

EXTRA LAB PRACTICE FOR DATABASE CONCEPTS

1. Introduction to SQL

LAB EXERCISES:

Lab 3: Create a database called library_db and a table books with columns: book_id, title, author, publisher, year_of_publication, and price. Insert five records into the table.

Ans.

The screenshot shows two instances of the phpMyAdmin interface. The top instance is for the 'library_db' database, where a 'books' table is being created with the following SQL code:

```
1 CREATE TABLE books
2 (
3     book_id INT,
4     title VARCHAR(100),
5     author VARCHAR(100),
6     publisher VARCHAR(100),
7     year_of_publication YEAR,
8     price INT
9 );
```

The bottom instance is also for the 'library_db' database, showing the results of the previous query and the insertion of five records into the 'books' table:

```
1 INSERT INTO books (book_id,title,author,publisher,year_of_publication,price) VALUES
2 (1,'The Great Gatsby', 'F. Scott Fitzgerald', 'Scribner', 1925, 10.99),
3 (2,'To Kill a Mockingbird', 'Harper Lee', 'J.B. Lippincott & Co.', 1960, 7.99),
4 (3,'1984', 'George Orwell', 'Secker & Warburg', 1949, 8.99),
5 (4,'Pride and Prejudice', 'Jane Austen', 'T. Egerton', 1813, 6.99),
6 (5,'The Catcher in the Rye', 'J.D. Salinger', 'Little, Brown and Company', 1951, 9.49);
```

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0004 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price
1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8
3	1984	George Orwell	Secker & Warburg	1949	9
4	Pride and Prejudice	Jane Austen	T. Egerton	0000	7
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9

Lab 4: Create a table members in library_db with columns: member_id, member_name, date_of_membership, and email. Insert five records into this table.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db1

Structure SQL Search Query Export

Run SQL query/queries on database librabry_db1:

```

CREATE TABLE members
(
    member_id INT,
    member_name VARCHAR(50),
    date_of_membership DATE,
    email VARCHAR(50)
);

```

Recent Favorites

New company course_db department_db depart_db employee emp_dept_db information_schema librabry_db1

The screenshot shows two instances of the phpMyAdmin interface. The top instance is the main dashboard, and the bottom instance is a detailed view of the 'members' table in the 'libraby_db1' database.

Main Dashboard (Top):

- Server: 127.0.0.1 » Database: libraby_db1
- Structure, SQL, Search, Query, Export, Import, Operations, Print buttons
- Run SQL query/queries on database libraby_db1: input field containing the following SQL code:

```

1 INSERT INTO members (member_id,member_name, date_of_membership, email) VALUES
2 (1,'raj', '2022-01-15', 'raj18@example.com'),
3 (2,'dip', '2021-06-23', 'dip21@example.com'),
4 (3,'has', '2023-03-10', 'has26@example.com'),
5 (4,'deep', '2020-09-05', 'deep1003@example.com'),
6 (5,'jay', '2022-11-30', 'jay10@example.com');

```

Table View (Bottom):

- Server: 127.0.0.1 » Database: libraby_db1 » Table: members
- Browse, Structure, SQL, Search, Insert, Export, Import buttons
- A warning message: "Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are disabled."
- Message: "Showing rows 0 - 4 (5 total, Query took 0.0006 seconds.)"
- SQL query: "SELECT * FROM `members`"
- Profiling options: Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
- Table data:

member_id	member_name	date_of_membership	email
1	raj	2022-01-15	raj18@example.com
2	dip	2021-06-23	dip21@example.com
3	has	2023-03-10	has26@example.com
4	deep	2020-09-05	deep1003@example.com
5	jay	2022-11-30	jay10@example.com

2. SQL Syntax

LAB EXERCISES:

Lab 3: Retrieve all members who joined the library before 2022. Use appropriate SQL syntax with WHERE and ORDER BY.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export Import Privileges

Run SQL query/queries on table libraby_db1.members:

```
1 SELECT * FROM members WHERE date_of_membership < '2022-01-01' ORDER BY date_of_membership ASC;
```

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 1 (2 total, Query took 0.0009 seconds.) [date_of_membership: 2020-09-05... - 2021-06-23...]

SELECT * FROM members WHERE date_of_membership < '2022-01-01' ORDER BY date_of_membership ASC;

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

member_id	member_name	date_of_membership	email
4	deep	2020-09-05	deep1003@example.com
2	dip	2021-06-23	dip21@example.com

Lab 4: Write SQL queries to display the titles of books published by a specific author. Sort the results by year_of_publication in descending order.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table library_db.books:

```
1 SELECT title, year_of_publication FROM books WHERE author = 'George Orwell'
2 ORDER BY year_of_publication DESC;
```

title	year_of_publication
1984	1949-06-14
The Road to Wigan Pier	1937-01-01

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import

Recent Favorites

company course_db department_db depart_db employee emp_dept_db information_schema libraby_db1 library_db New books mysql

⚠ Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features.

Showing rows 0 - 0 (1 total, Query took 0.0013 seconds.) [year_of_publication: 1949... - 1949...]

SELECT title, year_of_publication FROM books WHERE author = 'George Orwell' ORDER BY year_of_publication

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

title	year_of_publication
New	1984
	1949

3. SQL Constraints

LAB EXERCISES:

Lab 3: Add a CHECK constraint to ensure that the price of books in the books table is greater than 0.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import

Recent Favorites

New company course_db department_db

Show query box

MySQL returned an empty result set (i.e. zero rows). (Query took 0.1408 seconds.)

ALTER TABLE books ADD CONSTRAINT chk_price CHECK (price > 0);

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import

Recent Favorites

New company course_db department_db

Run SQL query/queries on table library_db.books:

```

1 INSERT INTO books (book_id,title,author,publisher,year_of_publication,price)
2 VALUES (6,'Valid Book', 'John Doe', 'ABC Publishers', 2023, 15.99);

```

The screenshot displays two instances of the phpMyAdmin interface. Both instances are connected to the same MySQL server (127.0.0.1) and database (library_db).

Top Instance:

- Table: books
- SQL Query:

```
1 INSERT INTO books (title, author, publisher, year_of_publication, price)
2 VALUES ('Invalid Book', 'Jane Doe', 'XYZ Publishers', 2024, -5.99);
```

Bottom Instance:

- Table: books
- SQL Query:

```
SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto
```

Bind parameters

Delimiter : Show this query here again Retain query box Rollback

Error:

SQL query: Copy

```
INSERT INTO books (title, author, publisher, year_of_publication, price)
VALUES ('Invalid Book', 'Jane Doe', 'XYZ Publishers', 2024, -5.99);
```

MySQL said: #4025 - CONSTRAINT `books.price` failed for `library_db`.`books`

Lab 4: Modify the members table to add a UNIQUE constraint on the email column, ensuring that each member has a unique email address.

Ans.

The screenshot shows a single instance of the phpMyAdmin interface connected to the MySQL server (127.0.0.1) and database (library_db2).

Table: members

SQL Query:

```
ALTER TABLE members ADD CONSTRAINT unique_email UNIQUE (email);
```

phpMyAdmin

Server: 127.0.0.1 » Database: library_db2 » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table library_db2.members:

```
1 INSERT INTO members (member_name, date_of_membership, email)
2 VALUES ('rajdip', '2023-05-12', 'rajdip18@example.com');
```

phpMyAdmin

Server: 127.0.0.1 » Database: library_db2 » Table: members

Browse Structure SQL Search Insert Export Import Privileges

Showing rows 0 - 0 (1 total, Query took 0.0010 seconds.)

SELECT * FROM `members`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

	member_id	member_name	date_of_membership	email
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	0	rajdip	2023-05-12	rajdip18@example.com

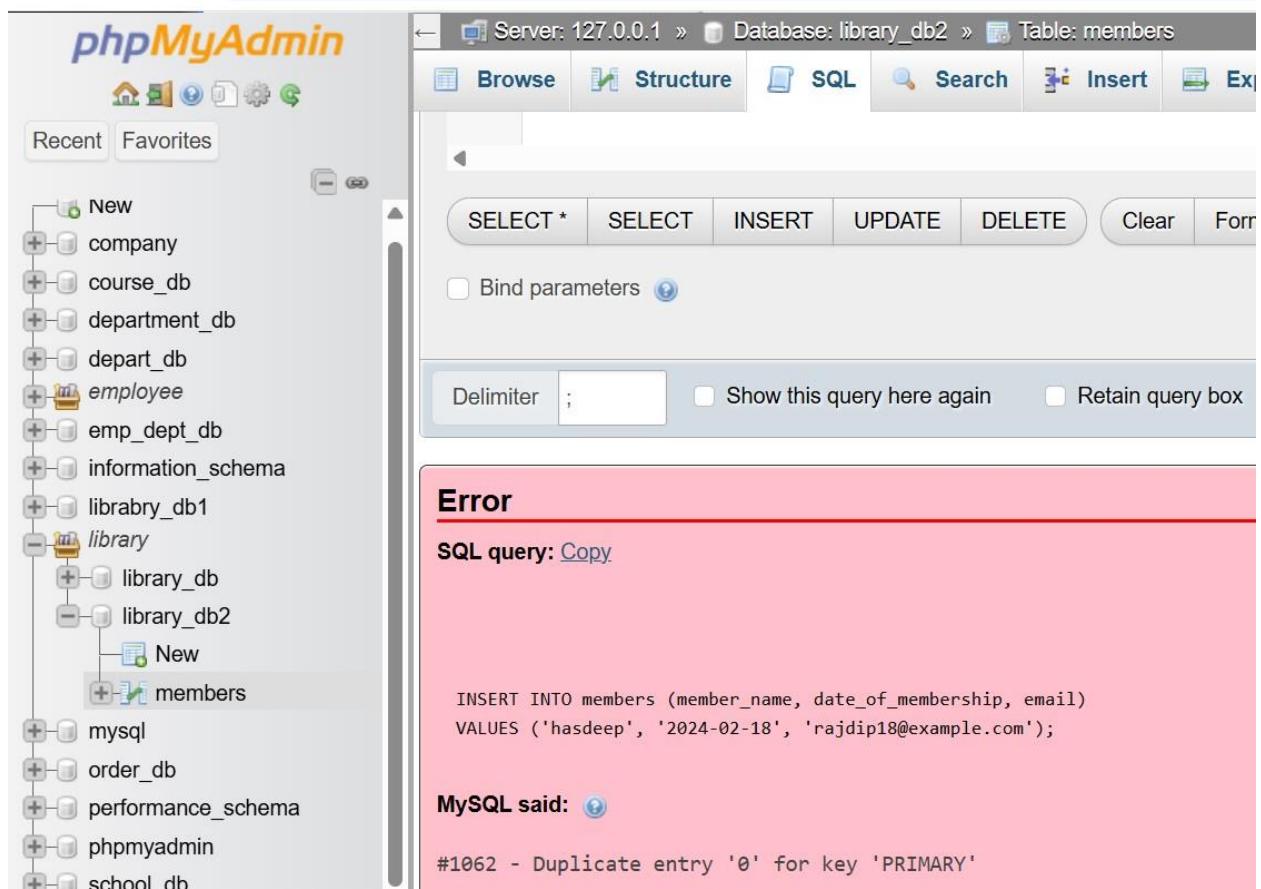
phpMyAdmin

Server: 127.0.0.1 » Database: library_db2 » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table library_db2.members:

```
1 INSERT INTO members (member_name, date_of_membership, email)
2 VALUES ('hasdeep', '2024-02-18', 'rajdip18@example.com');
```



4. Main SQL Commands and Sub-commands(DDL)

LAB EXERCISES:

Lab 3: Create a table authors with the following columns: author_id, first_name, last_name, and country. Set author_id as the primary key.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db3

Structure SQL Search Query Export

Recent Favorites

company course_db department_db depart_db employee emp_dept_db information_schema librabry librabry_db1 librabry_db3

Run SQL query/queries on database librabry_db3:

```
1 CREATE TABLE authors
2 (
3     author_id INT PRIMARY KEY,
4     first_name VARCHAR(100) NOT NULL,
5     last_name VARCHAR(100) NOT NULL,
6     country VARCHAR(100)
7 );
```

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db3 » Table: authors

Browse Structure SQL Search Insert Export Import Privileges Operations

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	author_id	int(11)	utf8mb4_general_ci		No	None			Change Drop More
2	first_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
3	last_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
4	country	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Lab 4: Create a table publishers with columns: publisher_id, publisher_name, contact_number, and address. Set publisher_id as the primary key and contact_number as unique.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db4

Structure SQL Search Query E

Recent Favorites

company course_db department_db depart_db employee emp_dept_db information_schema librabry librabry_db1 librabry_db3 New authors librabry_db4

Run SQL query/queries on database librabry_db4:

```

1 CREATE TABLE publishers
2 (
3     publisher_id INT PRIMARY KEY,
4     publisher_name VARCHAR(50) NOT NULL,
5     contact_number INT UNIQUE NOT NULL,
6     address TEXT
7 );

```

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db4 » Table: publishers

Browse Structure SQL Search Insert Export Import Privileges Operation

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	publisher_id	int(11)			No	None			Change Drop More
2	publisher_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	contact_number	int(11)			No	None			Change Drop More
4	address	text	utf8mb4_general_ci		Yes	NULL			Change Drop More

Check all With selected: [Browse](#) [Change](#) [Drop](#) [Primary](#) [Unique](#) [Index](#)

[Print](#) [Propose table structure](#) [Move columns](#) [Normalize](#)

Add 1 column(s) after address [Go](#)

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	publisher_id	0	A	No	
Edit Rename Drop	contact_number	BTREE	Yes	No	contact_number	0	A	No	

5. ALTER Command

LAB EXERCISES:

Lab 3: Add a new column genre to the books table. Update the genre for all existing records.

Ans.

The image shows two screenshots of the phpMyAdmin interface. Both screenshots have a sidebar on the left listing databases: course_db, department_db, depart_db, employee, emp_dept_db, information_schema, libraby, library, library_db, New, and books. The main area shows the 'books' table under the 'library_db' database.

Screenshot 1: The 'SQL' tab is selected. The query entered is:

```
1 ALTER TABLE books ADD COLUMN genre VARCHAR(100);
```

Screenshot 2: The 'SQL' tab is selected. The query entered is:

```
1 UPDATE books SET genre = 'Dystopian' WHERE title = '1984';
2
3 UPDATE books SET genre = 'Classic Literature' WHERE title = 'Pride and Prejudice';
4
5 UPDATE books SET genre = 'Historical Fiction' WHERE title = 'To Kill a Mockingbird';
6
7 UPDATE books SET genre = 'Fantasy' WHERE title = 'The Catcher in the Rye';
8
9 UPDATE books SET genre = 'Magical Realism' WHERE title = 'The Great Gatsby';
10
11 UPDATE books SET genre = 'good' WHERE title = 'valid book';
```

Showing rows 0 - 5 (6 total, Query took 0.0006 seconds.)

```
SELECT * FROM `books`
```

book_id	title	author	publisher	year_of_publication	price	genre
1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	Magical Realism
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1949	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	0000	7	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9	Fantasy
6	Valid Book	John Doe	ABC Publishers	2023	16	good

Lab 4: Modify the members table to increase the length of the email column to 100 characters.

Ans.

Table structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	member_id	int(11)			Yes	NULL			Change Drop More
2	member_name	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
3	date_of_membership	date			Yes	NULL			Change Drop More
4	email	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Run SQL query/queries on table librahy_db1.members:

```
1 ALTER TABLE members
2 MODIFY COLUMN email VARCHAR(100);
```

The screenshot shows the phpMyAdmin interface for the 'library_db1' database. The left sidebar lists databases: New, company, course_db, department_db, depart_db, employee. The main area shows the 'members' table structure with the following columns:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	member_id	int(11)	utf8mb4_general_ci		Yes	NULL			Change Drop More
2	member_name	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
3	date_of_membership	date			Yes	NULL			Change Drop More
4	email	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More

6. DROP Command

LAB EXERCISES:

Lab 3: Drop the publishers table from the database after verifying its structure.

Ans.

The screenshot shows the phpMyAdmin interface for the 'library_db4' database. The left sidebar lists databases: New, company, course_db, department_db, depart_db, employee, emp_dept_db, information_schema. The main area shows the 'publishers' table structure with the following columns:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	publisher_id	int(11)	utf8mb4_general_ci		No	None			Change Drop More
2	publisher_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	contact_number	int(11)			No	None			Change Drop More
4	address	text	utf8mb4_general_ci		Yes	NULL			Change Drop More

The screenshot shows the phpMyAdmin interface for the 'library_db4' database. The left sidebar lists databases: New, company. The main area has a SQL query editor with the following content:

```
Run SQL query/queries on table library_db4.publishers: 
```

```
1 DROP TABLE publishers;
```

The screenshot shows the phpMyAdmin interface with the following details:

- Server:** 127.0.0.1
- Database:** library_db4
- Structure** tab is selected.
- Error:** SQL query: Copy
MySQL said: #1146 - Table 'library_db4.publishers' doesn't exist
- Query Editor:** Contains the SQL command: SELECT * FROM publishers LIMIT 0, 25

Lab 4: Create a backup of the member's table and then drop the original member's table.

Ans.

The screenshot shows the phpMyAdmin interface with the following details:

- Server:** 127.0.0.1
- Database:** member_db
- Table:** members
- Browse** tab is selected.
- Message:** Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are disabled.
- Result:** Showing rows 0 - 0 (1 total, Query took 0.0007 seconds.)
- SQL:** SELECT * FROM `members`
- Options:** Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
- Filter:** Show all | Number of rows: 25 | Filter rows: Search this table
- Table Data:** mem_id | mem_name
1 rajdeep

phpMyAdmin

Server: 127.0.0.1 » Database: member_db » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table member_db.members:

```
1 CREATE TABLE members_backup LIKE members;
2
3 INSERT INTO members_backup SELECT * FROM members;
```

Recent Favorites

New company course_db department_db depart_db employee emp_dept_db information_schema libraby library member_db New members

phpMyAdmin

Server: 127.0.0.1 » Database: member_db » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table member_db.members:

```
1 DROP TABLE members;
```

Recent Favorites

New company course_db department_db depart_db employee emp_dept_db information_schema libraby library member_db members members_backup

The screenshot shows the phpMyAdmin interface for the 'member_db' database. The left sidebar lists databases: New, company, course_db, department_db, depart_db, employee, emp_dept_db, information_schema, library, library, member_db, New, and members_backup. The 'members_backup' table is selected. The top navigation bar shows 'Server: 127.0.0.1', 'Database: member_db', 'Table: members_backup'. The toolbar includes Browse, Structure, SQL, Search, Insert, Export, and Import. A message at the top says 'Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete feature'. The results section shows a green success message: 'Showing rows 0 - 0 (1 total, Query took 0.0011 seconds.)'. The SQL query is 'SELECT * FROM `members_backup`'. Below it are options for Profiling, Edit inline, Explain SQL, Create PHP code, and Refresh. A search bar 'Search this table' is present. The table data shows one row: mem_id (1) and mem_name (rajdeep). There are buttons for Show all, Number of rows (set to 25), and Filter rows.

7. Data Manipulation Language (DML)

LAB EXERCISES:

Lab 4: Insert three new authors into the authors table, then update the last name of one of the authors.

Ans.

The screenshot shows the phpMyAdmin interface for the 'library_db3' database. The left sidebar lists databases: information_schema, library, library_db1, library_db3, New, authors, library_db4, library, member_db, New, members_backup, mysql, order_db, performance_schema, and phpmyadmin. The 'authors' table is selected. The top navigation bar shows 'Server: 127.0.0.1', 'Database: library_db3', 'Table: authors'. The toolbar includes Browse, Structure, SQL, Search, Insert, Export, Import, and Print. A message at the top says 'Showing rows 0 - 4 (5 total, Query took 0.0008 seconds.)'. The SQL query is 'SELECT * FROM `authors`'. Below it are options for Profiling, Edit inline, Explain SQL, Create PHP code, and Refresh. A search bar 'Search this table' and a 'Sort by key' dropdown are present. The table data shows five rows with columns: author_id, first_name, last_name, and country. The rows are:

author_id	first_name	last_name	country
1	raj	chavda	india
2	deep	parmar	United Kingdom
3	dip	shah	United States
4	has	jambukiya	new zeland
5	hasdip	shah	Colombia

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db3 » Table: authors

Browse Structure SQL Search Insert Export Import Privileges

Run SQL query/queries on table libraby_db3.authors:

```
1 UPDATE authors SET last_name = 'rajdip' WHERE first_name = 'hasdip' AND last_name = 'shah';
```

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db3 » Table: authors

Browse Structure SQL Search Insert Export Import

Showing rows 0 - 4 (5 total, Query took 0.0008 seconds.)

SELECT * FROM `authors`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key:

Extra options

author_id	first_name	last_name	country
1	raj	chavda	india
2	deep	parmar	United Kingdom
3	dip	shah	United States
4	has	jambukiya	new zeland
5	hasdip	rajdip	Colombia

Lab 5: Delete a book from the books table where the price is higher than \$100.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operation

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 5 (6 total, Query took 0.0007 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	Magical Realism
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1949	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	0000	7	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9	Fantasy
6	Valid Book	John Doe	ABC Publishers	2023	16	good

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export

Run SQL query/queries on table library_db.books:

1 DELETE FROM books WHERE price > 10;

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operation

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 3 (4 total, Query took 0.0007 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1949	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	0000	7	Classic Literature

8. UPDATE Command

LAB EXERCISES:

Lab 3: Update the year_of_publication of a book with a specific book_id.

Ans.

The figure consists of three vertically stacked screenshots of the phpMyAdmin interface, all showing the same database structure and a table named 'books'.

Screenshot 1: Shows the 'books' table with the following data:

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1961	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1950	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	7	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9	Fantasy

Screenshot 2: Shows the SQL query window with the following update statement:

```
1 UPDATE books SET year_of_publication = 1970 WHERE book_id = 2;
```

Screenshot 3: Shows the 'books' table after the update, with the year_of_publication for book_id 2 changed to 1970:

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1970	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1950	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	7	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9	Fantasy

Lab 4: Increase the price of all books published before 2015 by 20%.

Ans.

The figure consists of three vertically stacked screenshots of the phpMyAdmin interface, all showing the same database structure and a table named 'books'.

Screenshot 1: Shows the 'books' table with the following data:

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1970	8	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1950	9	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	7	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	9	Fantasy

Screenshot 2: Shows the SQL query `UPDATE books SET price = price * 2 WHERE year_of_publication < 2010;` being run. The result shows the updated data:

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1970	16	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1950	18	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	14	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	18	Fantasy

Screenshot 3: Shows the 'books' table again with the same initial data as Screenshot 1.

9. DELETE Command

LAB EXERCISES:

Lab 3: Remove all members who joined before 2021 from the members table.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are disabled.

Showing rows 0 - 4 (5 total, Query took 0.0006 seconds.)

SELECT * FROM `members`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

member_id	member_name	date_of_membership	email
1	raj	2022-01-15	raj18@example.com
2	dip	2021-06-23	dip21@example.com
3	has	2023-03-10	has26@example.com
4	deep	2020-09-05	deep1003@example.com
5	jay	2022-11-30	jay10@example.com

New company course_db department_db depart_db employee emp_dept_db information_schema libraby libraby_db1 New members libraby_db3 libraby_db4 library library_db

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table libraby_db1.members: ⚡

1 DELETE FROM members WHERE date_of_membership < '2021-01-01';

New company

phpMyAdmin

Server: 127.0.0.1 » Database: library_db1 » Table: members

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete

Showing rows 0 - 3 (4 total, Query took 0.0003 seconds.)

SELECT * FROM `members`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

member_id	member_name	date_of_membership	email
1	raj	2022-01-15	raj18@example.com
2	dip	2021-06-23	dip21@example.com
3	has	2023-03-10	has26@example.com
5	jay	2022-11-30	jay10@example.com

New company course_db department_db depart_db employee emp_dept_db information_schema library libray_db1 members libray_db3 libray_db4 library

Lab 4: Delete all books that have a NULL value in the author column.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 3 (4 total, Query took 0.0004 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
2	To Kill a Mockingbird	NULL	J.B. Lippincott & Co.	1970	16	Historical Fiction
3	1984	George Orwell	Secker & Warburg	1950	18	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	14	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	18	Fantasy

information_schema library libray_db1 libray_db3 libray_db4 library_db books libray_db2 member_db mysql order_db performance_schema phpmyadmin

The screenshot shows two instances of the phpMyAdmin interface. The top instance is focused on the 'books' table within the 'library_db' database, with the SQL tab selected. A query is being run: `DELETE FROM books WHERE author IS NULL;`. The bottom instance shows the results of this query, which has deleted three rows from the 'books' table. The table structure and data are visible.

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	18	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	14	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	18	Fantasy

10. DataQuery Language (DQL)

LAB EXERCISES:

Lab 4: Write a query to retrieve all books with a price between \$50 and \$100.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Oper

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 2 (3 total, Query took 0.0003 seconds.)

```
SELECT * FROM `books`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	110	Fantasy

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export

Run SQL query/queries on table library_db.books:

```
1 SELECT * FROM books WHERE price BETWEEN 50 AND 100;
```

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 1 (2 total, Query took 0.0007 seconds.)

```
SELECT * FROM books WHERE price BETWEEN 50 AND 100;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	Classic Literature

Lab 5: Retrieve the list of books sorted by author in ascending order and limit the results to the top 3 entries.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0007 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	110	Fantasy
5	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	excellent
6	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	v.good

information_schema library library_db1 library_db3 library_db4 library library_db New books library_db2 member_db mysql order_db performance_schema phpmyadmin school_db

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert

Run SQL query/queries on table library_db.books:

1 SELECT * FROM books ORDER BY author ASC LIMIT 3;

information_schema library

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges

Show query box

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 2 (3 total, Query took 0.0432 seconds.) [author: F. SCOTT FITZGERALD... - HARPER LEE...]

SELECT * FROM books ORDER BY author ASC LIMIT 3;

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Extra options

book_id	title	author	publisher	year_of_publication	price	genre
5	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	excellent
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
6	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	v.good

information_schema library library_db1 library_db3 library_db4 library library_db New books library_db2 member_db mysql order_db

11. Data Control Language (DCL)

LAB EXERCISES:

Lab 3: Grant SELECT permission to a user named librarian on the books table.

Ans.

SELECT Permission:

```
GRANT SELECT ON library_db.books TO 'librarian'@'localhost';
```

Verify:

```
SHOW GRANTS FOR 'librarian'@'localhost';
```

Expected Output:

```
Grants for librarian@localhost
```

```
GRANT USAGE ON *.* TO `librarian`@`localhost`
```

```
GRANT SELECT ON `library_db`.`books` TO `librarian`@`localhost`
```

Lab 4: Grant INSERT and UPDATE permissions to the user admin on the members table.

Ans.

Grant INSERT and UPDATE Permissions:

```
GRANT INSERT, UPDATE ON library_db.members TO 'admin'@'localhost';
```

Verify:

```
SHOW GRANTS FOR 'admin'@'localhost';
```

Expected Output:

```
Grants for admin@localhost
```

```
GRANT USAGE ON *.* TO `admin`@`localhost`
```

```
GRANT INSERT, UPDATE ON `library_db`.`members` TO  
`admin`@`localhost`
```

12. REVOKE Command

LAB EXERCISES:

Lab 3: Revoke the INSERT privilege from the user librarian on the books table.

Ans.

Revoke INSERT Privilege:

```
REVOKE INSERT ON library_db.books FROM 'librarian'@'localhost';
```

Verify:

```
SHOW GRANTS FOR 'librarian'@'localhost';
```

Expected Output :

```
Grants for librarian@localhost
```

```
GRANT USAGE ON *.* TO `librarian`@`localhost`
```

```
GRANT SELECT ON `library_db`.`books` TO `librarian`@`localhost`
```

Re-Grant INSERT :

```
GRANT INSERT ON library_db.books TO 'librarian'@'localhost';
```

Lab 4: Revoke all permissions from user admin on the members table.

Ans.

Revoke All Permissions:

```
REVOKE ALL PRIVILEGES ON library_db.members FROM  
'admin'@'localhost';
```

Verify:

```
SHOW GRANTS FOR 'admin'@'localhost';
```

Expected Output:

```
Grants for admin@localhost
```

```
GRANT USAGE ON *.* TO `admin`@`localhost`
```

Drop the User:

```
DROP USER 'admin'@'localhost';
```

Re-Grant Permissions:

```
GRANT INSERT, UPDATE ON library_db.members TO 'admin'@'localhost';
```

13. Transaction Control Language (TCL)

LAB EXERCISES:

Lab 3: Use COMMIT after inserting multiple records into the books table, then make another insertion and perform a ROLLBACK.

Ans.

The screenshot displays two instances of the phpMyAdmin interface. Both instances are connected to the same MySQL server (127.0.0.1) and database (library_db).

Top Session (Left Panel): Shows the database structure with the following schema:

- information_schema
- library (selected)
 - library_db1
 - library_db3
 - library_db4
- library (selected)
 - library_db (selected)
 - New
 - books

Top Session (Right Panel): Shows the SQL tab with the following output:

```
MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)  
COMMIT;
```

Bottom Session (Left Panel): Shows the database structure with the following schema:

- information_schema
- library
 - library_db1
 - library_db3
 - library_db4
- library
 - library_db (selected)
 - New
 - books
- library_db2
- member_db
- mysql
- order_db
- performance_schema
- phpmyadmin
- school_db

Bottom Session (Right Panel): Shows the SQL tab with the following output:

```
Showing rows 0 - 4 (5 total, Query took 0.0010 seconds.)  
SELECT * FROM `books`
```

Bottom Session Grid View: Shows the results of the SELECT query:

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	110	Fantasy
5	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	excellent
6	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	v.good

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges

Run SQL query/queries on table library_db.books:

```

1 START TRANSACTION;
2
3 INSERT INTO books (book_id, title, author, publisher, year_of_publication, price, genre)
4 VALUES (104, 'Brave New World', 'Aldous Huxley', 'Chatto & Windus', 1932, 20.00, 'Dystopian');
5
6 ROLLBACK;

```

phpMyAdmin

Server: 127.0.0.1 » Database: library_db » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0009 seconds.)

SELECT * FROM books;

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

book_id	title	author	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	Classic Literature
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	110	Fantasy
5	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	excellent
6	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	v.good

Lab 4: Set a SAVEPOINT before making updates to the members table, perform some updates, and then roll back to the SAVEPOINT.

Ans.

SAVEPOINT before_update;

UPDATE members

SET email = 'updated_email1@example.com'

WHERE member_id = 1;

```
UPDATE members
```

```
SET email = 'updated_email2@example.com'
```

```
WHERE member_id = 2;
```

```
SELECT * FROM members;
```

```
ROLLBACK TO SAVEPOINT before_update;
```

```
RELEASE SAVEPOINT before_update;
```

14. SQL Joins

LAB EXERCISES:

Lab 3: Perform an INNER JOIN between books and authors tables to display the title of books and their respective authors' names.

Ans.

The screenshot shows the phpMyAdmin interface. On the left, the database structure is visible with several databases listed under 'Recent'. The current database is 'libraby_db5'. Inside this database, the 'authors' table is selected. The table structure is shown with columns: author_id, first_name, last_name, and country. Three rows are present in the data grid:

author_id	first_name	last_name	country
1	raj	chavda	ind
2	deep	jaha	USA
3	dip	parmar	UK

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db5 » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations Tri

Showing rows 0 - 2 (3 total, Query took 0.0006 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Extra options

	book_id	title	author_id	publisher	year_of_publication	price	genre
<input type="checkbox"/>	101	The Great Gatsby	1	Scribner	1925	15.99	Classic
<input type="checkbox"/>	102	To Kill a Mockingbird	2	J.B. Lippincott & Co.	1960	18.50	Fiction
<input type="checkbox"/>	103	1984	3	Secker & Warburg	1949	12.99	Dystopian

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db5 » Table: authors

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table librabry_db5.authors:

```
1 SELECT
2   books.title AS Book_Title,
3   CONCAT(authors.first_name, ' ', authors.last_name) AS Author_Name
4 FROM books
5 INNER JOIN authors ON books.author_id = authors.author_id;
```

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db5 » Table: books

Browse Structure SQL Search Insert

Current selection does not contain a unique column. Grid edit, checkbox, Edit

Showing rows 0 - 2 (3 total, Query took 0.0307 seconds.)

SELECT books.title AS Book_Title, CONCAT(authors.first_name, ' ', books.author_id = authors.author_id);

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this tab

Extra options

Book_Title	Author_Name
The Great Gatsby	raj chavda
To Kill a Mockingbird	deep jaha
1984	dip parmar

Lab 4: Use a FULL OUTER JOIN to retrieve all records from the books and authors tables, including those with no matching entries in the other table.

Ans.

The screenshot shows the phpMyAdmin interface. On the left, the database tree is visible with several databases listed under 'libraby'. The 'books' table is selected under the 'libraby_db5' database. The main window displays a SQL query in the 'SQL' tab:

```
1 -- left and right both of full join
2 SELECT
3     books.book_title AS Book_Title,
4     CONCAT(authors.first_name, ' ', authors.last_name) AS Author_Name
5 FROM books
6 LEFT JOIN authors ON books.author_id = authors.author_id
7
8 UNION
9
10 SELECT
11     books.book_title AS Book_Title,
12     CONCAT(authors.first_name, ' ', authors.last_name) AS Author_Name
13 FROM books
14 RIGHT JOIN authors ON books.author_id = authors.author_id;
```

The screenshot shows the phpMyAdmin interface. On the left, the database structure is displayed with the following tree:

- New
- company
- course_db
- department_db
- depart_db
- employee
- emp_dept_db
- information_schema
- librabry
 - librabry_db1
 - librabry_db3
 - librabry_db4
 - librabry_db5
 - New
 - authors
 - books

The right panel shows the details for the 'books' table in the 'librabry_db5' database. The table has two columns: 'Book_Title' and 'Author_Name'. The data is as follows:

Book_Title	Author_Name
The Great Gatsby	raj chavda
To Kill a Mockingbird	deep jaha
1984	dip parmar

15. SQL Group By

LAB EXERCISES:

Lab 3: Group books by genre and display the total number of books in each genre.

Ans.

phpMyAdmin

Server: 127.0.0.1 > Database: library_db > Table: books

Browse Structure SQL Search Insert Export Import Privileges Open

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0006 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author_id	publisher	year_of_publication	price	genre
3	1984	George Orwell	Secker & Warburg	1950	87	Dystopian
4	Pride and Prejudice	Jane Austen	T. Egerton	1970	78	excellent
5	The Catcher in the Rye	J.D. Salinger	Little, Brown and Company	1951	110	fantasy
5	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	11	fantasy
6	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	8	excellent

phpMyAdmin

Server: 127.0.0.1 > Database: library_db > Table: books

Browse Structure SQL Search Insert Export Open

Run SQL query/queries on table library_db.books:

```
1 SELECT genre, COUNT(*) AS total_books FROM books GROUP BY genre;
```

phpMyAdmin

Server: 127.0.0.1 > Database: library_db > Table: books

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 2 (3 total, Query took 0.0410 seconds.)

SELECT genre, COUNT(*) AS total_books FROM books GROUP BY genre;

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

genre	total_books
Dystopian	1
excellent	2
fantasy	2

Lab 4: Group members by the year they joined and find the number of members who joined each year.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db1 » Table: members

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete fe

Showing rows 0 - 3 (4 total, Query took 0.0006 seconds.)

SELECT * FROM `members`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

member_id	member_name	date_of_membership	email
1	raj	2022-01-15	raj18@example.com
2	dip	2021-06-23	dip21@example.com
3	has	2023-03-10	has26@example.com
5	jay	2022-11-30	jay10@example.com

librabry librabry_db1 New members librabry_db3 librabry_db4 librabry_db5 library library_db library_db2 member_db mysql order_db performance_schema phpmyadmin

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db1 » Table: members

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table librabry_db1.members: [?](#)

```
1 SELECT
2     YEAR(date_of_membership) AS membership_year,
3     COUNT(*) AS total_members
4 FROM members
5 GROUP BY membership_year
6 ORDER BY membership_year;
```

librabry librabry_db1 New members librabry_db3 librabry_db4 librabry_db5

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy

Showing rows 0 - 2 (3 total, Query took 0.0008 seconds.)

```
SELECT YEAR(date_of_membership) AS membership_year, COUNT(*) AS total_members
FROM members
GROUP BY membership_year;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table

membership_year	total_members
2021	1
2022	2
2023	1

16. SQL Stored Procedure

LAB EXERCISES:

Lab 3: Write a stored procedure to retrieve all books by a particular author.

Ans.

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds.)

```
SELECT * FROM `books`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

	book_id	title	author	publisher	year_of_publication	price	genre
<input type="checkbox"/>	1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	16	Fiction
<input type="checkbox"/>	2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	19	Fiction
<input type="checkbox"/>	3	1984	George Orwell	Secker & Warburg	1949	13	Dystopian
<input type="checkbox"/>	4	Brave New World	Aldous Huxley	Chatto & Windus	1932	20	Dystopian
<input type="checkbox"/>	5	Animal Farm	George Orwell	Secker & Warburg	1945	15	Political Fiction

The screenshots illustrate the process of creating and executing a stored procedure in MySQL using phpMyAdmin.

Screenshot 1: Procedure Creation

The SQL query in the "SQL" tab is:

```

1 DELIMITER $$

2

3 CREATE PROCEDURE GetBooksByAuthor(IN author_name VARCHAR(100))
4 BEGIN
5     SELECT title, author, year_of_publication, genre, price
6     FROM books
7     WHERE author = author_name;
8 END |

```

Screenshot 2: Procedure Execution

The SQL query in the "SQL" tab is:

```

1 CALL GetBooksByAuthor('George Orwell');

```

Screenshot 3: Result Set

The result set shows the output of the executed query:

title	author	year_of_publication	genre	price
1984	George Orwell	1949	Dystopian	13
Animal Farm	George Orwell	1945	Political Fiction	15

Lab 4: Write a stored procedure that takes book_id as an argument and returns the price of the book.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db6 » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Showing rows 0 - 4 (total, Query took 0.0010 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Extra options

	book_id	title	author	publisher	year_of_publication	price	genre
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	16	Fiction
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	19	Fiction
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	1984	George Orwell	Secker & Warburg	1949	13	Dystopian
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	Brave New World	Aldous Huxley	Chatto & Windus	1932	20	Dystopian
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	Animal Farm	George Orwell	Secker & Warburg	1945	15	Political Fiction

depart_db employee emp_dept_db information_schema libraby libraby_db1 libraby_db3 libraby_db4 libraby_db5 libraby_db6 New books library member_db mysql order_db

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db6 » Table: books

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table libraby_db6.books:

```
1 DELIMITER $$  
2  
3 CREATE PROCEDURE GetBookPrice(IN book_id_param INT, OUT book_price INT)  
4 BEGIN  
5     SELECT price INTO book_price  
6     FROM books  
7     WHERE book_id = book_id_param;  
8 END
```

depart_db employee emp_dept_db information_schema libraby libraby_db1 libraby_db3 libraby_db4 libraby_db5 libraby_db6 New books

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db6 » Table: books

Browse Structure SQL Search Insert Export

Run SQL query/queries on table libraby_db6.books:

```
1 CALL GetBookPrice(3, @book_price);  
2 SELECT @book_price;
```

depart_db employee emp_dept_db

Server: 127.0.0.1 » Database: libraby_db6 » Table: books

Browse Structure SQL Search Insert Export Import

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0020 seconds.)

```
CALL GetBookPrice(3, @book_price);
```

[Edit inline] [Edit] [Create PHP code]

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are disabled.

Showing rows 0 - 0 (1 total, Query took 0.0005 seconds.)

```
SELECT @book_price;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

@book_price

13

17. SQL View

LAB EXERCISES:

Lab 3: Create a view to show only the title, author, and price of books from the books table.

Ans.

Server: 127.0.0.1 » Database: libraby_db6 » Table: books

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds.)

```
SELECT * FROM `books`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

	book_id	title	author	publisher	year_of_publication	price	genre
<input type="checkbox"/>	1	The Great Gatsby	F. Scott Fitzgerald	Scribner	1925	16	Fiction
<input type="checkbox"/>	2	To Kill a Mockingbird	Harper Lee	J.B. Lippincott & Co.	1960	19	Fiction
<input type="checkbox"/>	3	1984	George Orwell	Secker & Warburg	1949	13	Dystopian
<input type="checkbox"/>	4	Brave New World	Aldous Huxley	Chatto & Windus	1932	20	Dystopian
<input type="checkbox"/>	5	Animal Farm	George Orwell	Secker & Warburg	1945	15	Political Fiction

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db6 » Table: books

Browse Structure SQL Search Insert Export

Run SQL query/queries on table librabry_db6.books:

```
1 CREATE VIEW BookDetails AS
2 SELECT title, author, price
3 FROM books;
```

Recent Favorites

depart_db
employee
emp_dept_db
information_schema
librabry
librabry_db1
librabry_db3
librabry_db4
librabry_db5
librabry_db6
New
books

phpMyAdmin

Server: 127.0.0.1 » Database: librabry_db6 » View: bookdetails

Browse Structure SQL Search Insert Export Privileges

Current selection does not contain a unique column. Grid edit, Edit, Copy and Delete features may result in multiple rows being updated or deleted.

Showing rows 0 - 4 (5 total, Query took 0.0216 seconds.)

```
SELECT * FROM `bookdetails`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

	title	author	price
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	The Great Gatsby	F. Scott Fitzgerald	16
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	To Kill a Mockingbird	Harper Lee	19
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1984	George Orwell	13
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Brave New World	Aldous Huxley	20
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	Animal Farm	George Orwell	15

Recent Favorites

librabry_db3
librabry_db4
librabry_db5
librabry_db6
Procedures
Tables
New
books
Views
New
bookdetails
library
member_db
mysql
order_db
performance_schema
phpmyadmin

Lab 4: Create a view to display members who joined before 2020.

Ans.

phpMyAdmin

Recent Favorites

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export Import Print

⚠ Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 3 (4 total, Query took 0.0006 seconds.)

SELECT * FROM `members`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

member_id	member_name	date_of_membership	email
1	raj	2022-01-15	raj18@example.com
2	dip	2021-06-23	dip21@example.com
3	has	2023-03-10	has26@example.com
5	jay	2022-11-30	jay10@example.com

libraby

- libraby_db1
 - Tables
 - New
 - members
 - Views
- libraby_db3
- libraby_db4
- libraby_db5
- libraby_db6
- library
- member_db
- mysql
- order_db
- performance_schema

phpMyAdmin

Recent Favorites

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table libraby_db1.members:

```
1 CREATE VIEW MembersBefore2023 AS
2 SELECT member_id, member_name, date_of_membership, email
3 FROM members
4 WHERE date_of_membership < '2023-01-01';
```

depart_db

- employee
- emp_dept_db
- information_schema
- libraby
- libraby_db1
 - New
 - members

phpMyAdmin

Recent Favorites

Server: 127.0.0.1 » Database: libraby_db1 » Table: members

Browse Structure SQL Search Insert Export

Run SQL query/queries on table libraby_db1.members:

```
1 SELECT * FROM membersbefore2023;
```

New

- company

Showing rows 0 - 2 (3 total, Query took 0.0010 seconds.)

```
SELECT * FROM membersbefore2023;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table

	member_id	member_name	date_of_membership	email
<input type="checkbox"/>	1	raj	2022-01-15	raj18@example.com
<input type="checkbox"/>	2	dip	2021-06-23	dip21@example.com
<input type="checkbox"/>	5	jay	2022-11-30	jay10@example.com

Check all With selected: Edit Copy Delete Export

18. SQL Trigger

LAB EXERCISES:

Lab 3: Create a trigger to automatically update the last_modified timestamp of the books table whenever a record is updated.

Ans.

```
Run SQL query/queries on table libraby_db7.books: ?
```

```

1 ALTER TABLE books ADD COLUMN last_modified TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP;
2
3 DELIMITER $$;
4
5 CREATE TRIGGER UpdateLastModified
6 BEFORE UPDATE ON books
7 FOR EACH ROW
8 BEGIN
9     SET NEW.last_modified = NOW();
10 END |

```

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db7 » Table: books

Browse Structure SQL Search Insert Export Import Print

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 1 (2 total, Query took 0.0382 seconds.)

SELECT * FROM `books`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	price	last_modified
1	The Great Gatsby	F. Scott Fitzgerald	26	2025-03-20 01:51:07
2	1984	George Orwell	18	2025-03-20 01:51:07

New company course_db department_db depart_db employee emp_dept_db information_schema library libraby_db1 libraby_db3 libraby_db4 libraby_db5

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db7 » Table: books

Browse Structure SQL Search Insert Export

Run SQL query/queries on table libraby_db7.books:

1 UPDATE books SET price = 22 WHERE book_id = 1;

New company course_db

phpMyAdmin

Server: 127.0.0.1 » Database: libraby_db7 » Table: books

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 1 (2 total, Query took 0.0010 seconds.)

SELECT * FROM books;

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	price	last_modified
1	The Great Gatsby	F. Scott Fitzgerald	22	2025-03-20 01:51:55
2	1984	George Orwell	18	2025-03-20 01:51:07

New company course_db department_db depart_db employee emp_dept_db information_schema library libraby_db1 libraby_db3 libraby_db4 libraby_db5 libraby_db6 libraby_db7 books Columns Triggers

Lab 4: Create a trigger that inserts a log entry into a log_changes table whenever a DELETE operation is performed on the books table.

Ans.

phpMyAdmin

Server: 127.0.0.1 » Database: book_db » Table: books

Browse Structure SQL Search Insert Export Import

Run SQL query/queries on table book_db.books:

```
1 DELIMITER $$  
2  
3 CREATE TRIGGER LogBookDeletion  
4 AFTER DELETE ON books  
5 FOR EACH ROW  
6 BEGIN  
7     INSERT INTO log_changes (book_id, title, author, deleted_at)  
8         VALUES (OLD.book_id, OLD.title, OLD.author, NOW());  
9 END
```

phpMyAdmin

Server: 127.0.0.1 » Database: book_db » Table: books

Browse Structure SQL Search Insert Export Import

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features

Showing rows 0 - 1 (2 total, Query took 0.0006 seconds.)

```
SELECT * FROM `books`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

book_id	title	author	price
1	The Great Gatsby	F. Scott Fitzgerald	26
2	1984	George Orwell	18

phpMyAdmin

Server: 127.0.0.1 » Database: book_db » Table: books

Browse Structure SQL Search Insert

Run SQL query/queries on table book_db.books:

```
1 DELETE FROM books WHERE book_id = 1;
```

Run SQL query/queries on table book_db.books:

```
1 SELECT * FROM log_changes;
```

Showing rows 0 - 0 (1 total, Query took 0.0007 seconds.)

SELECT * FROM log_changes;

log_id	book_id	title	author	deleted_at
1	1	The Great Gatsby	F. Scott Fitzgerald	2025-03-20 02:22:22

19. Introduction to PL/SQL

LAB EXERCISES:

Lab 3: Write a PL/SQL block to insert a new book into the books table and display a confirmation message.

Ans.

DECLARE

```
v_book_id books.book_id%TYPE := 101; -- Example book_id
v_title books.title%TYPE := 'To Kill a Mockingbird';
v_author books.author%TYPE := 'Harper Lee';
v_publisher books.publisher%TYPE := 'J.B. Lippincott & Co.';
```

```

v_year books.year_of_publication%TYPE := 1960;
v_price books.price%TYPE := 18.99;
BEGIN

INSERT INTO books (book_id, title, author, publisher, year_of_publication, price)
VALUES (v_book_id, v_title, v_author, v_publisher, v_year, v_price);

DBMS_OUTPUT.PUT_LINE('Book "' || v_title || "' has been successfully
added!');

COMMIT;

EXCEPTION
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);
ROLLBACK; -- Rollback transaction in case of an error
END;
/

```

Lab 4: Write a PL/SQL block to display the total number of books in the books table.

Ans.

```
SET SERVEROUTPUT ON;
```

```
DECLARE
```

```
v_total_books NUMBER; -- Variable to store total book count
```

```
BEGIN
```

```
SELECT COUNT(*) INTO v_total_books FROM books;

DBMS_OUTPUT.PUT_LINE('Total number of books in the library: ' ||  
v_total_books);

EXCEPTION

WHEN OTHERS THEN

DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);

END;  
/
```

20. PL/SQL Syntax

LAB EXERCISES:

Lab 3: Write a PL/SQL block to declare variables for book_id and price, assign values, and display the results.

Ans.

```
SET SERVEROUTPUT ON;
```

```
DECLARE  
    v_book_id books.book_id%TYPE := 101; -- Assigning a book ID  
    v_price books.price%TYPE := 25.99; -- Assigning a price  
BEGIN  
    DBMS_OUTPUT.PUT_LINE('Book ID: ' || v_book_id);  
    DBMS_OUTPUT.PUT_LINE('Price: $' || v_price);  
END;  
/
```

Lab 4: Write a PL/SQL block using constants and perform arithmetic operations on book prices.

Ans.

```
SET SERVEROUTPUT ON;
```

```
DECLARE
```

```
    c_discount CONSTANT NUMBER := 0.10;
```

```
    c_tax CONSTANT NUMBER := 0.05;
```

```
    v_book_id books.book_id%TYPE := 101
```

```
    v_price books.price%TYPE;
```

```
    v_discounted_price NUMBER;
```

```
    v_final_price NUMBER;
```

```
BEGIN
```

```
    SELECT price INTO v_price FROM books WHERE book_id = v_book_id;
```

```
    v_discounted_price := v_price - (v_price * c_discount);
```

```
    v_final_price := v_discounted_price + (v_discounted_price * c_tax);
```

```
    DBMS_OUTPUT.PUT_LINE('Original Price: $' || TO_CHAR(v_price, '9999.99'));
```

```
    DBMS_OUTPUT.PUT_LINE('Discounted Price (10% off): $' ||  
        TO_CHAR(v_discounted_price, '9999.99'));
```

```

DBMS_OUTPUT.PUT_LINE('Final Price after 5% Tax: $' ||
TO_CHAR(v_final_price, '9999.99'));

EXCEPTION

WHEN NO_DATA_FOUND THEN

DBMS_OUTPUT.PUT_LINE('Error: No book found with the given ID.');

WHEN OTHERS THEN

DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);

END;
/

```

21. PL/SQL Control Structures

LAB EXERCISES:

Lab 3: Write a PL/SQL block using IF-THEN-ELSE to check if a book's price is above \$100 and print a message accordingly.

Ans.

```
SET SERVEROUTPUT ON;
```

```
DECLARE
```

```
    v_book_id books.book_id%TYPE := 101;
```

```
    v_price books.price%TYPE;
```

```
BEGIN
```

```
    SELECT price INTO v_price FROM books WHERE book_id = v_book_id;
```

```
    IF v_price > 100 THEN
```

```

DBMS_OUTPUT.PUT_LINE('The book is expensive. Price: $' ||  

TO_CHAR(v_price, '9999.99'));  
  

ELSE  
  

DBMS_OUTPUT.PUT_LINE('The book is affordable. Price: $' ||  

TO_CHAR(v_price, '9999.99'));  
  

END IF;  
  

EXCEPTION  
  

WHEN NO_DATA_FOUND THEN  
  

DBMS_OUTPUT.PUT_LINE('Error: No book found with the given ID.');//  
  

WHEN OTHERS THEN  
  

DBMS_OUTPUT.PUT_LINE('Error: ' || SQLERRM);  
  

END;  
  

/

```

Lab 4: Use a FOR LOOP in PL/SQL to display the details of all books one by one.

Ans.

```
SET SERVEROUTPUT ON;
```

```

DECLARE  
  

CURSOR book_cursor IS  
  

SELECT book_id, title, author, price FROM books;  
  

v_book books%ROWTYPE;  
  

BEGIN  
  

FOR v_book IN book_cursor LOOP  
  

DBMS_OUTPUT.PUT_LINE('Book ID: ' || v_book.book_id);

```

```
DBMS_OUTPUT.PUT_LINE('Title: ' || v_book.title);
DBMS_OUTPUT.PUT_LINE('Author: ' || v_book.author);
DBMS_OUTPUT.PUT_LINE('Price: $' || TO_CHAR(v_book.price, '9999.99'));
DBMS_OUTPUT.PUT_LINE('-----');
END LOOP;
END;
/
```

22. SQL Cursors

LAB EXERCISES:

Lab 3: Write a PL/SQL block using an explicit cursor to fetch and display all records from the members table.

Ans.

```
SET SERVEROUTPUT ON;
```

```
DECLARE
```

```
    CURSOR member_cursor IS
        SELECT member_id, member_name, date_of_membership, email FROM
members;
```

```
v_member member_cursor%ROWTYPE;
```

```
BEGIN
```

```
    OPEN member_cursor;
```

```
LOOP
```

```
    FETCH member_cursor INTO v_member;
```

```

    EXIT WHEN member_cursor%NOTFOUND;

    DBMS_OUTPUT.PUT_LINE('Member ID: ' || v_member.member_id);
    DBMS_OUTPUT.PUT_LINE('Name: ' || v_member.member_name);
    DBMS_OUTPUT.PUT_LINE('Joined: ' ||
    TO_CHAR(v_member.date_of_membership, 'YYYY-MM-DD'));
    DBMS_OUTPUT.PUT_LINE('Email: ' || v_member.email);
    DBMS_OUTPUT.PUT_LINE('-----');

END LOOP;

CLOSE member_cursor;
END;
/

```

Lab 4: Create a cursor to retrieve books by a particular author and display their titles.

Ans.

DELIMITER \$\$

```

CREATE PROCEDURE GetBooksByAuthor(IN author_name VARCHAR(255))
BEGIN
    DECLARE done INT DEFAULT 0;
    DECLARE book_title VARCHAR(255);

    DECLARE book_cursor CURSOR FOR
        SELECT title FROM books WHERE author = author_name;

```

```
DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = 1;
```

```
OPEN book_cursor;  
read_loop: LOOP  
    FETCH book_cursor INTO book_title;  
    IF done THEN  
        LEAVE read_loop;  
    END IF;  
    SELECT book_title;  
END LOOP;  
  
CLOSE book_cursor;  
END $$
```

23. Rollback and Commit Savepoint

LAB EXERCISES:

Lab 3: Perform a transaction that includes inserting a new member, setting a SAVEPOINT, and rolling back to the savepoint after making updates.

Ans.

```
START TRANSACTION;  
INSERT INTO members (name, email) VALUES ('John Doe',  
'johndoe@example.com');  
SAVEPOINT before_update;  
UPDATE members SET email = 'newemail@example.com' WHERE name = 'John  
Doe';
```

```
ROLLBACK TO SAVEPOINT before_update;  
COMMIT;
```

Lab 4: Use COMMIT after successfully inserting multiple books into the books table, then use ROLLBACK to undo a set of changes made after a savepoint.

Ans.

```
START TRANSACTION;
```

```
INSERT INTO books (title, author) VALUES  
('The Catcher in the Rye', 'J.D. Salinger'),  
('Brave New World', 'Aldous Huxley'),  
('Moby-Dick', 'Herman Melville');
```

```
COMMIT;
```

```
START TRANSACTION;  
SAVEPOINT before_update;
```

```
UPDATE books SET author = 'Unknown Author' WHERE title = 'Moby-Dick';  
DELETE FROM books WHERE title = 'Brave New World';
```

```
ROLLBACK TO SAVEPOINT before_update;  
COMMIT;
```