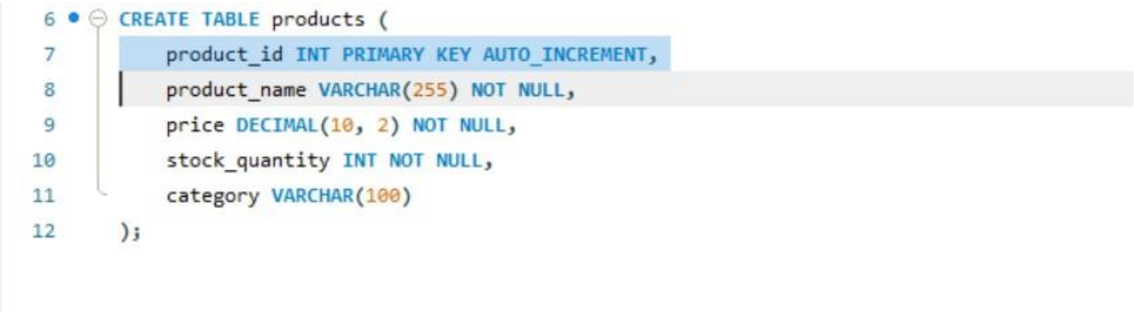


```sql
CREATE DATABASE stock_management;
use stock_management;
```

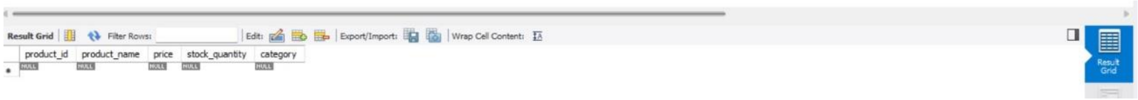


```
4  21:54:56  CREATE DATABASE stock_management    1 row(s) affected
5  21:55:01  use stock_management               0 row(s) affected
```

Table:

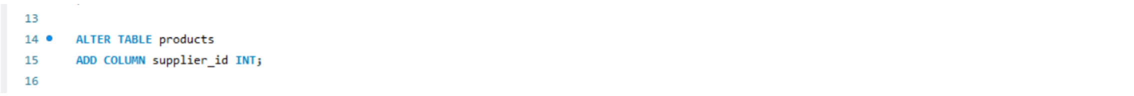


```sql
CREATE TABLE products (
    product_id INT PRIMARY KEY AUTO_INCREMENT,
    product_name VARCHAR(255) NOT NULL,
    price DECIMAL(10, 2) NOT NULL,
    stock_quantity INT NOT NULL,
    category VARCHAR(100)
);
```

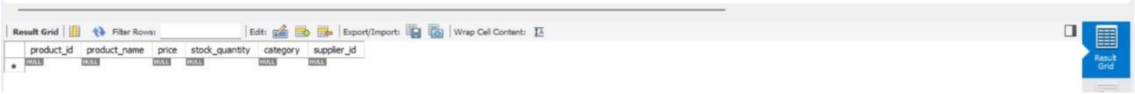


product_id	product_name	price	stock_quantity	category
NULL	NULL	NULL	NULL	NULL

Alter:

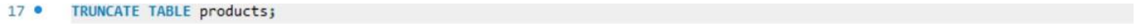


```sql
ALTER TABLE products
ADD COLUMN supplier_id INT;
```

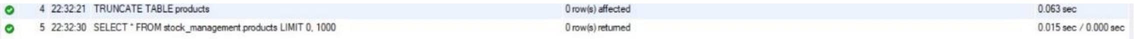


product_id	product_name	price	stock_quantity	category	supplier_id
NULL	NULL	NULL	NULL	NULL	NULL

Truncate:

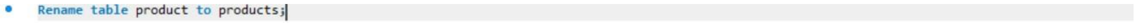


```
TRUNCATE TABLE products;
```

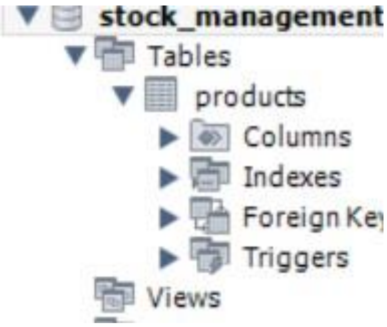


```
4  22:32:21  TRUNCATE TABLE products                                  0 row(s) affected    0.063 sec
5  22:32:30  SELECT * FROM stock_management.products LIMIT 0, 1000   0 row(s) returned    0.015 sec / 0.000 sec
```

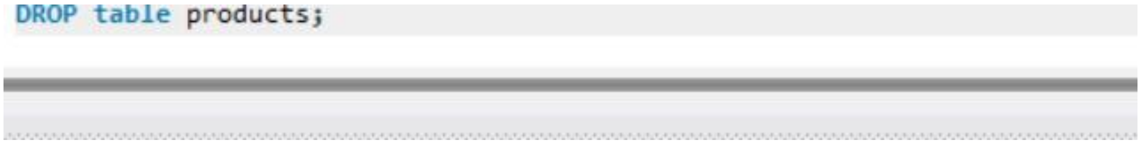
Rename:



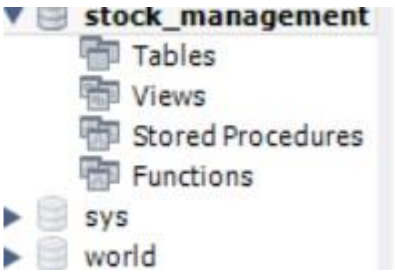
```
Rename table product to products;
```



Drop:



```
DROP table products;
```



Conclusion:

Constraints in Data Definition Language (DDL) are rules applied to the data in a database table to enforce data integrity. They ensure that the data stored in the database meets certain criteria or conditions. Constraints can enforce uniqueness, referential integrity, and data validity. By defining constraints, such as primary key, unique, foreign key, and check constraints, developers can maintain the accuracy, consistency, and reliability of the data stored in the database. Constraints prevent the insertion, deletion, or modification of data that would violate the specified rules, thereby ensuring data integrity.

Data types in Data Definition Language (DDL) define the type of data that can be stored in each column of a database table. They specify the format and range of values that can be assigned to a column, ensuring data integrity and efficient storage.

The significance of data types in DDL lies in:

1. Data Integrity: Data types enforce constraints on the values that can be stored in a column, preventing invalid or inappropriate data from being inserted.

2. Storage Efficiency: Different data types require different amounts of storage space. By choosing appropriate data types, database designers can optimize storage efficiency and performance.

3. Data Validation: Data types help validate the format and range of values entered into a column, ensuring consistency and accuracy of the data.

Commonly used data types in DDL include:

1. INTEGER/INT: Used for whole numbers without decimal points, such as 1, 10, -5.

2. VARCHAR(n): Variable-length character strings with a maximum length of 'n'. For example, VARCHAR(50) can store strings of up to 50 characters.

3. CHAR(n): Fixed-length character strings with a length of 'n'. Unused space is padded with spaces. For example, CHAR(10) can store strings of exactly 10 characters.

4.DECIMAL(p, s): Fixed-point numeric data type, where 'p' specifies the total number of digits and 's' specifies the number of digits after the decimal point. For example, DECIMAL(10, 2) can store numbers with up to 10 digits, 2 of which are after the decimal point.

5. DATE: Used to store date values in YYYY-MM-DD format.

6. BOOLEAN: Represents true or false values.

These are just a few examples of commonly used data types in DDL. The choice of data type depends on the nature of the data being stored and the requirements of the application.