

SE Computer (B)	Roll number :		
Experiment no. : 3	Date of Implementation :		
Aim : To implement data manipulation language (DML) commands			
Tool Used : PostgreSQL/MYSQL			
Related Course outcome: Students should be able to Write queries in SQL to retrieve any type of information from a data base.			
<b>Rubrics for assessment of Experiment:</b>			
Indicator	Poor	Average	Good
Timeliness Maintains Experiment deadline (3)	Experiment not done (0)	One or More than One week late (1-2)	Maintains deadline (3)
Completeness and neatness Complete all parts of Experiment(3)	N/A	< 80% complete (1-2)	100% complete (3)
Originality Extent of plagiarism(2)	Copied it from someone else(0)	At least try to implement but could not succeed (1)	Implemented (2)
Knowledge In depth knowledge of the Experiment(2)	Unable to answer any questions(0)	Unable to answer few questions (1)	Able to answer all questions (2)
<b>Assessment Marks :</b>			
Timeliness			
Completeness and neatness			
Originality			
Knowledge			
Total			
<b>Total :</b>	<b>(Out of 10)</b>		

**Teacher's Sign :**

<b>EXPERIMENT 3</b>	DDL and DML Commands
Aim	To implement DDL and DML – Data Definition (DDL) and Data manipulation language command (DML)
Tools	PostgreSQL/MYSQL
Theory	<p>Data Definition Language-1) Create 2) Alter 3) Drop 4) Rename 5) Truncate</p> <ul style="list-style-type: none"> <li>• <b>CREATE</b> – is used to create the database or its objects (like table, index, function, views, store procedure and triggers).</li> <li>• <b>DROP</b> – is used to delete objects from the database.</li> <li>• <b>ALTER</b>–is used to alter the structure of the database.</li> <li>• <b>TRUNCATE</b>–is used to remove all records from a table, including all spaces allocated for the records are removed.</li> <li>• <b>COMMENT</b> –is used to add comments to the data dictionary.</li> <li>• <b>RENAME</b> –is used to rename an object existing in the database.</li> </ul>

**1) CREATE table**

```
create table "tablename"
("column1" "data type",
 "column2" "data type",
 "column3" "data type",
 ...
 "columnN" "data type");
```

**2) DROP object object\_name**

Examples:

`DROP TABLE table_name;`

`table_name`: Name of the table to be deleted.

`DROP DATABASE database_name;`

`database_name`: Name of the database to be deleted.

**3) TRUNCATE**

TRUNCATE statement is a Data Definition Language (DDL) operation that is used to mark the extents of a table for deallocation (empty for reuse). The result of this operation quickly removes all data from a table, typically bypassing a number of integrity enforcing mechanisms. It was officially introduced in the standard.

The TRUNCATE TABLE mytable statement is logically (though not physically) equivalent to the DELETE FROM mytable statement (without a WHERE clause).

Syntax:

TRUNCATE TABLE table\_name;

table\_name: Name of the table to be truncated.

DATABASE name - student\_data

- **cannot** be rolled back, so it must be used wisely.

### **DROP vs TRUNCATE**

- Truncate is normally ultra-fast and its ideal for deleting data from a temporary table.
- Truncate preserves the structure of the table for future use, unlike drop table where the table is deleted with its full structure.

Table or Database deletion using DROP statement

- To delete the whole database

DROP DATABASE student\_data;

After running the above query whole database will be deleted.

- To truncate Student\_details table from student\_data database.

TRUNCATE TABLE Student\_details;

After running the above query Student\_details table will be truncated, i.e, the data will be deleted but the structure will remain in the memory for further operations.

### **4) ALTER**

alter command is used for altering the table structure, such as,

- to add a column to existing table
- to rename any existing column
- to change data type of any column or to modify its size.
- to drop a column from the table.

ALTER TABLE table\_name

ADD (column\_name datatype);

Procedure	<p><b>B) Data Manipulation Language</b></p> <p>A Data Manipulation Language enables programmers and users of the database to retrieve insert, delete and update data in a database. e.g. INSERT, UPDATE, DELETE, SELECT.</p> <p><b><u>INSERT:</u></b></p> <p>INSERT statement adds one or more records to any single table in a relational database.</p> <p>INSERT INTO tablename VALUES (expr1,expr2.....);</p> <p><b><u>UPDATE:</u></b></p> <p>UPDATE statement that changes the data of one or more records in a table. Either all the rows can be updated, or a subset may be chosen using a condition.</p> <p>UPDATE table_name SET column_name = value [, column_name = value ...] [WHERE condition]</p> <p><b><u>DELETE:</u></b></p> <p>DELETE statement removes one or more records from a table. A subset may be defined for deletion using a condition, otherwise all records are removed.</p> <p>DELETE FROM tablename WHERE condition</p> <p><b><u>SELECT:</u></b></p> <p>The SELECT statement is used to select data from a database. The data returned is stored in a result table, called the result-set. SELECT statement in its simplest form is given as,</p> <p>SELECT Column_name1, Column_name2,.... From table_name Where condition;</p> <p>SELECT * from Table_name; Would select all the columns from a specified table.</p>
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Task1: 1. Create following tables:

Table name : client\_master

Column Name	Data type	Size	Constraint
client_no	varchar	6	PRIMARY KEY
Name	varchar	20	NOT NULL
Address	varchar	30	
City	varchar	15	
Pincode	numeric	8	
State	varchar	15	
Bal_due	numeric	10,2	

Table name: Product\_master

Column Name	Data type	Size	Constraint
product_no	Varchar	6	PRIMARY KEY
description	Varchar	15	NOT NULL
Profit_percent	Numeric	4,2	
Unit_measure	Varchar	10	
Qty_on_hand	Numeric	8	
Reorder_level	Numeric	8	
Sell_price	Numeric	8,2	
Cost_price	Numeric	8,2	

2. Insert 5-6 records in each table.
3. Find out the names of all clients
4. Retrieve the entire contents of the client\_master table.
5. Retrieve the list of names and cities of all the clients
6. List the various products available from the product\_master table
7. List all the clients who are located in mumbai.
8. Change the city of client\_no C001 to mumbai
9. Change the bal\_due of client\_no C005 to Rs. 1000
10. Change the cost price of 'hard disk' to Rs. 3000

	<p>11. Delete all the products from product_master where the qty_on_hand is less than 100</p> <p>12. Delete from client_master where the column state holds the value 'Tamil Nadu'</p>
<b>Post Lab Questions:</b>	<ol style="list-style-type: none"><li>1. Explain difference between Alter and update command in SQL with a suitable example.</li><li>2. Explain different types of keys with suitable examples.</li><li>3. Perform delete and truncate in lab and Differentiate delete and truncate</li></ol>

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# DBMS Practical Implementation, Lab 3

## Table Creation

For Table client\_master

```
CREATE TABLE `client_master` (
    `client_no` varchar(6) NOT NULL,
    `name` varchar(20) NOT NULL,
    `address` varchar(30),
    `city` varchar(15),
    `pincode` decimal(8,0),
    `state` varchar(15),
    `Bal_due` decimal(10,2)
);
```

For Table product\_master

```
CREATE TABLE `product_master` (
    `product_no` varchar(6) NOT NULL,
    `description` varchar(15) NOT NULL,
    `profit_percent` decimal(4,2),
    `unit_measure` varchar(10),
    `qty_on_hand` decimal(8,0),
    `reorder_level` decimal(8,0),
    `cost_price` decimal(8,2),
    `new_price` decimal(8,2)
);
```

## Inserting values

### For client\_master

```
INSERT INTO `client_master` VALUES ('2005', 'Rajat Promod', 'CMO, Jaipur', 'Jaipur', '899358', 'Rajasthan', '158261');
```

Screenshot:

The screenshot shows the phpMyAdmin interface for the dbmspracs database. The left sidebar lists tables such as client\_master, product\_master, and information\_schema. The main area displays the client\_master table with the following data:

client_no	name	address	city	pincode	state	Bal_due
2005	Rajat Promod	CMO, Jaipur	Jaipur	899358	Rajasthan	158261.00
3000	jayesh shah	CMO, Tripura	Tripura	950021	Mizoram	0.00
5051	ramadin shah	CMO, banglore	banglore	300021	Karnataka	75000.00
8086	mohan prasad	PMO, New Delhi	New Delhi	600021	New Delhi	5000.00
9005	Jaspal Singh	CMO, Chandigarh	Chandigarh	515959	Punjab	38000.00
C001	mohan sharma	CMO Pune	Mumbai	405001	Maharashtra	7500.00
C005	kapi mishra	PMO, New Delhi	New Delhi	600021	New Delhi	1000.00
C009	kapil sharma	CMO, Chennai	Chennai	600021	Tamil Nadu	300.00
C010	mohan rajat	CMO, Mumbai	Mumbai	400001	Maharashtra	5000.00

### For product\_master

```
INSERT INTO `product_master` VALUES ('1001', 'table fan', '10.20', '25', '30', '120', '1200', '1500');
```

Screenshot:

The screenshot shows the phpMyAdmin interface for the dbmspracs database. The left sidebar lists tables such as client\_master, product\_master, and information\_schema. The main area displays the product\_master table with the following data:

product_no	description	profit_percent	unit_measure	qty_on_hand	reorder_level	cost_price	selling_price
1001	table fan	10.20	25	30	120	1200.00	1500.00
1002	ceiling fan	15.70	1	50	250	2500.00	3500.00
1003	portable AC	17.50	1	10	50	25000.00	35000.00
1004	window AC	19.00	1	15	40	5000.00	8000.00
1005	split AC	25.00	2	50	300	25000.00	37500.00
1006	hard disk	10.20	25	30	120	3000.00	5000.00
1007	Face Mask	5.00	2	500	1000	8.00	12.00

### 3. Find out the names of all clients

Query:- SELECT name FROM 'client\_master';

Screenshots:

The screenshot shows the phpMyAdmin interface for the 'client\_master' table. In the SQL tab, the query 'SELECT name FROM "client\_master";' is run, and the results are displayed in the Results tab. The results show 8 rows of client names.

name
Rajat Pramod
jayesh shah
ramadin shah
mohan prasad
Jaspal Singh
mohan sharma
kapil mishra
kapil sharma

The screenshot shows the phpMyAdmin interface for the 'client\_master' table. The results page displays the list of clients with their names and provides edit and delete options for each row. The names listed are the same as in the previous screenshot.

name
Rajat Pramod
jayesh shah
ramadin shah
mohan prasad
Jaspal Singh
mohan sharma
kapil mishra
kapil sharma

#### 4. Retrieve the entire contents of the client\_master table.

Query:- `SELECT * FROM 'client_master';`

Screenshots:

The screenshot shows the phpMyAdmin interface with the database 'dbmspracs' selected. In the left sidebar, the 'client\_master' table is visible under the 'dbmspracs' schema. The main area displays the results of the SQL query `SELECT * FROM 'client_master';`. The results table has columns: client\_no, name, address, city, pincode, state, and Bal\_due. There are 8 rows returned. At the bottom of the results table, there are options for 'Check all', 'With selected', and various operations like Edit, Copy, Delete, and Export.

This screenshot shows the same phpMyAdmin session after the query has been run. The results table now displays the actual data from the 'client\_master' table. The columns are: client\_no, name, address, city, pincode, state, and Bal\_due. The data includes entries such as Rajat Pramod CMO Jaipur, Jayesh Shah CMO Tripura, and others. The bottom of the page shows standard browser navigation and search controls.

## 5. Retrieve the list of names and cities of all the clients

Query:- SELECT name, city FROM 'client\_master';

Screenshots:

The screenshot shows the phpMyAdmin interface for the 'client\_master' table. In the SQL tab, the query 'SELECT name,city FROM "client\_master";' is entered. The results pane shows the following data:

name	city
Rajat Pramod	Jaipur
jayesh shah	Tripura
ramadin shah	banglore
mohan prasad	New Delhi
Jaspal Singh	Chandigarh
mohan sharma	Pune
kapi mishra	New Delhi
kapi sharma	Chennai

The screenshot shows the phpMyAdmin interface for the 'client\_master' table. The data grid displays the same 8 rows as the previous screenshot. At the bottom of the grid, there are operations buttons for 'Check all', 'With selected', 'Edit', 'Copy', and 'Delete'. Below the grid, the 'Query results operations' section includes links for Print, Copy to clipboard, Export, Display chart, and Create view.

## 6. List the various products available from the product\_master table

Query:- SELECT \* FROM 'product\_master';

Screenshots:

The screenshot shows the phpMyAdmin interface for a database named 'dbmspracs'. The left sidebar lists databases like 'New', 'dbmspracs', 'information\_schema', 'mysql', etc. The main area displays the 'product\_master' table with the following data:

product_no	description	profit_percent	unit_measure	qty_on_hand	reorder_level	cost_price	selling_price
1001	table fan	10.20	25	30	120	1200.00	1500.00
1002	ceiling fan	15.70	1	50	250	2500.00	3500.00
1003	portable AC	17.50	1	10	50	25000.00	35000.00
1004	window AC	19.00	1	15	40	5000.00	8000.00
1005	split AC	25.00	2	50	300	25000.00	37500.00
1006	hard disk	10.20	25	30	120	3000.00	5000.00
1007	Face Mask	5.00	2	500	1000	8.00	12.00

Below the table, there are buttons for 'Check all', 'With selected:', 'Edit', 'Copy', 'Delete', and 'Export'. The bottom of the screen shows a taskbar with icons for File, Home, Mail, etc., and a status bar indicating 'Bookmark this SQL query'.

## 7. List all the clients who are located in mumbai.

Query:- `SELECT * FROM 'client_master' WHERE city="Mumbai";`

Screenshots:

The screenshot shows the phpMyAdmin interface with the following details:

- Left Panel:** Shows the database structure with the 'client\_master' table selected under the 'dbmspracs' database.
- SQL Tab:** Contains the SQL query: `SELECT * FROM client_master WHERE city="Mumbai";`
- Results Tab:** Displays the results of the query. A green bar at the top indicates "Showing rows 0 - 0 (1 total, Query took 0.0012 seconds.)". The result set shows one row:

client_no	name	address	city	pincode	state	Bal_due
C010	mohan rajat	CMO, Mumbai	Mumbai	400001	Maharashtra	5000.00
- Bottom Bar:** Includes standard browser navigation icons and a status bar showing "1048 ENG 23-02-2021".

The screenshot shows the phpMyAdmin interface with the following details:

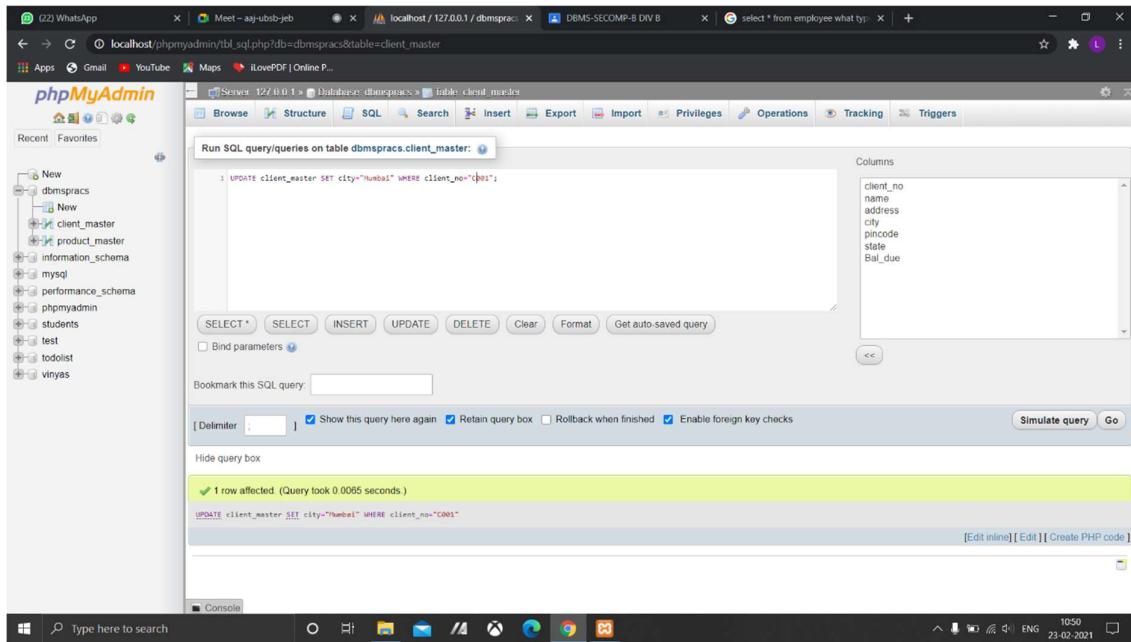
- Left Panel:** Shows the database structure with the 'client\_master' table selected under the 'dbmspracs' database.
- SQL Tab:** Contains the SQL query: `SELECT * FROM client_master WHERE city="Mumbai";`
- Results Tab:** Displays the results of the query. A green bar at the top indicates "Showing rows 0 - 0 (1 total, Query took 0.0013 seconds.)". The result set shows one row:

client_no	name	address	city	pincode	state	Bal_due
C010	mohan rajat	CMO, Mumbai	Mumbai	400001	Maharashtra	5000.00
- Operations Tab:** Shows options to Edit, Copy, Delete, and Export the selected row.
- Bottom Bar:** Includes standard browser navigation icons and a status bar showing "1048 ENG 23-02-2021".

## 8. Change the city of client\_no C001 to mumbai

```
UPDATE client_master SET city="Mumbai" WHERE client_no="C001";
```

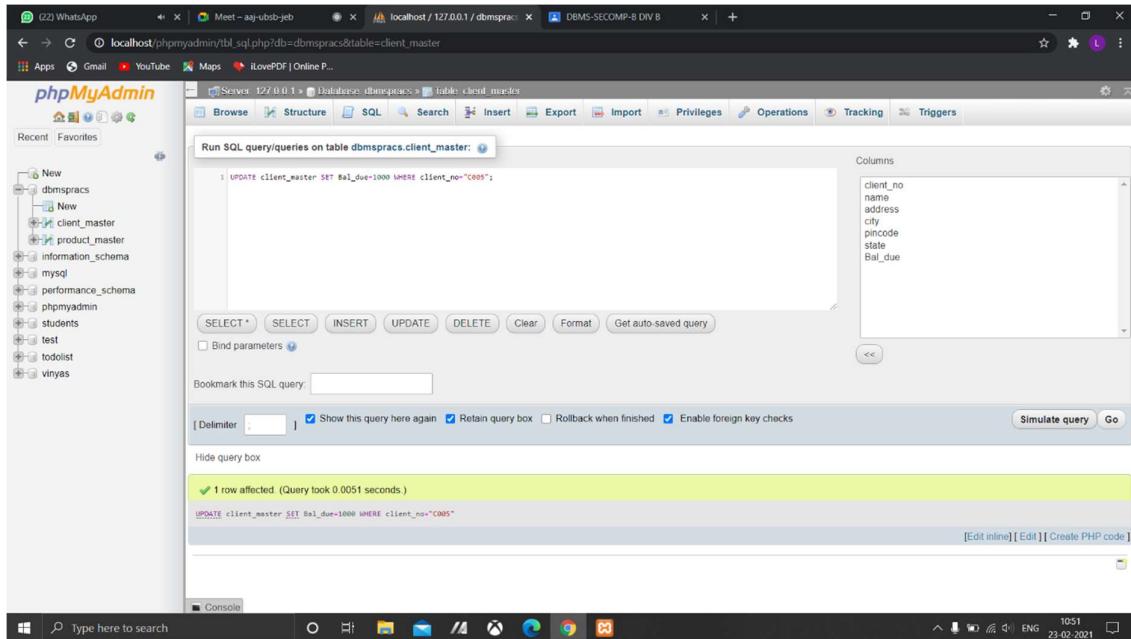
Screenshot:



## 9. Change the bal\_due of client\_no C005 to Rs. 1000

Query:- UPDATE client\_master SET Bal\_due=1000 WHERE client\_no="C005";

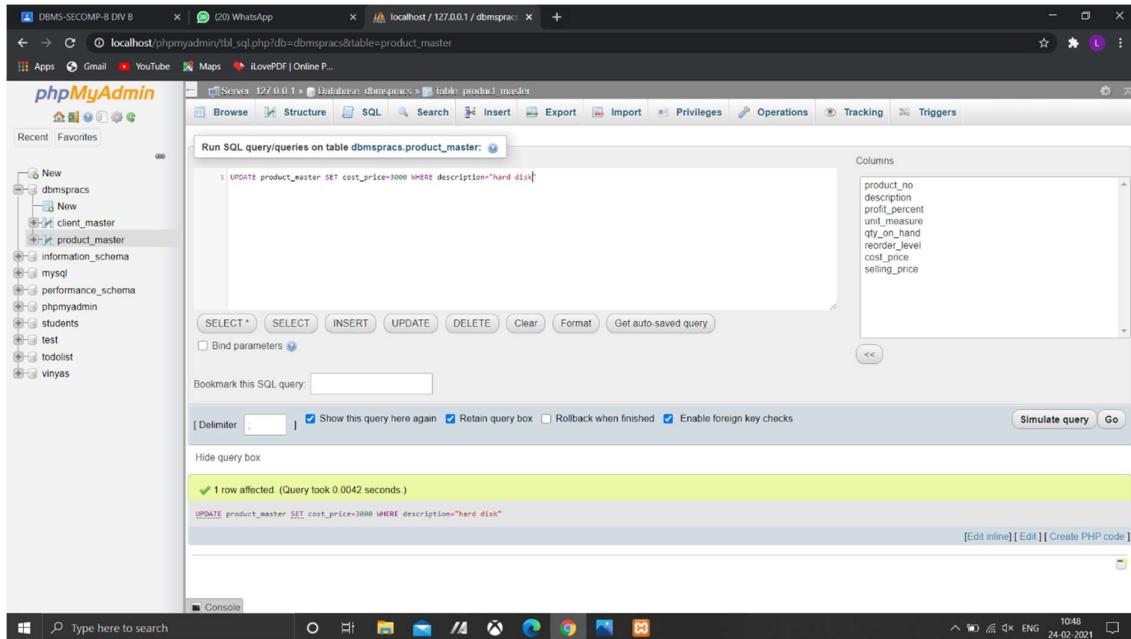
Screenshot:



## 10. Change the cost price of 'hard disk' to Rs. 3000

Query:- UPDATE product\_master SET cost\_price=3000 WHERE description="hard\_disk";

Screenshot:



## 11. Delete all the products from product\_master where the qty\_on\_hand is less than 100

Query:-DELETE FROM 'product\_master' WHERE qty\_on\_hand<100;

Screenshot:

Before:

The screenshot shows the phpMyAdmin interface for a database named 'dbmspracs'. The left sidebar lists various databases and tables, with 'product\_master' selected. The main area contains a SQL query editor with the following code:

```
1 UPDATE product_master SET cost_price=3000 WHERE description="hard disk";
```

Below the query, the results show:

✓ 1 row affected (Query took 0.0042 seconds.)  
UPDATE product\_master SET cost\_price=3000 WHERE description="hard disk";

At the bottom right, there are buttons for [Edit inline], [Edit], and [Create PHP code].

After:

The screenshot shows the phpMyAdmin interface after the query has been executed. The left sidebar is identical to the previous screenshot. The main area now displays the results of a SELECT query on the 'product\_master' table:

Showing rows 0 - 0 (total, Query took 0.0008 seconds.)  
SELECT \* FROM "product\_master"

The results table shows one row of data:

	product_no	description	profit_percent	unit_measure	qty_on_hand	reorder_level	cost_price	selling_price
<input type="checkbox"/>	1007	Face Mask	5.00	2	500	1000	8.00	12.00

Below the table, there are buttons for Edit, Copy, Delete, and Export. The status bar at the bottom right indicates the date and time: 24-02-2021 10:48.

## 12. Delete from client\_master where the column state holds the value 'Tamil Nadu'

Query:- DELETE FROM 'client\_master' WHERE state="Tamil Nadu"

Screenshots:

The screenshot shows two instances of the phpMyAdmin interface. The top instance is used to execute a SQL query:

```
DELETE FROM 'client_master' WHERE state="Tamil Nadu";
```

The bottom instance shows the result of the query execution and the current state of the 'client\_master' table.

**Table Structure:**

client_no	name	address	city	pincode	state	Bal_due
2005	Rajat Pramod	CMO, Jaipur	Jaipur	899358	Rajasthan	158261.00
3000	jayesh shah	CMO, Tripura	Tripura	950021	Mizoram	0.00
5051	ramdin shah	CMO, banglore	banglore	300021	Karnataka	75000.00
8086	mohan prasad	PMO, New Delhi	New Delhi	600021	New Delhi	5000.00
9005	Jaspal Singh	CMO, Chandigarh	Chandigarh	515959	Punjab	38000.00
C001	mohan sharma	CMO, Pune	Mumbai	405001	Maharashtra	7500.00
C005	kapil mishra	PMO, New Delhi	New Delhi	600021	New Delhi	1000.00
C010	mohan rajat	CMO, Mumbai	Mumbai	400001	Maharashtra	5000.00

Q) Write the difference between Alter and Update in MySQL.

Ans Alter:-

- (i) ALTER command is Data Definition Language
- (ii) Alter command will perform the actions on structural level and not on data level.
- (iii) Alter command is used to add, delete, modify the attributes of the relations in the database.
- (iv) The command makes changes with Table structure.
- (v) Examples: Table Structure, Table Name, etc

Update:-

- (i) UPDATE Command is a Data Manipulation Language.
- (ii) Update command will perform on the data level.
- (iii) Update command is used to update existing records in a database.
- (iv) This command makes changes with data inside the table.
- (v) Example: Change date in the table in row or in column etc.

Q2 Explain different types of keys with suitable examples.

Ans:-

### (i) Superkey

- A super key is a set of attributes that can identify each tuple uniquely in the given relation.
- Thus, a superkey may consist of one or more attributes.

e.g. Student (roll, name, sex, age, address, class, etc.)

### (ii) Candidate Key:-

A set of minimal attributes that can identify each tuple uniquely in the given relation is called as a candidate key.

e.g. (name, roll)

### (iii) Primary key:-

Candidate key that the database designer implements is called as primary key.

It has the following properties

- It can never be NULL
- It must always be unique
- It cannot be changed or updated
- It must be assigned while inserting record.

e.g. For student roll No is primary key

Page No.	
Date	

### (vii) Alternate key :-

Candidate keys that are left unimplemented or unused after implementing the primary keys are called as alternate keys.

### (viii) Unique key :-

Unique key is a key with the following properties:-

- It is unique for the records of the table.
- Once assigned, its value can not be changed.
- It may have a Null value.

eg:-

Aadhar number in Database.

### (ix) Partial key :-

- Partial key is a key using all the records of the table can not be identified uniquely.
- However, a bunch of related tuples can be selected from the table using the partial key.

eg:- For employee of Department, relating of employee can have partial keys of employee.

Q3 Difference between delete and truncate.

Ans

Delete :-

- (i) Delete command is Data Manipulation Language
- (ii) It can be used along conditions.
- (iii) It deletes a single row at a time.
- (iv) It can be rolled back.
- (v) It is slow in nature.

Truncate :-

- (i) Truncate command is Data Definition Language
- (ii) It does not work with any conditions.
- (iii) It deletes all data in the table.
- (iv) It cannot be rolled back.
- (v) It is fast in nature.