Name: Aditya Kangune

Roll No: 23365

Class: SE-11

Batch: G-11

---------------------------------------------------------------------------------------------------------------  **Assignment 6:**

**AIM:**

Design & Develop DB for “Order Management System” with all

the constraints

**PROBLEM STATEMENT / DEFINITION:**

Design & Develop DB for “Order Management System” with all

the constraints. (There must be At least 3 entities and relationships between  them.) The statement should use SQL objects such as Table, View, Index,  and Sequence.Draw suitable ER/EER diagram for the system.

**OBJECTIVE:**

To understand use of DDL commands such as create and alter commands. **THEORY:**

Introduction to SQL:

The Structured Query Language (SQL) comprises one of the fundamental building  blocks of modern database architecture. SQL defines the methods used to create and  manipulate relational databases on all major platforms. SQL comes in many  flavors. Oracle databases utilize their proprietary PL/SQL. Microsoft SQL Server  makes use of Transact-SQL.

However, all of these variations are based upon the industry standard ANSI SQL. SQL commands can be divided into two main sublanguages.

1. Data Definition Language

2. Data Manipulation Language

1.1 DATA DEFINITION LANGUAGE (DDL)

It contains the commands used to create and destroy databases and database objects. These commands will primarily be used by database administrators during the setup and removal phases of a database project.

DDL Commands:

a) Create table command:

Syntax :

CREATE TABLE table name (column\_name1 data type (size), column\_name2  data\_type(size), ....... )

Example 1

This example demonstrates how you can create a table named “Person", with four columns. The column names will be "LastName", "FirstName", "Address", and "Age": CREATE TABLE Person (LastName varchar, FirstName varchar,

Address varchar, Age

int )

This example demonstrates how you can specify a maximum length for some columns: Example 2

CREATE TABLE Person (LastName varchar(30), FirstName varchar,  Address varchar,

Age int(3))

Creating table from another (existing table) table:

Syntax CREATE TABLE tablename [(columnname,column name)]] AS  SELECT columnname,columnname FROM tablename;

b. Alter table command:

Once table is created within a database, we may wish to modify the definition of  that table.The ALTER command allows making changes to the structure of a  table without deleting and recreating it.

Syntax

ALTER TABLE table\_name ADD (newcolumn\_name1 data\_type(size),  newcolumn\_name2 data\_type(size), .......)

Example

ALTER TABLE personal\_info ADD salary money null

This example adds a new attribute to the personal\_info table -- an employee's  salary. The "money" argument specifies that an employee's salary will be stored  using a dollars and cents format. Finally, the "null” keyword tells the database that  it's OK for this field to contain no value for any given employee.

c. Drop table command:

DROP command allows us to remove entire database objects from our DBMS. For example, if we want to permanently remove the personal\_info table that we created, we'd use the following command:

Syntax

DROP TABLE table\_name;

Example

Prepared by S.A.Jakhete

DROP TABLE personal\_info;

DATA INTEGRITY:

Enforcing data integrity ensures the quality of the data in the database. For example, if an employee is entered with an employee\_id value of “123”, the database should not  allow another employee to have an ID with the same value. Two important steps in  planning tables are to identify valid values for a column and to decide how to enforce  the integrity of the data in the column. Data integrity falls into four categories: • Entity  integrity

• Domain integrity

• Referential integrity

• User-defined integrity

There are several ways of enforcing each type of integrity. Integrity type  Recommended options

Entity PRIMARY KEY constraintUNIQUE constraint

Domain FOREIGN KEY constraint CHECK constraint NOT

NULL

Referential FOREIGN KEY constraint

CHECK constraint

User-defined All column- and table-level constraints in CREATE

TABLE StoredProcedures Triggers

ENTITY INTEGRITY:

Entity integrity defines a row as a unique entity for a particular table. Entity integrity enforces the integrity of the identifier column(s) or the primary key of a table (through indexes, UNIQUE constraints, PRIMARY KEY constraints, or

IDENTITY properties).

DOMAIN INTEGRITY:

Domain integrity is the validity of entries for a given column. You can enforce domain integrity by restricting the type (through data types), the format (through CHECK constraints and rules), or the range of possible values (through FOREIGN KEY constraints, CHECK constraints, DEFAULT definitions, NOT

NULL definitions, and rules).

REFERENTIAL INTEGRITY:

Referential integrity preserves the defined relationships between tables when records are entered or deleted. In Microsoft® SQL ServerTM, referential integrity is based on relationships between foreign keys and primary keys or between foreign keys and unique keys. Referential integrity ensures that key values are consistent across tables.  Such consistency requires that there be no references to nonexistent values and that if a  key value changes, all references to it change consistently throughout the database.

PRIMARY KEY CONSTRAINT:

Definition: - The primary key of a relational table uniquely identifies each record in the table. A primary key constraint ensures no duplicate values are entered in particular columns and that NULL values are not entered in those columns.

a. NOT NULL CONSTRAINT:

This constraint ensures that NULL values are not entered in those columns. b. UNIQUE CONSTRAINT:

This constraint ensures that no duplicate values are entered in those columns. c. CHECK CONSTRAINT:

The CHECK constraint enforces column value restrictions. Such constraints can restrict a column, for example, to a set of values, only positive numbers, or reasonable  dates.not working in mysql.

d. FOREIGN KEY CONSTRAINT:

Foreign keys constrain data based on columns in other tables. They are called foreign keys because the constraints are foreign--that is, outside the table. For example, suppose a table contains customer addresses, and part of each address is a United States two character state code. If a table held all valid state codes, a foreign key constraint could  be created to prevent a user from entering invalid state codes. To create a table with  different types of constraints:

CREATE TABLE table\_name (column\_name1 data\_type

[constraint], column\_name2

data\_type [constraint], ....... )

Example

All Basic commands of MySql .Like :

mysql> create database ManageCust;

Query OK, 1 row affected (0.00 sec) // to user ur own database, other than  default.

mysql> use ManageCust;

Database changed

mysql> QUIT To exit the MySQL Shell, just type QUIT or EXIT: mysql>  exit

mysql> SHOW TABLES;

mysql> DESCRIBE <Table Name>;

INPUT:

Initial database is blank now consider the real-time scenario to create database management system.

n E-R Diagram by considering notation of E-R.

-R to table by applying rules of conversion.

For implementation of DDL, DML, DQL statement using MySql, we  have considered a real time example of “Managing customer orders” system.  Following is the Scenario:

1. A customer has a unique customer number and contact information, 2. A customer can place many orders, but a given purchase order is placed by onecustomer

3. A purchase order has a many-to-many relationship with a stock item.

A)Create Table Customer (CustnoInt Not Null ,Custname Varchar2(200) Not Null, Street Varchar2(200) Not Null, City Varchar2(200) Not Null,State Char(4) Not Null Default ‘Pune’, Zip Varchar2(20),Primary Key (Custno));

B) Create Table Purchaseorder(PonoInt , CustnoInt , Orderdate Date, Shipdate  Date,

Tostreet Varchar2(200), Tocity Varchar2(200), Tostate Char(2), Tozip Varchar2(20), Primary Key(Pono) , Foreign Key Fk\_Cust(Custno) References Customer (Custno) ) ;

C) Create Table Contains (PonoInt, StocknoInt, Quantity Int, Discount Int, Foreign  Key

Fk\_Pur(Pono)References Purchaseorder (Pono), Foreign

Key Fk\_Stock(Stockno)

References Stock (Stockno),Primary Key (Pono, Stockno) ) ;

D) Create Table Cust\_Phones(Custno Number, Phones Varchar2 (20), Foreign Key Fk\_Cust(Custno) References Customer (Custno) , Primary Key (Custno, Phones) ) ;

E) Create Table Stock (StocknoInt, Price Int, TaxrateInt, Primary Key(Stockno) ); --------------------------------------------------------------

**Implementation:**

Aditya@Aditya-VirtualBox:~$ sudo mysql -u root -p

[sudo] password for Aditya:

Enter password:

Welcome to the MySQL monitor. Commands end with ; or \g. Your MySQL connection id is 8

Server version: 8.0.23-0ubuntu0.20.04.1 (Ubuntu) Copyright (c) 2000, 2021, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or  its

affiliates. Other names may be trademarks of their respective owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current  input statement.

mysql> show databases;

+--------------------+

| Database |

+--------------------+

| E\_Commerce |

| appliance\_shop |

| information\_schema |

| mysql |

| performance\_schema |

| sys |

+--------------------+

6 rows in set (0.00 sec)

mysql> use E\_Commerce;

Reading table information for completion of table and column  names

You can turn off this feature to get a quicker startup with - A

Database changed

mysql> show tables;

+----------------------+

| Tables\_in\_E\_Commerce |

+----------------------+

| Customer |

| Payment |

| Shopping\_Cart |

+----------------------+

3 rows in set (0.00 sec)

mysql> desc Customer;

+-------------+-------------+------+-----+---------+-------+ | Field | Type | Null | Key | Default | Extra | +-------------+-------------+------+-----+---------+-------+ | username | varchar(20) | NO | PRI | NULL | | | name | varchar(20) | NO | | NULL | | | address | varchar(20) | NO | | NULL | | | contact | varchar(20) | NO | | NULL | | | age | int | NO | | NULL | | | gender | varchar(20) | NO | | NULL | | | buy\_history | date | YES | | NULL | | | cart\_id | varchar(20) | NO | UNI | NULL | | +-------------+-------------+------+-----+---------+-------+

8 rows in set (0.01 sec)

mysql> desc Payment;

+--------------+-------------+------+-----+---------+-------+ | Field | Type | Null | Key | Default | Extra | +--------------+-------------+------+-----+---------+-------+ | card\_no | varchar(20) | NO | | NULL | | | upi\_id | varchar(20) | NO | | NULL | | | payment\_mode | varchar(20) | NO | | NULL | | | cart\_id | varchar(20) | NO | MUL | NULL | | +--------------+-------------+------+-----+---------+-------+ 4 rows in set (0.00 sec)

mysql> desc Shopping\_Cart;

+----------------+-------------+------+-----+---------+------ -+

| Field | Type | Null | Key | Default | Extra  |

+----------------+-------------+------+-----+---------+------ -+

| cart\_id | varchar(20) | NO | PRI | NULL |  |

| total\_products | int | NO | | NULL |  |

| total\_amount | int | NO | | NULL |  |

| product\_id | varchar(20) | YES | | NULL |  |

+----------------+-------------+------+-----+---------+------ -+

4 rows in set (0.00 sec)

mysql> alter table Shopping\_Cart add discount int; Query OK, 0 rows affected (0.07 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Shopping\_Cart;

+----------------+-------------+------+-----+---------+------ -+

| Field | Type | Null | Key | Default | Extra  |

+----------------+-------------+------+-----+---------+------ -+

| cart\_id | varchar(20) | NO | PRI | NULL |  |

| total\_products | int | NO | | NULL |  |

| total\_amount | int | NO | | NULL |  |

| product\_id | varchar(20) | YES | | NULL |  |

| discount | int | YES | | NULL |  |

+----------------+-------------+------+-----+---------+------ -+

5 rows in set (0.00 sec)

mysql> alter table Payment modify payment\_mode varchar(15); Query OK, 4 rows affected (0.27 sec)

Records: 4 Duplicates: 0 Warnings: 0

mysql> desc Payment;

+--------------+-------------+------+-----+---------+-------+ | Field | Type | Null | Key | Default | Extra | +--------------+-------------+------+-----+---------+-------+ | card\_no | varchar(20) | NO | | NULL | | | upi\_id | varchar(20) | NO | | NULL | | | payment\_mode | varchar(15) | YES | | NULL | |

| cart\_id | varchar(20) | NO | MUL | NULL | | +--------------+-------------+------+-----+---------+-------+ 4 rows in set (0.00 sec)

mysql> alter table Shopping\_Cart drop column discount; Query OK, 0 rows affected (0.16 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Shopping\_Cart;

+----------------+-------------+------+-----+---------+------ -+

| Field | Type | Null | Key | Default | Extra  |

+----------------+-------------+------+-----+---------+------ -+

| cart\_id | varchar(20) | NO | PRI | NULL |  |

| total\_products | int | NO | | NULL |  |

| total\_amount | int | NO | | NULL |  |

| product\_id | varchar(20) | YES | | NULL |  |

+----------------+-------------+------+-----+---------+------ -+

4 rows in set (0.00 sec)

mysql> create table temp1 (value1 int, value2 int); Query OK, 0 rows affected (0.07 sec)

mysql> desc temp1;

+--------+------+------+-----+---------+-------+ | Field | Type | Null | Key | Default | Extra | +--------+------+------+-----+---------+-------+

| value1 | int | YES | | NULL | | | value2 | int | YES | | NULL | | +--------+------+------+-----+---------+-------+ 2 rows in set (0.00 sec)

mysql> drop table temp1;

Query OK, 0 rows affected (0.03 sec)

mysql> show tables;

+----------------------+

| Tables\_in\_E\_Commerce |

+----------------------+

| Customer |

| Payment |

| Shopping\_Cart |

+----------------------+

3 rows in set (0.00 sec)

mysql> create table Temp1(Value1 int, Value2 int); Query OK, 0 rows affected (0.06 sec)

mysql> insert into Temp1(Value1, Value2) VALUES(10,20);  Query OK, 1 row affected (0.01 sec)

mysql> insert into Temp1(Value1, Value2) VALUES(30,40);  Query OK, 1 row affected (0.01 sec)

mysql> insert into Temp1(Value1, Value2) VALUES(50,60); Query OK, 1 row affected (0.02 sec)

mysql> select \* FROM Temp1;

+--------+--------+

| Value1 | Value2 |

+--------+--------+

| 10 | 20 |

| 30 | 40 |

| 50 | 60 |

+--------+--------+

3 rows in set (0.00 sec)

mysql> truncate table Temp1;

Query OK, 0 rows affected (0.08 sec)

mysql> select \* FROM Temp1;

Empty set (0.00 sec)

mysql> alter table Temp1 rename to RenamedTemp1;  Query OK, 0 rows affected (0.04 sec)

mysql> desc Temp1;

ERROR 1146 (42S02): Table 'E\_Commerce.Temp1' doesn't exist mysql> desc RenamedTemp1;

+--------+------+------+-----+---------+-------+ | Field | Type | Null | Key | Default | Extra | +--------+------+------+-----+---------+-------+ | Value1 | int | YES | | NULL | | | Value2 | int | YES | | NULL | |

+--------+------+------+-----+---------+-------+ 2 rows in set (0.00 sec)

mysql> exit

-------------------------------------------------------------

**Conclusion:**

Understand to design and develop relational database system by using MySql.