



DIGITAL INNOVATOR PROGRAMME (DIP)

COMPUTER SCIENCE I PSCS2014

COMPUTER SCIENCE

SEMESTER 2 PART 2

TASK 3 (10% CARRYMARKS) SQL EXERCISE : LIBRARY DATABASE

INSTRUCTIONS:

In this individual task, you will develop a basic library database using HeidiSQL and MySQL. The exercise focuses on creating and managing a single table that tracks library books and their borrowing dates.

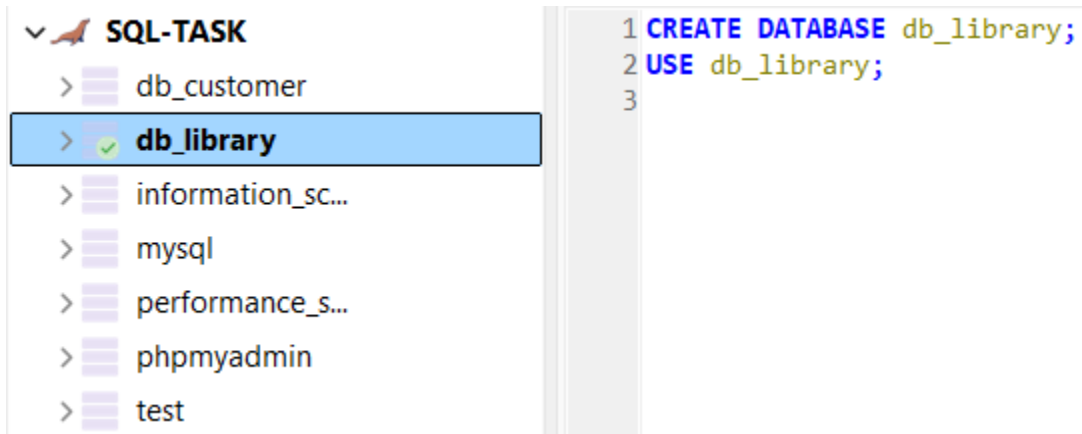
Key elements to include on your assignment are:

- **Database Structure:** Clear table designs with proper fields and relationships.
- **Data Management:** Sample data entry and manipulation
- **Query Operations:** Various SQL commands to interact with the database
- **Results Documentation:** Screenshots showing successful execution of commands

1. Create and Use database db_library.

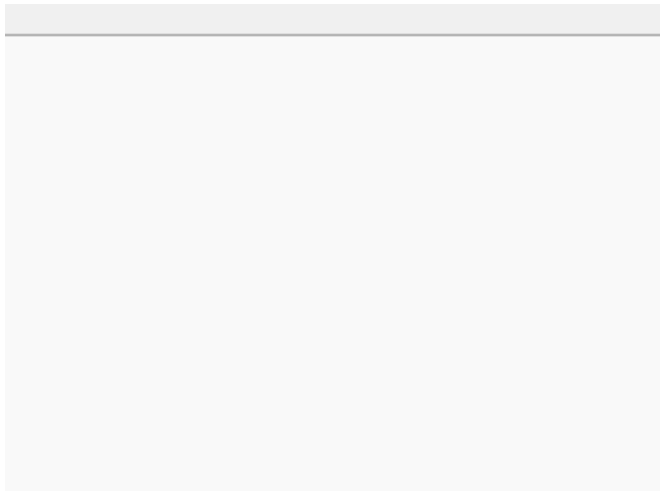
```
CREATE DATABASE db_library;
```

```
USE db_library;
```



1. Create a table named books inside db_library.

```
CREATE TABLE books (  
  book_id INT AUTO_INCREMENT PRIMARY KEY,  
  title VARCHAR(255) NOT NULL,  
  author VARCHAR(255) NOT NULL,  
  borrowed_date DATE NOT NULL  
);
```



2. Insert 5 new rows in the table.

```
INSERT INTO books (title, author, borrowed_date) VALUES
('The Great Gatsby', 'F. Scott Fitzgerald', '2024-12-01'),
('To Kill a Mockingbird', 'Harper Lee', '2024-12-05'),
('1984', 'George Orwell', '2024-12-07'),
('Pride and Prejudice', 'Jane Austen', '2024-12-10'),
('Moby Dick', 'Herman Melville', '2024-12-12');
```

3. Lists all books.

```
SELECT * FROM books;
```

#	book_id	title	author	borrowed_date
1	1	The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2	To Kill a Mockingbird	Harper Lee	2024-12-05
3	3	1984	George Orwell	2024-12-07
4	4	Pride and Prejudice	Jane Austen	2024-12-10
5	5	Moby Dick	Herman Melville	2024-12-12

4. Lists books by authors.

```
SELECT * FROM books WHERE author = 'George Orwell';
```

books (10r × 4c)

books (2r × 4c)

#	book_id	title	author	borrowed_date
1	3	1984	George Orwell	2024-12-07
2	8	1984	George Orwell	2024-12-07


5. Lists books borrowed on a specific date.

```
SELECT * FROM books WHERE borrowed_date = '2024-12-07';
```

books (15r × 4c)		books (3r × 4c)		books (3r × 4c)	
#	book_id	title	author	borrowed_date	
1	3	1984	George Orwell	2024-12-07	
2	8	1984	George Orwell	2024-12-07	
3	13	1984	George Orwell	2024-12-07	

6. Lists books borrowed after a certain date.

```
SELECT * FROM books WHERE borrowed_date > '2024-12-05';
```

books (20r × 4c)		books (4r × 4c)		books (4r × 4c)		books (12r × 4c)	
#	book_id		title	author	borrowed_date		
1	3		1984	George Orwell	2024-12-07		
2	4		Pride and Prejudice	Jane Austen	2024-12-10		
3	5		Moby Dick	Herman Melville	2024-12-12		
4	8		1984	George Orwell	2024-12-07		
5	9		Pride and Prejudice	Jane Austen	2024-12-10		
6	10		Moby Dick	Herman Melville	2024-12-12		
7	13		1984	George Orwell	2024-12-07		
8	14		Pride and Prejudice	Jane Austen	2024-12-10		
9	15		Moby Dick	Herman Melville	2024-12-12		
10	18		1984	George Orwell	2024-12-07		
11	19		Pride and Prejudice	Jane Austen	2024-12-10		
12	20		Moby Dick	Herman Melville	2024-12-12		


7. Updates lists books borrowed date.

```
UPDATE books  
SET borrowed_date = '2024-12-15'  
WHERE book_id = 3;
```

Before

books (5r × 4c)					
#	book_id		title	author	borrowed_date
1	1		The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2		To Kill a Mockingbird	Harper Lee	2024-12-05
3	3		1984	George Orwell	2024-12-07
4	4		Pride and Prejudice	Jane Austen	2024-12-10
5	5		Moby Dick	Herman Melville	2024-12-12

After

books (30r × 4c)		books (6r × 4c)		books (5r × 4c)		books (18r × 4c)	
#	book_id		title	author	borrowed_date		
1	1		The Great Gatsby	F. Scott Fitzgerald	2024-12-01		
2	2		To Kill a Mockingbird	Harper Lee	2024-12-05		
3	3		1984	George Orwell	2024-12-15		
4	4		Pride and Prejudice	Jane Austen	2024-12-10		
5	5		Moby Dick	Herman Melville	2024-12-12		

8. Delete a book.

DELETE FROM books WHERE book_id = 5;

Before

books (30r × 4c)				
#	book_id	title	author	borrowed_date
1	1	The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2	To Kill a Mockingbird	Harper Lee	2024-12-05
3	3	1984	George Orwell	2024-12-15
4	4	Pride and Prejudice	Jane Austen	2024-12-10
5	5	Moby Dick	Herman Melville	2024-12-12

After

books (39r × 4c)				
#	book_id	title	author	borrowed_date
1	1	The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2	To Kill a Mockingbird	Harper Lee	2024-12-05
3	3	1984	George Orwell	2024-12-15
4	4	Pride and Prejudice	Jane Austen	2024-12-10
5	6	The Great Gatsby	F. Scott Fitzgerald	2024-12-01

9. Re-add the deleted book.

INSERT INTO books (title, author, borrowed_date) VALUES ('Moby Dick', 'Herman Melville', '2024-12-12');

Before

books (39r × 4c)				
#	book_id	title	author	borrowed_date
1	1	The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2	To Kill a Mockingbird	Harper Lee	2024-12-05
3	3	1984	George Orwell	2024-12-15
4	4	Pride and Prejudice	Jane Austen	2024-12-10
5	6	The Great Gatsby	F. Scott Fitzgerald	2024-12-01

After

books (127r × 4c)				
#	book_id	title	author	borrowed_date
1	1	The Great Gatsby	F. Scott Fitzgerald	2024-12-01
2	2	To Kill a Mockingbird	Harper Lee	2024-12-05
3	3	1984	George Orwell	2024-12-15
4	4	Pride and Prejudice	Jane Austen	2024-12-10
5	6	The Great Gatsby	F. Scott Fitzgerald	2024-12-01

PS: The rows are actually there, it just doesn't appear.

Conclusion

This document demonstrates creating and managing a library database using SQL, covering table creation, data manipulation, and queries for effective book record management.