

~EXTRA LAB PRACTISE FOR DATABASE CONCEPTS

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Introduction to SQL

- 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.

```
CREATE DATABASE library_db;
```

```
CREATE TABLE books ( book_id int PRIMARY KEY,  
    title VARCHAR(255) NOT NULL, author  
    VARCHAR(200) NOT NULL, publisher  
    VARCHAR(200) NOT NULL, year_of_publication INT,  
    price int );
```













```
INSERT INTO books (book_id, title, author, publisher,  
    year_of_publication, price) VALUES  
(1, 'one piece', 'oda', 'shueisha', 1997, 199),  
(2, 'the greatest estate developer', 'kim hyunsoo', 'asura  
    scans', 2019, 210),  
(3, 'spy x family', 'endou tatsuya', 'shueisha', 2019, 150),  
(4, 'the apothecary diaries', 'hyuuga natsu', 'square enix  
    books', 2011, 180),  
(5, 'Hells paradise ', 'kaku yuuji', 'shueisha', 2018, 160);
```

`SELECT * FROM `books``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: Filter rows: Sort by key:

Extra options

<div>← T →</div>			book_id	title	author	publisher	year_of_publication	price	
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	one piece	oda	shueisha	1997	199
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	the greatest estate developer	kim hyunsoo	asura scans	2019	210
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	spy x family	endou tatsuya	shueisha	2019	150
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	the apothecary diaries	hyuuga natsu	square enix books	2011	180
<input type="checkbox"/>	 Edit	 Copy	 Delete	5	Hells paradise	kaku yuuji	shueisha	2018	160

☐ Check all With selected: Edit Copy Delete Export

Table structure

Relation view

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	book_id	int(11)			No	None			Change Drop More
<input type="checkbox"/>	2	title	varchar(255)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3	author	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	4	publisher	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	5	year_of_publication	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/>	6	price	int(11)			Yes	NULL			Change Drop More

☐ Check all With selected: Browse Change Drop Primary Unique Index Spatial Fulltext

Add to central columns Remove from central columns

- 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.

```
CREATE TABLE members (member_id INT PRIMARY KEY, member_name VARCHAR(100) NOT NULL, date_of_membership DATE NOT NULL, email VARCHAR(100) NOT NULL);
```

```
INSERT INTO members (member_id, member_name, date_of_membership, email) VALUES  
(1, 'harsh', '2023-04-11', 'harsh@email.com'),  
(2, 'luffy', '2022-06-22', 'monkey@email.com'),  
(3, 'anya', '2024-01-10', 'forger@email.com'),  
(4, 'llyod', '2024-03-18', 'fronterra@email.com'),  
(5, 'maomao', '2024-05-05', 'hehe@email.com');
```

Extra options





















				member_id	member_name	date_of_membership	email
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	harsh	2023-04-11	harsh@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	luffy	2022-06-22	monkey@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	anya	2024-01-10	forger@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	llyod	2024-03-18	fronterra@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	5	maomao	2024-05-05	hehe@email.com
	<input type="checkbox"/> Check all	With selected:	 Edit	 Copy	 Delete	 Export	

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 member_id	int(11)			No	None			Change Drop More
<input type="checkbox"/>	2 member_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3 date_of_membership	date			No	None			Change Drop More
<input type="checkbox"/>	4 email	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More

☐ Check all

With selected:

Browse Change Drop Primary Unique Index Spatial Fulltext

Add to central columns Remove from central columns

SQL Syntax

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

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

✓ Showing rows 0 - 0 (1 total, Query took 0.0007 seconds.) [date_of_membership: 2020-03-18... - 2020-03-18...]

```
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:

Extra options

	member_id	member_name	date_of_membership	email
<input type="checkbox"/> Edit Copy Delete	4	Ilyod	2020-03-18	fronterra@email.com

↑ ☐ Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

☐ Show all | Number of rows: 25 ▼ Filter rows:

- 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.

SELECT title FROM books WHERE author = 'oda'
ORDER BY year_of_publication DESC;

```
SELECT title FROM books WHERE author = 'oda' ORDER BY year_of_publication DESC;
```

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 ▼ Filter rows:

Extra options

←T→

title

☐ Edit Copy Delete one piece

☐ Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 ▼ Filter rows:

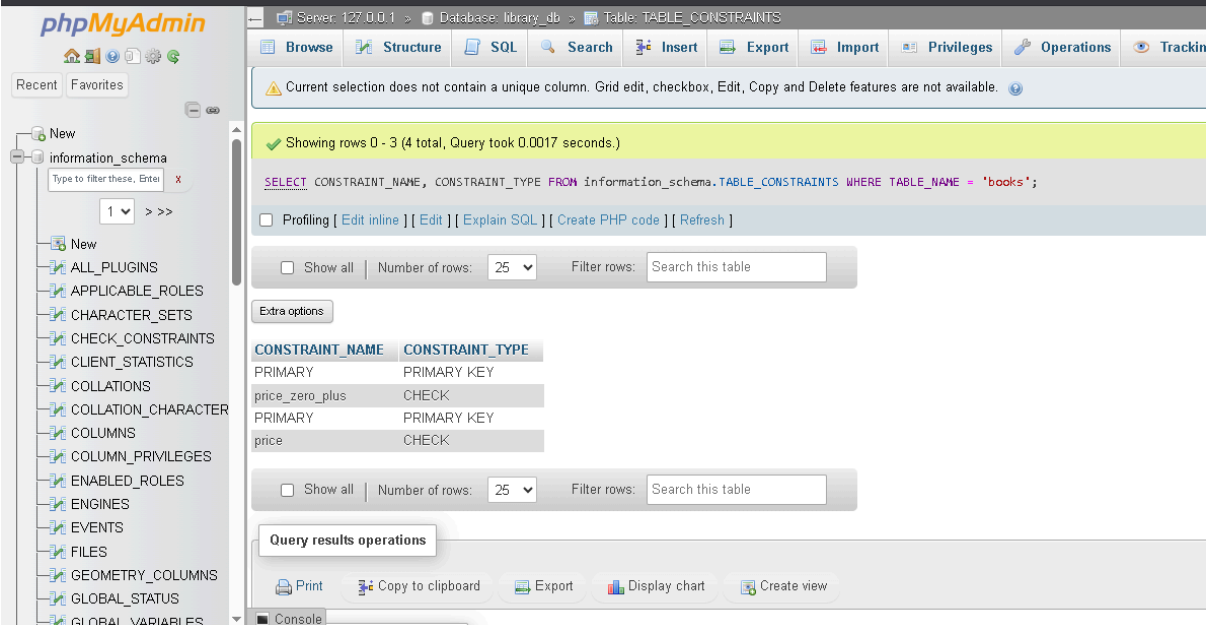
Query results operations

SQL Constraints

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

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

SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM information_schema.TABLE_CONSTRAINTS
WHERE TABLE_NAME = 'books';

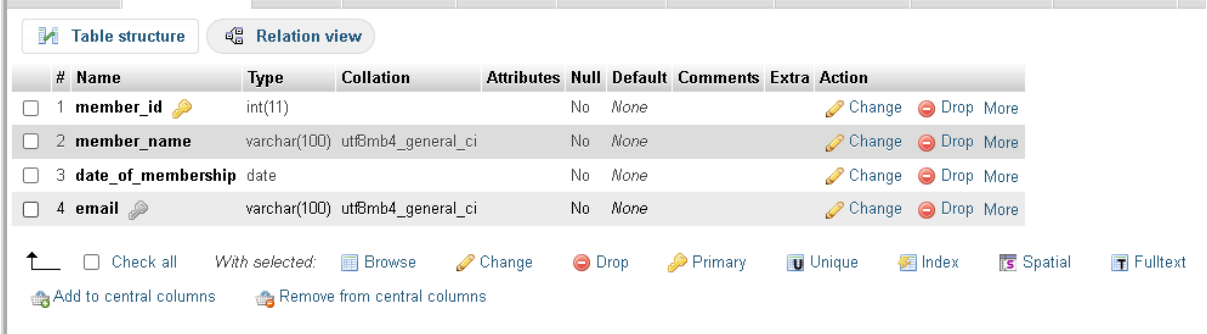


The screenshot shows the phpMyAdmin interface. On the left is the database navigation tree. The main panel displays the results of a query executed against the 'TABLE_CONSTRAINTS' table in the 'library_db' database. The query is: `SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE FROM information_schema.TABLE_CONSTRAINTS WHERE TABLE_NAME = 'books';`. The results show four rows of constraints for the 'books' table.

CONSTRAINT_NAME	CONSTRAINT_TYPE
PRIMARY	PRIMARY KEY
price_zero_plus	CHECK
PRIMARY	PRIMARY KEY
price	CHECK

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

ALTER TABLE members ADD CONSTRAINT
unique_email UNIQUE (email);



The screenshot shows a database management interface with two tabs: 'Table structure' (selected) and 'Relation view'. The table structure view displays the following columns:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 member_id	int(11)			No	None			Change Drop More
<input type="checkbox"/>	2 member_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3 date_of_membership	date			No	None			Change Drop More
<input type="checkbox"/>	4 email	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More

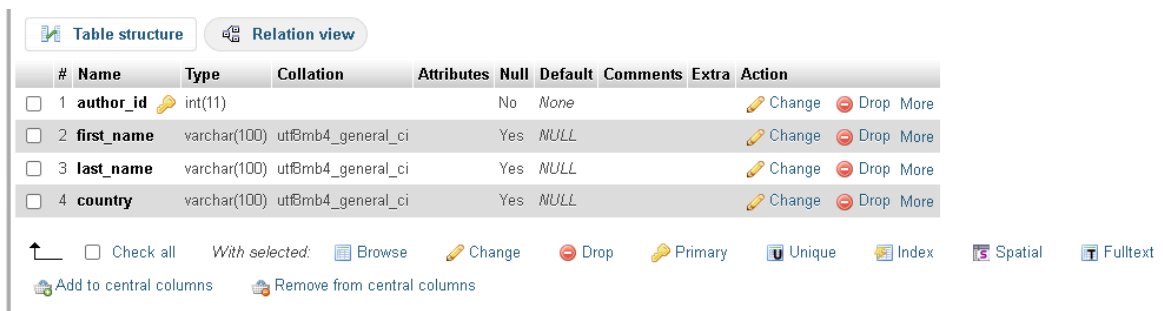
Below the table, there is a toolbar with the following options:

- ☐ Check all
- With selected: Browse Change Drop Primary Unique Index Spatial Fulltext
- Add to central columns Remove from central columns

Main SQL Commands and Sub-commands (DDL)

- 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.

```
CREATE TABLE authors (author_id INT PRIMARY KEY,  
first_name VARCHAR(100), last_name  
VARCHAR(100), country VARCHAR(100));
```



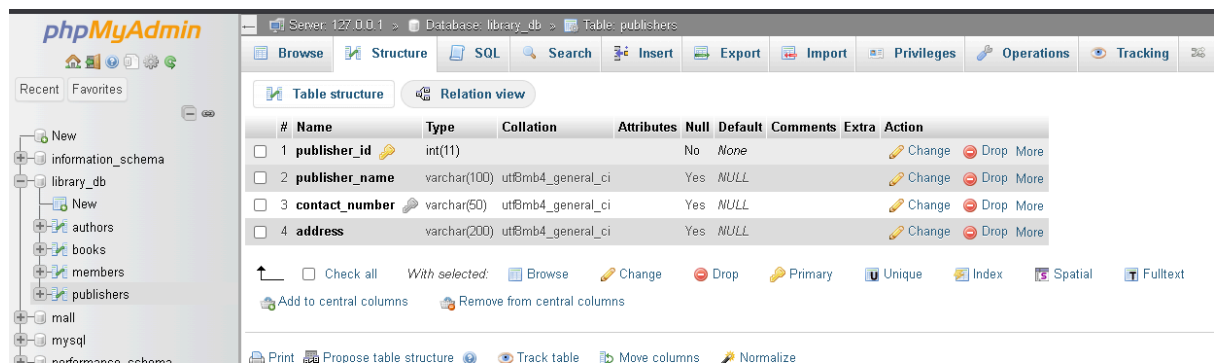
The screenshot shows a database management interface with two tabs: 'Table structure' (active) and 'Relation view'. The table structure is displayed in a table with columns: #, Name, Type, Collation, Attributes, Null, Default, Comments, Extra, and Action. The table 'authors' has four columns: author_id (int(11), primary key), first_name (varchar(100)), last_name (varchar(100)), and country (varchar(100)). All varchar columns have the collation 'utf8mb4_general_ci'. Below the table, there are various icons and buttons for managing the table structure, including 'Check all', 'With selected', 'Browse', 'Change', 'Drop', 'Primary', 'Unique', 'Index', 'Spatial', 'Fulltext', 'Add to central columns', and 'Remove from central columns'.

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

↑ ☐ Check all With selected: Browse Change Drop Primary Unique Index Spatial Fulltext
 Add to central columns Remove from central columns

- 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.

```
CREATE TABLE publishers (publisher_id INT PRIMARY KEY, publisher_name VARCHAR(100), contact_number VARCHAR(50) UNIQUE, address VARCHAR(200));
```



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

Its length is already 100 so i will set it to 200.

ALTER TABLE members MODIFY email varchar(200)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	member_id	int(11)			No	None			Change Drop More
<input type="checkbox"/> 2	member_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 3	date_of_membership	date			No	None			Change Drop More
<input type="checkbox"/> 4	email	varchar(200)	utf8mb4_general_ci		Yes	NULL			Change Drop More

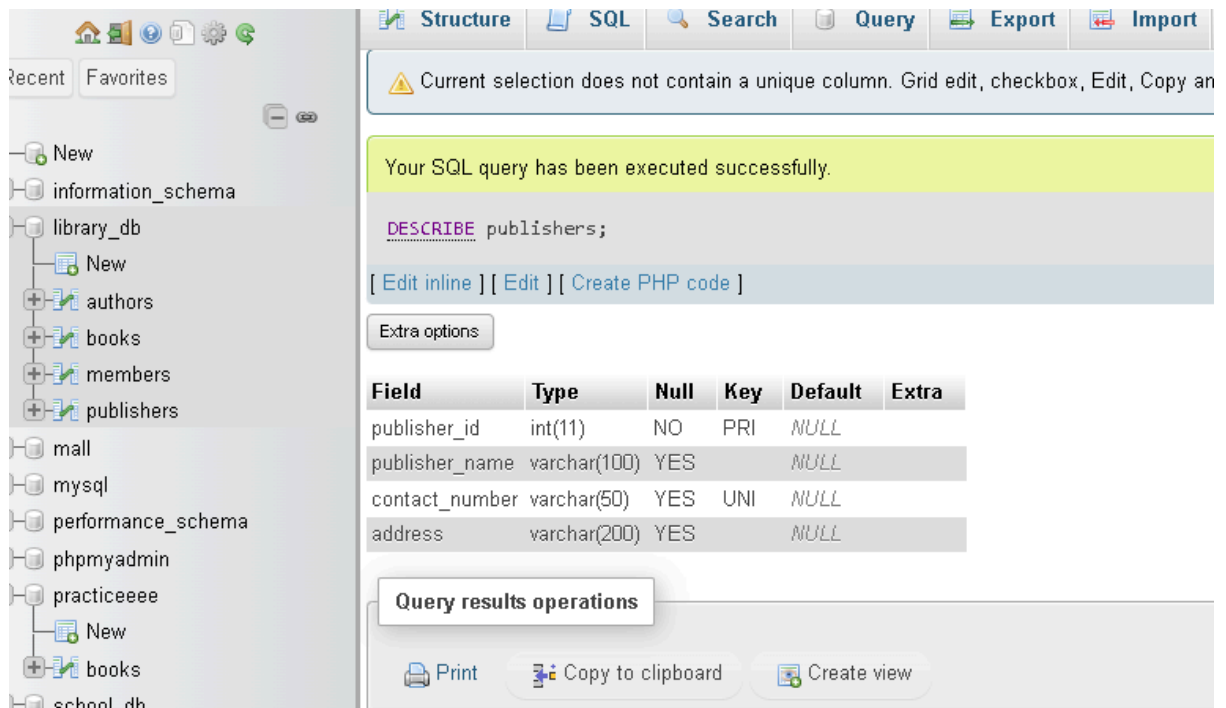
☐ Check all With selected: Browse Change Drop Primary Unique Index Spatial

Add to central columns Remove from central columns

DROP Command

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

DESCRIBE publishers;

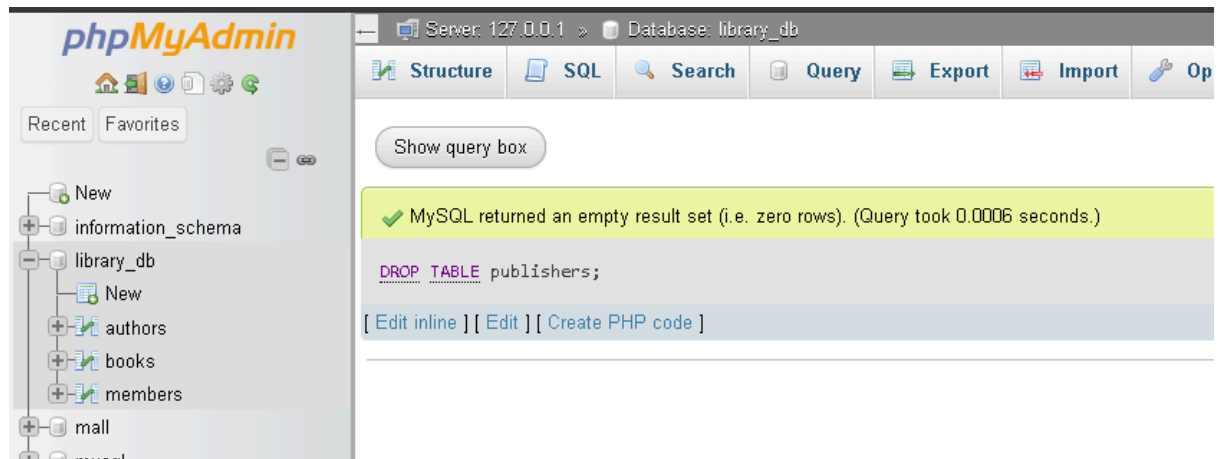


The screenshot shows the phpMyAdmin interface with the 'library_db' database selected. The 'Structure' tab is active, displaying the table structure for 'publishers'. A message at the top states: 'Your SQL query has been executed successfully.' Below this, the SQL query 'DESCRIBE publishers;' is shown. The table structure is as follows:

Field	Type	Null	Key	Default	Extra
publisher_id	int(11)	NO	PRI	NULL	
publisher_name	varchar(100)	YES		NULL	
contact_number	varchar(50)	YES	UNI	NULL	
address	varchar(200)	YES		NULL	

Below the table structure, there are buttons for 'Print', 'Copy to clipboard', and 'Create view'.

DROP TABLE publishers;



The screenshot shows the phpMyAdmin interface with the 'library_db' database selected. The 'SQL' tab is active, displaying the SQL query 'DROP TABLE publishers;'. A message at the top states: 'MySQL returned an empty result set (i.e. zero rows). (Query took 0.0006 seconds.)' Below this, the SQL query is shown. The interface also includes buttons for 'Edit inline', 'Edit', and 'Create PHP code'.

- Lab 4: Create a backup of the members table and then drop the original members table.

CREATE TABLE members_backup AS SELECT * FROM members;

The screenshot shows the phpMyAdmin interface. On the left, the database structure is visible, including 'library_db' and 'members_backup'. The main panel displays the 'Structure' tab for the 'members_backup' table. A message indicates that the current selection does not contain a unique column. Below this, a green status bar shows 'Showing rows 0 - 4 (5 total, Query took 0.0005 seconds.)'. The SQL query 'SELECT * FROM `members_backup`' is entered. Below the query, there are options for 'Profiling', 'Edit inline', 'Edit', 'Explain SQL', 'Create PHP code', and 'Refresh'. A 'Show all' checkbox is present, along with a 'Number of rows' dropdown set to 25 and a 'Filter rows' input field. Below these, an 'Extra options' button is visible. The table data is displayed in a grid with columns: member_id, member_name, date_of_membership, and email. The data rows are: 1 harsh 2023-04-11 harsh@email.com, 2 luffy 2022-06-22 monkey@email.com, 3 anya 2024-01-10 forger@email.com, 4 llyod 2020-03-18 fronterra@email.com, and 5 maomao 2024-05-05 hehe@email.com. At the bottom, there are again 'Show all', 'Number of rows' (25), and 'Filter rows' options.

member_id	member_name	date_of_membership	email
1	harsh	2023-04-11	harsh@email.com
2	luffy	2022-06-22	monkey@email.com
3	anya	2024-01-10	forger@email.com
4	llyod	2020-03-18	fronterra@email.com
5	maomao	2024-05-05	hehe@email.com

DROP TABLE members;

The screenshot shows the phpMyAdmin interface. On the left, the database structure is visible, including 'library_db' and 'members_backup'. The main panel displays the 'Query' tab. A green status bar shows 'MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)'. The SQL query 'DROP TABLE members;' is entered. Below the query, there are options for 'Edit inline', 'Edit', and 'Create PHP code'.

Data Manipulation Language (DML)

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

```
INSERT INTO authors(author_id, first_name, last_name, country)
VALUES(1,'oda','chauhan','japan'),(2,'itachi','uchiha','india'),(3,'javier','law','korea')
```



The screenshot shows the phpMyAdmin interface. On the left is a sidebar with a tree view of databases and tables. The 'information_schema' database is selected, showing a list of tables including 'authors'. The main panel displays the 'authors' table with the following data:

author_id	first_name	last_name	country
1	oda	chauhan	japan
2	itachi	uchiha	india
3	javier	law	korea

Below the table, there are controls for 'Check all', 'With selected', 'Edit', 'Copy', 'Delete', and 'Export'.

```
UPDATE authors SET last_name = 'monkey' WHERE
author_id = 1
```



The screenshot shows the phpMyAdmin interface after the update. The 'authors' table now has the following data:

author_id	first_name	last_name	country
1	oda	monkey	japan
2	itachi	uchiha	india
3	javier	law	korea

The 'last_name' for author_id 1 has been updated from 'chauhan' to 'monkey'.

UPDATE Command

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

UPDATE books SET year_of_publication = 2021 WHERE book_id = 4

Extra options

<div>⏮️⏪️⏩️⏭️</div>		book_id	title	author	publisher	year_of_publication	price	genre
<div><input type="checkbox"/>  Edit  Copy  Delete</div>		2	the greatest estate developer	kim hyunsoo	asura scans	2019	210	Manhwa
<div><input type="checkbox"/>  Edit  Copy  Delete</div>		3	spy x family	endou tatsuya	shueisha	2019	150	Manga
<div><input type="checkbox"/>  Edit  Copy  Delete</div>		4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga
<div><input type="checkbox"/>  Edit  Copy  Delete</div>		5	Hells paradise	kaku yuuji	shueisha	2018	160	Manga
<div>⬆️ <input type="checkbox"/> Check all <input type="checkbox"/> All selected  Edit  Copy  Delete  Export</div>								

- Lab 4: Increase the price of all books published before 2015 by 10%.

Bcz i didnt set any book's published year before 2015

```
UPDATE `books` SET `year_of_publication` = '2012'  
WHERE `books`.`book_id` = 5;
```

<div>⬅️ ➡️</div>		book_id	title	author	publisher	year_of_publication	price	genre
<input type="checkbox"/>	<div><div>✏️ Edit</div><div>📄 Copy</div><div>🗑️ Delete</div></div>	2	the greatest estate developer	kim hyunsoo	asura scans	2019	210	Manhwa
<input type="checkbox"/>	<div><div>✏️ Edit</div><div>📄 Copy</div><div>🗑️ Delete</div></div>	3	spy x family	endou tatsuya	shueisha	2019	150	Manga
<input type="checkbox"/>	<div><div>✏️ Edit</div><div>📄 Copy</div><div>🗑️ Delete</div></div>	4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga
<input type="checkbox"/>	<div><div>✏️ Edit</div><div>📄 Copy</div><div>🗑️ Delete</div></div>	5	Hells paradise	kaku yuuji	shueisha	2012	160	Manga
<div>⬆️</div>	<div><div><input type="checkbox"/> Check all</div><div>With selected:</div><div>✏️ Edit</div><div>📄 Copy</div><div>🗑️ Delete</div><div>📄 Export</div></div>							

```
UPDATE books SET price = price * 1.10 WHERE  
year_of_publication < 2015
```

<div>←T→</div>		book_id	title	author	publisher	year_of_publication	price	genre
<input type="checkbox"/>	<div><div><div>Edit</div><div>Copy</div><div>Delete</div></div></div>	2	the greatest estate developer	kim hyunsoo	asura scans	2019	210	Manhwa
<input type="checkbox"/>	<div><div><div>Edit</div><div>Copy</div><div>Delete</div></div></div>	3	spy x family	endou tatsuya	shueisha	2019	150	Manga
<input type="checkbox"/>	<div><div><div>Edit</div><div>Copy</div><div>Delete</div></div></div>	4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga
<input type="checkbox"/>	<div><div><div>Edit</div><div>Copy</div><div>Delete</div></div></div>	5	Hells paradise	kaku yuuji	shueisha	2012	176	Manga
<div><div><div></div></div></div>	<div><div><div><input type="checkbox"/> Check all</div><div>With selected:</div><div><div><div>Edit</div><div>Copy</div><div>Delete</div></div><div>Export</div></div></div></div>							

DELETE Command

- Lab 3: Remove all members who joined before 2020 from the members table.

```
CREATE TABLE members (member_id INT PRIMARY KEY, member_name VARCHAR(100) NOT NULL, date_of_membership DATE NOT NULL, email VARCHAR(100) NOT NULL);
```

```
INSERT INTO members (member_id, member_name, date_of_membership, email) VALUES  
(1, 'harsh', '2023-04-11', 'harsh@email.com'),  
(2, 'luffy', '2022-06-22', 'monkey@email.com'),  
(3, 'anya', '2015-01-10', 'forger@email.com'),  
(4, 'llyod', '2024-03-18', 'fronterra@email.com'),  
(5, 'maomao', '2019-05-05', 'hehe@email.com');
```

Show all

Number of rows:

25

Filter rows:

Search this table

Sort by key:

None

Extra options

<div><div><div></div><div></div><div></div></div></div>	<div></div>	<div>member_id</div>	<div>member_name</div>	<div>date_of_membership</div>	<div>email</div>
<div><div><div></div><div></div><div></div></div><div><div></div><div>Edit</div><div></div><div>Copy</div><div></div><div>Delete</div></div></div>		<div>1</div>	<div>harsh</div>	<div>2023-04-11</div>	<div>harsh@email.com</div>
<div><div><div></div><div></div><div></div></div><div><div></div><div>Edit</div><div></div><div>Copy</div><div></div><div>Delete</div></div></div>		<div>2</div>	<div>luffy</div>	<div>2022-06-22</div>	<div>monkey@email.com</div>
<div><div><div></div><div></div><div></div></div><div><div></div><div>Edit</div><div></div><div>Copy</div><div></div><div>Delete</div></div></div>		<div>3</div>	<div>anya</div>	<div>2015-01-10</div>	<div>forger@email.com</div>
<div><div><div></div><div></div><div></div></div><div><div></div><div>Edit</div><div></div><div>Copy</div><div></div><div>Delete</div></div></div>		<div>4</div>	<div>llyod</div>	<div>2024-03-18</div>	<div>fronterra@email.com</div>
<div><div><div></div><div></div><div></div></div><div><div></div><div>Edit</div><div></div><div>Copy</div><div></div><div>Delete</div></div></div>		<div>5</div>	<div>maomao</div>	<div>2019-05-05</div>	<div>hehe@email.com</div>

Check all

With selected:

Edit










Copy






Delete

Export

DELETE FROM members WHERE date_of_membership < '2020-01-01';

Extra options

				member_id	member_name	date_of_membership	email
<input type="checkbox"/>		Edit		Copy		Delete	1 harsh2023-04-11harsh@email.com
<input type="checkbox"/>		Edit		Copy		Delete	2 luffy2022-06-22monkey@email.com
<input type="checkbox"/>		Edit		Copy		Delete	4 llyod2024-03-18fronterra@email.com

 ☐ Check all With selected:  Edit  Copy  Delete  Export

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

DELETE FROM books WHERE author IS null

✓ 0 rows deleted. (Query took 0.0004 seconds.)

```
DELETE FROM books WHERE author IS null;
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

Data Control Language (DCL)

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

```
CREATE USER 'librarian'@'localhost' IDENTIFIED BY 'harsh';
```

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

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0056 seconds.)

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

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

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

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

Show query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0050 seconds.)

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

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

SELECT * FROM `TABLE_PRIVILEGES`

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

```
SELECT * FROM `TABLE_PRIVILEGES`
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 | Filter rows:

Extra options

GRANTEE	TABLE_CATALOG	TABLE_SCHEMA	TABLE_NAME	PRIVILEGE_TYPE	IS_GRANTABLE
'user2'@'localhost'	def	school_db	courses	INSERT	NO
'librarian'@'localhost'	def	library_db	books	SELECT	NO
'user1'@'localhost'	def	school_db	courses	SELECT	NO
'librarian'@'localhost'	def	library_db	members	INSERT	NO
'librarian'@'localhost'	def	library_db	members	UPDATE	NO

☐ Show all | Number of rows: 25 | Filter rows:

REVOKE Command

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

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

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0028 seconds.)

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

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

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

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

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0022 seconds.)

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

[Edit inline](#)] [Edit](#)] [Create PHP code](#)]

Transaction Control Language (TCL)

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

START TRANSACTION;

```
INSERT INTO books (book_id, title, author, publisher,  
    year_of_publication, price, genre)  
VALUES(6, 'Blue Lock', 'Muneyuki Kaneshiro',  
    'Kodansha', 2018, 220, 'Sports'),  
    (7, 'Jujutsu Kaisen', 'Gege Akutami', 'Shueisha', 2018,  
    210, 'Supernatural');
```

COMMIT;

```
INSERT INTO books (book_id, title, author, publisher,  
    year_of_publication, price, genre)  
VALUES(8, 'Demon Slayer', 'Koyoharu Gotouge',  
    'Shueisha', 2016, 200, 'Action');
```

ROLLBACK;

SELECT * FROM `books`

Profiling

[\[Edit inline \]](#)

[\[Edit \]](#)

[\[Explain SQL \]](#)

[\[Create PHP code \]](#)

[\[Refresh \]](#)

☐ Show all

Number of rows: 25

Filter rows:

Sort by key: None

Extra options

		book_id	title	author	publisher	year_of_publication	price	genre		
<input type="checkbox"/>	Edit	Copy	Delete	2	the greatest estate developer	kim hyunsoo	asura scans	2019	210	Manhwa
<input type="checkbox"/>	Edit	Copy	Delete	3	spy x family	endou tatsuya	shueisha	2019	150	Manga
<input type="checkbox"/>	Edit	Copy	Delete	4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga
<input type="checkbox"/>	Edit	Copy	Delete	5	Hells paradise	kaku yuuji	shueisha	2012	176	Manga
<input type="checkbox"/>	Edit	Copy	Delete	6	Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220	Sports
<input type="checkbox"/>	Edit	Copy	Delete	7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural
<input type="checkbox"/>	Edit	Copy	Delete	8	Demon Slayer	Koyoharu Gotouge	Shueisha	2016	200	Action

[↑](#)

☐ Check all

With selected:

[Edit](#)

[Copy](#)

[Delete](#)

[Export](#)

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

START TRANSACTION;

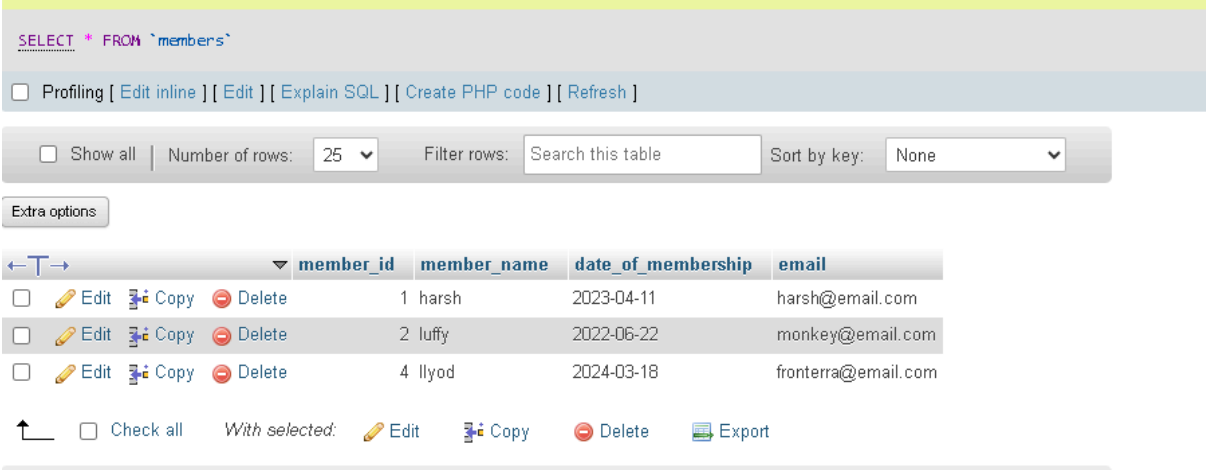
SAVEPOINT before_update;

UPDATE members SET member_name = 'Ash' WHERE member_id = 1;

UPDATE members SET member_name = 'Monkey D. Luffy' WHERE member_id = 2;

ROLLBACK TO SAVEPOINT before_update;

COMMIT;



SELECT * FROM `members`

☐ 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

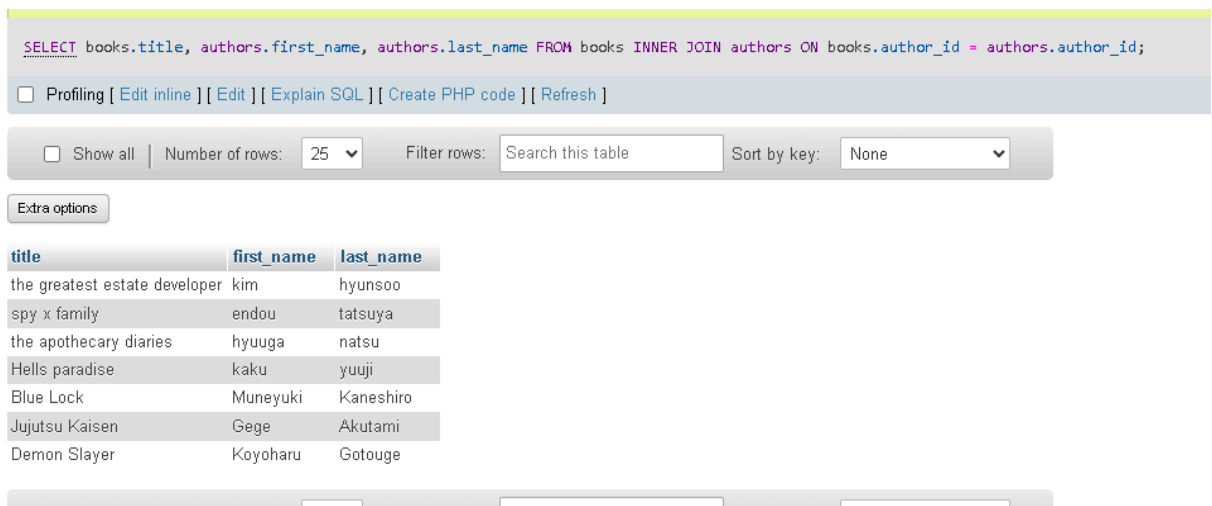
	member_id	member_name	date_of_membership	email
<input type="checkbox"/> Edit Copy Delete	1	harsh	2023-04-11	harsh@email.com
<input type="checkbox"/> Edit Copy Delete	2	luffy	2022-06-22	monkey@email.com
<input type="checkbox"/> Edit Copy Delete	4	llyod	2024-03-18	fronterra@email.com

↑ ☐ Check all With selected: Edit Copy Delete Export

SQL Joins

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

```
SELECT
    books.title,
    authors.first_name,
    authors.last_name
FROM
    books
INNER JOIN
    authors
ON
    books.author_id = authors.author_id;
```



The screenshot shows a web-based SQL interface. At the top, a SQL query is entered: `SELECT books.title, authors.first_name, authors.last_name FROM books INNER JOIN authors ON books.author_id = authors.author_id;`. Below the query, there are controls for Profiling, Edit inline, Edit, Explain SQL, Create PHP code, and Refresh. Further down, there are controls for Show all, Number of rows (set to 25), Filter rows (Search this table), and Sort by key (set to None). An 'Extra options' button is also present. The results are displayed in a table with three columns: title, first_name, and last_name. The table contains seven rows of data.

title	first_name	last_name
the greatest estate developer	kim	hyunsoo
spy x family	endou	tatsuya
the apothecary diaries	hyuuga	natsu
Hells paradise	kaku	yuuji
Blue Lock	Muneyuki	Kaneshiro
Jujutsu Kaisen	Gege	Akutami
Demon Slayer	Koyoharu	Gotouge

- 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.

```
SELECT * FROM books LEFT JOIN authors ON
  books.author_id = authors.author_id
UNION
```

```
SELECT * FROM books RIGHT JOIN authors ON
  books.author_id = authors.author_id
```

`SELECT * FROM books LEFT JOIN authors ON books.author_id = authors.author_id UNION SELECT * FROM books RIGHT JOIN authors ON 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 table | Sort by key: None

Extra options

book_id	title	author	publisher	year_of_publication	price	genre	author_id	author_id	first_name	last_name	country
2	the greatest estate developer	kim hyunsoo	asura scans	2019	210	Manhwa	4	4	kim	hyunsoo	korea
3	spy x family	endou tatsuya	shueisha	2019	150	Manga	5	5	endou	tatsuya	america
4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga	6	6	hyuuga	natsu	canada
5	Hells paradise	kaku yuuji	shueisha	2012	176	Manga	7	7	kaku	yuuji	china
6	Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220	Sports	8	8	Muneyuki	Kaneshiro	japan
7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural	9	9	Gege	Akutami	japan
8	Demon Slayer	Koyoharu Gotouge	Shueisha	2016	200	Action	10	10	Koyoharu	Gotouge	japan
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	1	oda	monkey	japan
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	2	itachi	uchiha	india
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	3	javier	law	korea

Console

SQL Group By

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

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

```
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:

Extra options

genre	total_books
Action	1
Manga	3
Manhwa	1
Sports	1
Supernatural	1

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

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

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

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows:

Extra options

join_year	total_members
2022	1
2023	1
2024	1

SQL Stored Procedure

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

```
DELIMITER //
```

```
CREATE PROCEDURE BooksByAuthor(IN author_name  
    VARCHAR(100))
```

```
BEGIN
```

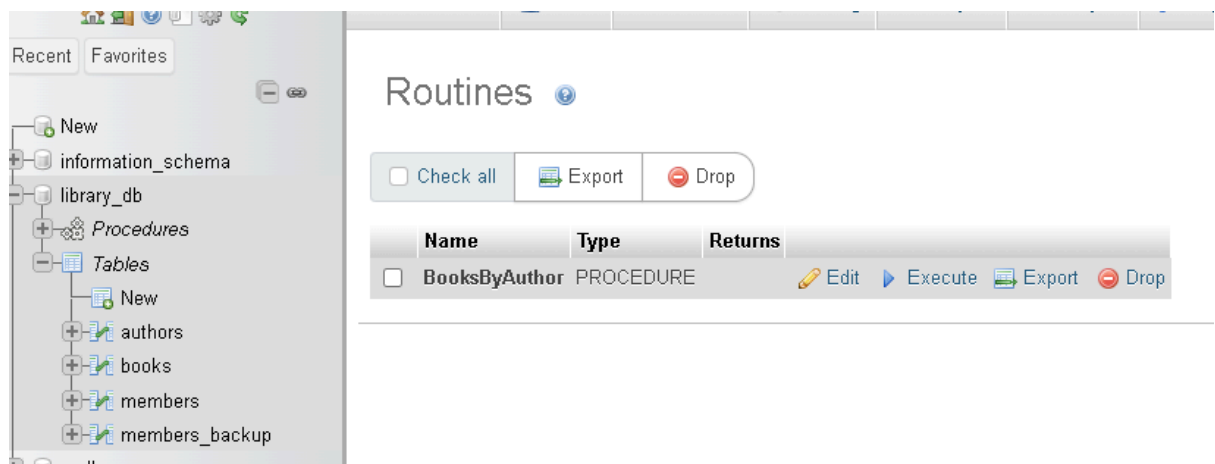
```
    SELECT *
```

```
    FROM books
```

```
    WHERE author = author_name;
```

```
END //
```

```
DELIMITER ;
```



Routines

☐ Check all

Export

Drop

Search

Name

☐ BooksByA

Execute routine `BooksByAuthor`

Routine parameters

Name	Type	Function	Value
author_name	VARCHAR		Gege Akutami

Go

Close

SET @p0='Gege Akutami'; CALL `BooksByAuthor` (@p0);

Execution results of routine `BooksByAuthor`

book_id	title	author	publisher	year_of_publication	price	genre	author_id
7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural	9

Routines

☐ Check all

Export

Drop

Search

Create new routine

Name

Type

Returns

☐ BooksByAuthor

PROCEDURE

Edit

Execute

Export

Drop

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

DELIMITER //

CREATE PROCEDURE BookPrice(IN id INT)

BEGIN

 SELECT price



 FROM books




 WHERE book_id = id;

END //

DELIMITER ;

Routines ⓘ

☐ Check all  Export  Drop

	Name	Type	Returns	
<input type="checkbox"/>	BookPrice	PROCEDURE		 Edit  Execute  Export  Drop
<input type="checkbox"/>	BooksByAuthor	PROCEDURE		 Edit  Execute  Export  Drop

Execute routine `BookPrice`

Routine parameters

Name	Type	Function	Value
id	INT		3

Go

Close

Type

Returns

```
SET @p0='3'; CALL `BookPrice`(@p0);
```

Execution results of routine `BookPrice`

price
150

Routines ⓘ

☐ Check all

Export

Drop


	Name	Type	Returns	
<input type="checkbox"/>	BookPrice	PROCEDURE		Edit Execute Export Drop
<input type="checkbox"/>	BooksByAuthor	PROCEDURE		Edit Execute Export Drop

SQL View

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

```
CREATE VIEW books_summary AS  
SELECT title, author, price  
FROM books;
```

```
SELECT * FROM books_summary;
```



The screenshot shows a SQL query execution interface. At the top, the query `SELECT * FROM `books_summary`` is entered. Below the query, there are links for `Profiling`, `Edit inline`, `Edit`, `Explain SQL`, `Create PHP code`, and `Refresh`. A control bar shows `Show all`, `Number of rows: 25`, and a `Filter rows` search box. An `Extra options` button is also present. The results are displayed in a table with columns `title`, `author`, and `price`. Each row includes checkboxes for `Edit`, `Copy`, and `Delete`.

	title	author	price
<input type="checkbox"/> Edit Copy Delete	the greatest estate developer	kim hyunsoo	210
<input type="checkbox"/> Edit Copy Delete	spy x family	endou tatsuya	150
<input type="checkbox"/> Edit Copy Delete	the apothecary diaries	hyuuga natsu	180
<input type="checkbox"/> Edit Copy Delete	Hells paradise	kaku yuuji	176
<input type="checkbox"/> Edit Copy Delete	Blue Lock	Muneyuki Kaneshiro	220
<input type="checkbox"/> Edit Copy Delete	Jujutsu Kaisen	Gege Akutami	210
<input type="checkbox"/> Edit Copy Delete	Demon Slayer	Koyoharu Gotouge	200

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

```
CREATE VIEW members_before_2020 AS  
SELECT *  
FROM members  
WHERE YEAR(date_of_membership) < 2020;
```

`SELECT * FROM `members_before_2020``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: | Filter rows:

Extra options

				member_id	member_name	date_of_membership	email
<input type="checkbox"/>				7	aqua	2019-07-03	aqua@gmail.com
<input type="checkbox"/>				8	sai	2018-05-19	sai@gmail.com

☐ Check all | With selected: Edit Copy Delete Export

SQL Trigger

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

```
CREATE TABLE book_update_log
(
    log_id INT AUTO_INCREMENT PRIMARY KEY,
    book_id INT,
    old_title VARCHAR(200),
    new_title VARCHAR(200),
    old_price INT,
    new_price INT,
    update_time TIMESTAMP DEFAULT
CURRENT_TIMESTAMP
);
```

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	log_id	int(11)		No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2	book_id	int(11)		Yes	NULL			Change Drop More
<input type="checkbox"/>	3	old_title	varchar(200)	utf8mb4_general_ci	Yes	NULL			Change Drop More
<input type="checkbox"/>	4	new_title	varchar(200)	utf8mb4_general_ci	Yes	NULL			Change Drop More
<input type="checkbox"/>	5	old_price	int(11)		Yes	NULL			Change Drop More
<input type="checkbox"/>	6	new_price	int(11)		Yes	NULL			Change Drop More
<input type="checkbox"/>	7	update_time	timestamp		No	current_timestamp()			Change Drop More



☐ Check all With selected: Browse Change Drop Primary Unique Index Spatial Fulltext

DELIMITER //

```
CREATE TRIGGER update_log
AFTER UPDATE ON books
FOR EACH ROW
BEGIN
    INSERT INTO update_log (book_id, old_title, new_title,
old_price, new_price)
    VALUES
    (
        OLD.book_id,
        OLD.title,
        NEW.title,
        OLD.price,
        NEW.price
    );
END //
```



DELIMITER ;



Triggers

☐ Check all  Export  Drop

Name	Table	Time	Event	
<input type="checkbox"/> update_log	books	AFTER	UPDATE	 Edit  Export  Drop

Triggers

☐ Check all  Export  Drop

	Name	Time	Event	
<input type="checkbox"/>	update_log	AFTER	UPDATE	 Edit  Export  Drop




UPDATE books SET price = 200 WHERE books.book_id = 2;






```
SELECT * FROM `update_log`
```

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 | Filter rows:






Extra options

	log_id	book_id	old_title	new_title	old_price	new_price	update_time
<input type="checkbox"/>  Edit  Copy  Delete	1	2	the greatest estate developer	the greatest estate developer	210	200	2025-10-26 19:44:30

 ☐ Check all With selected:  Edit  Copy  Delete  Export

☐ Show all | Number of rows: 25 | Filter rows:

Query results operations

 Print  Copy to clipboard  Export  Display chart  Create view

- 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.

```
CREATE TABLE delete_log
(
    log_id INT AUTO_INCREMENT PRIMARY KEY,
    book_id INT,
    title VARCHAR(200),
    author VARCHAR(100),
    deleted_at TIMESTAMP DEFAULT
    CURRENT_TIMESTAMP
);
```

Table structure

Relation view

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	log_id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2	book_id	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/>	3	title	varchar(200)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	4	author	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	5	deleted_at	timestamp			No	current_timestamp()			Change Drop More

☐ Check all

With selected:

Browse

Change

Drop

Primary

Unique

Index

Spatial

Fulltext

DELIMITER //

```
CREATE TRIGGER book_delete_tri
AFTER DELETE ON books
FOR EACH ROW
BEGIN
    INSERT INTO delete_log (book_id, title, author)
    VALUES (OLD.book_id, OLD.title, OLD.author);
END //
```

DELIMITER ;

DELETE FROM books WHERE books.book_id = 8

```
SELECT * FROM `delete_log`
```

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 | Filter rows:

Extra options

	log_id	book_id	title	author	deleted_at
<input type="checkbox"/> Edit Copy Delete	1	8	Demon Slayer	Koyoharu Gotouge	2025-10-26 20:11:43

[↑](#) ☐ Check all *With selected:* [Edit](#) [Copy](#) [Delete](#) [Export](#)

☐ Show all | Number of rows: 25 | Filter rows:

Query results operations

Introduction to PL/SQL

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

```
DELIMITER //
```

```
CREATE PROCEDURE ForNewBook
```

```
(
```

```
    IN n_book_id int,
```

```
    IN n_title VARCHAR(200),
```

```
    IN n_author VARCHAR(100),
```

```
    IN n_publisher VARCHAR(100),
```

```
    IN n_year int,
```

```
    IN n_price int,
```

```
    IN n_genre VARCHAR(100),
```

```
    IN n_author_id int
```

```
)
```

```
BEGIN
```

```
    INSERT INTO books (book_id,title, author, publisher,  
        year_of_publication, price, genre, author_id)
```

```
    VALUES (n_book_id,n_title, n_author, n_publisher,  
        n_year, n_price, n_genre, n_author_id);
```

```
    SELECT CONCAT('Book "', n_title, '" inserted  
        successfully') AS confirmation_message;
```

```
END //
```

DELIMITER ;

CALL ForNewBook

(
 8
 'My Hero Academia',
 'Kohei Horikoshi',
 'Shueisha',
 2014,
 175,
 'Action',
 12
);

The screenshot displays a MySQL database management tool interface. On the left, a tree view shows the database structure, including 'information_schema', 'library_db', and 'mysql'. The 'library_db' database is expanded, showing tables like 'authors', 'books', 'delete_log', 'members', 'members_backup', and 'update_log'. The 'books' table is selected. The main panel on the right shows the query execution results. A yellow banner at the top indicates 'Showing rows 0 - 0 (1 total, Query took 0.0022 seconds.)'. Below this, the executed query is displayed: `CALL ForNewBook(8, 'My Hero Academia', 'Kohei Horikoshi', 'Shueisha', 2014, 175, 'Action', 12);`. The query results are shown as a single row in a table, with the column 'confirmation_message' containing the text 'Book "My Hero Academia" inserted successfully'. The interface also includes a 'Query results operations' section with buttons for 'Print', 'Copy to clipboard', and 'Create view'.

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

DELIMITER //

CREATE PROCEDURE ShowTotalBooks()

BEGIN

 SELECT COUNT(*) AS total_books FROM books;

END //

DELIMITER ;

The screenshot displays a database management interface. On the left, a tree view shows the database structure for 'library_db', including 'Procedures' and 'Tables'. The 'Tables' folder is expanded, showing 'New', 'authors', 'books', 'delete_log', 'members', 'members_backup', and 'update_log'. The 'Views' folder is also expanded, showing 'New', 'books_summary', and 'members_before_2020'. The main panel on the right shows the execution of a PL/SQL procedure. A green status bar at the top indicates 'Showing rows 0 - 0 (1 total, Query took 0.0008 seconds.)'. Below this, the procedure call is shown: 'CALL ShowTotalBooks();'. There are links for '[Edit inline]', '[Edit]', and '[Create PHP code]'. A table with one row is displayed, showing the result of the procedure. The table has a column named 'total_books' with a value of 8. The table is titled 'total_books' and has 8 rows. Below the table, there are controls for 'Show all', 'Number of rows' (set to 25), and 'Filter rows' (Search this table). At the bottom, there is a section for 'Query results operations'.

total_books
8

PL/SQL Syntax

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

```
DELIMITER //
```

```
CREATE PROCEDURE Book_by_IdAndPrice  
(  
    IN id INT,  
    IN g_price INT  
)  
BEGIN  
    SELECT id AS book_id, g_price AS price;  
END //
```

```
DELIMITER ;
```

The screenshot shows a database management tool interface. On the left, a tree view displays the database structure, including 'information_schema', 'library_db', 'Procedures', 'Tables', and 'Views'. The 'Procedures' folder is expanded, showing a procedure named 'Book_by_IdAndPrice'. The main panel on the right displays the execution results of the procedure. A green status bar at the top indicates 'Showing rows 0 - 0 (1 total, Query took 0.0003 seconds.)'. Below this, the SQL command is shown: `CALL Book_by_IdAndPrice(101, 250);`. The results are displayed in a table with two columns: `book_id` and `price`. The table contains one row with the values 101 and 250. The interface also includes a search bar, a 'Number of rows' dropdown set to 25, and a 'Filter rows' input field. At the bottom, there are buttons for 'Print', 'Copy to clipboard', and 'Create view'.

book_id	price
101	250

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

```
DELIMITER //
```

```
CREATE PROCEDURE Calc_B_Prices()
```

```
BEGIN
```

```
    DECLARE price1 INT DEFAULT 210;
```

```
    DECLARE price2 INT DEFAULT 180;
```

```
    DECLARE price3 INT DEFAULT 170;
```

```
    DECLARE sum_prices INT;
```

```
    DECLARE avg_price int;
```

```
    SET sum_prices = price1 + price2 + price3;
```

```
    SET avg_price = sum_prices / 3;
```

```
    SELECT
```

```
        sum_prices AS total_price,
```

```
        avg_price AS average_price;
```

```
END //
```

```
DELIMITER ;
```

`call` Calc_B_Prices();

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

☐ Show all

Number of rows:

25 ▼

Filter rows:

Extra options

total_price	average_price
560	187

PL/SQL Control Structures

- Lab 3: Write a PL/SQL block using IF-THEN-ELSE to check if a book's price is above \$200 and print a message accordingly.

```
DELIMITER //
```

```
CREATE PROCEDURE CheckBookPriceById(IN id INT)
```

```
BEGIN
```

```
    DECLARE t_price INT;
```

```
    SELECT price INTO t_price FROM books WHERE  
    book_id = id;
```

```
    IF t_price > 200 THEN
```

```
        SELECT CONCAT('the book price is above 200  
(price: ', t_price, ')') AS message;
```

```
    ELSE
```

```
        SELECT CONCAT('the book price is 200 or below  
(price: ', t_price, ')') AS message;
```

```
    END IF;
```

```
END //
```

```
DELIMITER ;
```

```
call CheckBookPriceById(3);
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows:

Extra options

message

the book price is 200 or below (price: 150)

☐ Show all | Number of rows: 25 ▼ Filter rows:

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

```
DELIMITER //
```

```
CREATE PROCEDURE ShowAllBooks()
```

```
BEGIN
```

```
    DECLARE done INT DEFAULT FALSE;
```

```
    DECLARE g_book_id INT;
```

```
    DECLARE g_title VARCHAR(200);
```

```
    DECLARE g_author VARCHAR(100);
```

```
    DECLARE g_publisher VARCHAR(100);
```

```
    DECLARE g_year INT;
```

```
    DECLARE g_price INT;
```

```
    DECLARE g_genre VARCHAR(100);
```

```
    DECLARE g_author_id INT;
```

```
    DECLARE cur CURSOR FOR
```

```
        SELECT book_id, title, author, publisher,  
        year_of_publication, price, genre, author_id  
        FROM books;
```

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

```
    OPEN cur;
```

```
    read_loop: LOOP
```

```
        FETCH cur INTO g_book_id, g_title, g_author,  
        g_publisher, g_year, g_price, g_genre, g_author_id;
```

```
IF done THEN
    LEAVE read_loop;
END IF;
```

```
SELECT
    g_book_id AS book_id,
    g_title AS title,
    g_author AS author,
    g_publisher AS publisher,
    g_year AS year_of_publication,
    g_price AS price,
    g_genre AS genre,
    g_author_id AS author_id;
END LOOP;
```

```
CLOSE cur;
END //
```

```
DELIMITER ;
```

```
CALL `ShowAllBooks`();
```


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 - delete_log
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 - Views
 - New
 - books_summary
 - members_before_2020
- mall
- mysql
- performance_schema
- phpmyadmin
- practiceeeee

CALL `ShowAllBooks`();

Execution results of routine `ShowAllBooks`

book_id	title	author	publisher	year_of_publication	price	genre	author_id
1	Chainsaw Man	Tatsuki Fujimoto	Shueisha	2019	250	Action	11
2	the greatest estate developer	kim hyunsoo	asura scans	2019	200	Manhwa	4
3	spy x family	endou tatsuya	shueisha	2019	150	Manga	5
4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga	6
5	Hells paradise	kaku yuuji	shueisha	2012	230	Manga	7
6	Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220	Sports	8
7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural	9
8	My Hero Academia	Kohei Horikoshi	Shueisha	2014	175	Action	12

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 - books_summary
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- mall
- mysql
- performance schema

book_id	title	author	publisher	year_of_publication	price	genre	author_id
3	spy x family	endou tatsuya	shueisha	2019	150	Manga	5
4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga	6
5	Hells paradise	kaku yuuji	shueisha	2012	230	Manga	7
6	Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220	Sports	8
7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural	9
8	My Hero Academia	Kohei Horikoshi	Shueisha	2014	175	Action	12

Routines ⓘ

SQL Cursors

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

```
DELIMITER //
```

```
CREATE PROCEDURE ShowAllMembers()
```

```
BEGIN
```

```
    DECLARE done INT DEFAULT FALSE;
```

```
    DECLARE g_member_id INT;
```

```
    DECLARE g_member_name VARCHAR(200);
```

```
    DECLARE g_date_of_membership DATE;
```

```
    DECLARE g_email VARCHAR(200);
```

```
    DECLARE cur CURSOR FOR
```

```
        SELECT member_id, member_name,  
        date_of_membership, email FROM members;
```

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

```
    OPEN cur;
```

```
    member_loop: LOOP
```

```
        FETCH cur INTO g_member_id, g_member_name,  
        g_date_of_membership, g_email;
```

```
        IF done THEN
```

```
        LEAVE member_loop;
    END IF;
    SELECT
        g_member_id AS member_id,
        g_member_name AS member_name,
        g_date_of_membership AS date_of_membership,
        g_email AS email;
    END LOOP;

    CLOSE cur;
END //
```



```
DELIMITER ;
```

Recent Favorites

New

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 - New
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 - members_before_2020
- mail
- mysql
- performance_schema
- phpmyadmin
- practiceeee

CALL `ShowAllMembers`();

Execution results of routine `ShowAllMembers`

member_id	member_name	date_of_membership	email
1	harsh	2023-04-11	harsh@email.com
2	luffy	2022-06-22	monkey@email.com
3	kazuma	2020-10-10	chun@gmail.com
4	llyod	2024-03-18	fronterra@gmail.com
5	ash	2020-08-15	ash@gmail.com
6	eren	2021-12-22	eren@gmail.com
7	aqua	2019-07-03	aqua@gmail.com

Console

Recent Favorites

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 - books_summary
 - members_before_2020
- mail
- mysql
- performance_schema
- phpmyadmin
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member_id member_name date_of_membership email

7	aqua	2019-07-03	aqua@gmail.com
8	sai	2018-05-19	sai@gmail.com
9	jin	2023-09-21	jin@gmail.com

Routines

☐ Check all

	Name	Type	Returns
<input type="checkbox"/>	BookPrice	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>
<input type="checkbox"/>	Book_by_IdAndPrice	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>
<input type="checkbox"/>	BooksByAuthor	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>
<input type="checkbox"/>	Calc_B_Prices	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>
<input type="checkbox"/>	CheckBookPriceById	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>
<input type="checkbox"/>	ForNewBook	PROCEDURE	<input type="button" value="Edit"/> <input type="button" value="Execute"/> <input type="button" value="Export"/> <input type="button" value="Drop"/>

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

```
DELIMITER //
```

```
CREATE PROCEDURE ShowBooksByAuthor(IN  
p_author VARCHAR(100))  
BEGIN  
    DECLARE done INT DEFAULT FALSE;  
    DECLARE g_title VARCHAR(100);  
    DECLARE cur CURSOR FOR  
        SELECT title FROM books WHERE author =  
g_author;  
    DECLARE CONTINUE HANDLER FOR NOT  
FOUND SET done = TRUE;  
  
    OPEN cur;  
  
    books_loop: LOOP  
        FETCH cur INTO g_title;  
        IF done THEN  
            LEAVE books_loop;  
        END IF;  
        SELECT g_title AS book_title;  
    END LOOP;  
  
    CLOSE cur;  
END //
```

DELIMITER ;

call ShowBooksByAuthor('Tatsuki Fujimoto');

The screenshot displays a database management tool interface. On the left, a tree view shows the database structure with 'library_db' expanded, showing 'Procedures' and 'Tables'. The 'Tables' folder is expanded, listing 'authors', 'books', 'delete_log', 'members', 'members_backup', and 'update_log'. The 'Views' folder is also expanded, listing 'books_summary' and 'members_before_2020'. The main panel on the right shows a query execution result. A green status bar at the top indicates 'Showing rows 0 - 0 (1 total, Query took 0.0013 seconds.)'. Below this, the query 'CALL ShowBooksByAuthor('Tatsuki Fujimoto');' is displayed. Underneath the query, there are links for '[Edit inline]', '[Edit]', and '[Create PHP code]'. A control bar shows 'Show all' (unchecked), 'Number of rows: 25', and 'Filter rows: Search this table'. Below the control bar, there is a button for 'Extra options'. The query result is displayed as a table with one row. The first column is 'book_title' and the value is 'Chainsaw Man'. Another control bar is present below the table, identical to the one above. At the bottom, there is a button for 'Query results operations'.

Showing rows 0 - 0 (1 total, Query took 0.0013 seconds.)

CALL ShowBooksByAuthor('Tatsuki Fujimoto');

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

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

Extra options

book_title
Chainsaw Man

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

Query results operations

Rollback and Commit Savepoint

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

```
START TRANSACTION;
```































```
INSERT INTO members (member_id, member_name,  
    date_of_membership, email)  
VALUES (10, 'zoro', '2019-10-27', 'zoro@email.com');
```

```
SAVEPOINT after_insert;
```

```
UPDATE members  
SET member_name = 'edward'  
WHERE member_id = 10;
```

```
ROLLBACK TO after_insert;
```

```
COMMIT;
```

<div>←T→</div>				member_id	member_name	date_of_membership	email
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	harsh	2023-04-11	harsh@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	luffy	2022-06-22	monkey@email.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	kazuma	2020-10-10	chun@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	llyod	2024-03-18	fronterra@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	5	ash	2020-08-15	ash@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	6	eren	2021-12-22	eren@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	7	aqua	2019-07-03	aqua@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	8	sai	2018-05-19	sai@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	9	jin	2023-09-21	jin@gmail.com
<input type="checkbox"/>	 Edit	 Copy	 Delete	10	zoro	2019-10-27	zoro@email.com

- 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.

START TRANSACTION;

```
INSERT INTO books (book_id, title, author, publisher,  
    year_of_publication, price, genre, author_id)  
VALUES (9, 'Vagabond', 'Takehiko Inoue', 'Kodansha',  
    1998, 275, 'Historical', 13),  
    (10, 'Noragami', 'Adachitoka', 'Kodansha', 2010, 210,  
    'Fantasy', 14);
```

COMMIT;

START TRANSACTION;

SAVEPOINT before_price_update;

```
UPDATE books SET price = 100 WHERE book_id = 9;  
UPDATE books SET price = 100 WHERE book_id = 10;
```

ROLLBACK TO before_price_update;

COMMIT;

Before

		book_id	title	author	publisher	year_of_publication	price	genre	author_id
<input type="checkbox"/>	 Edit  Copy  Delete	1	Chainsaw Man	Tatsuki Fujimoto	Shueisha	2019	250	Action	11
<input type="checkbox"/>	 Edit  Copy  Delete	2	the greatest estate developer	kim hyunsoo	asura scans	2019	200	Manhwa	4
<input type="checkbox"/>	 Edit  Copy  Delete	3	spy x family	endou tatsuya	shueisha	2019	150	Manga	5
<input type="checkbox"/>	 Edit  Copy  Delete	4	the apothecary diaries	hyuuga natsu	square enix books	2021	180	Manga	6
<input type="checkbox"/>	 Edit  Copy  Delete	5	Hells paradise	kaku yuui	shueisha	2012	230	Manga	7
<input type="checkbox"/>	 Edit  Copy  Delete	6	Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220	Sports	8
<input type="checkbox"/>	 Edit  Copy  Delete	7	Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210	Supernatural	9
<input type="checkbox"/>	 Edit  Copy  Delete	8	My Hero Academia	Kohei Horikoshi	Shueisha	2014	175	Action	12
<div> <input type="checkbox"/> Check all <input type="checkbox"/> With selected  Edit  Copy  Delete  Export</div>									

After

		book_id	title	author	publisher	year_of_publication	price	genre	author_id
<input type="checkbox"/>	 Edit	 Copy	 Delete	1 Chainsaw Man	Tatsuki Fujimoto	Shueisha	2019	250 Action	11
<input type="checkbox"/>	 Edit	 Copy	 Delete	2 the greatest estate developer	kim hyunsoo	asura scans	2019	200 Manhwa	4
<input type="checkbox"/>	 Edit	 Copy	 Delete	3 spy x family	endou tatsuya	shueisha	2019	150 Manga	5
<input type="checkbox"/>	 Edit	 Copy	 Delete	4 the apothecary diaries	hyuuga natsu	square enix books	2021	180 Manga	6
<input type="checkbox"/>	 Edit	 Copy	 Delete	5 Hells paradise	kaku yuui	shueisha	2012	230 Manga	7
<input type="checkbox"/>	 Edit	 Copy	 Delete	6 Blue Lock	Muneyuki Kaneshiro	Kodansha	2018	220 Sports	8
<input type="checkbox"/>	 Edit	 Copy	 Delete	7 Jujutsu Kaisen	Gege Akutami	Shueisha	2018	210 Supernatural	9
<input type="checkbox"/>	 Edit	 Copy	 Delete	8 My Hero Academia	Kohei Horikoshi	Shueisha	2014	175 Action	12
<input type="checkbox"/>	 Edit	 Copy	 Delete	9 Vagabond	Takehiko Inoue	Kodansha	1998	275 Historical	13
<input type="checkbox"/>	 Edit	 Copy	 Delete	10 Noragami	Adachitoka	Kodansha	2010	210 Fantasy	14
<div> <input type="checkbox"/> Check all With selected:  Edit  Copy  Delete  Export</div>									