



# PUBLIC LIBRARY

# INTRODUCTION

Hello, My name is  
Mohammed Rafe Raheel. I  
have created SQL project  
on Library Management.  
Slide Pages to view the  
Project.



# schema :

## Library

# Tables :

**book\_categories**

**book\_issue**

**book\_issue\_log**

**books**

**branches**

**student\_categories**

**students**

# Retrieve all information from the books table.



```
+-----+  
|       |  
|   SELECT  
|       |  
|       *  
|  
|       FROM  
|       library.books;  
|  
+-----+
```

	book_id	title	author	description	category_id	added_by	added_at_timestamp
▶	1	The Great Gatsby	F. Scott Fitzgerald	A classic novel.	1	101	2024-01-10 10:15:23
	2	Introduction to Algorithms	Thomas H. Cormen	A comprehensive algorithm book.	2	102	2024-02-15 14:25:10
	3	1984	George Orwell	Dystopian novel.	3	103	2024-03-05 16:55:30
	4	To Kill a Mockingbird	Harper Lee	A novel on racial injustice.	1	101	2024-03-20 09:45:12
	5	Artificial Intelligence: A Modern Approach	Stuart Russell	AI textbook.	2	104	2024-04-10 12:35:45

# Find the title and author of all books written by "George Orwell".



**SELECT**

**title, author**

**FROM**

**library.books**

**WHERE**

**author = 'George Orwell';**

Result Grid | Filter Rows:

	<b>title</b>	<b>author</b>
▶	<b>1984</b>	<b>George Orwell</b>

# Retrieve all students who are approved (i.e., approved = 1).



```
SELECT
    *
FROM
    library.students
WHERE
    approved = 1;
```

Result Grid											Filter Rows:	Edit:	Export/Import:	Wrap Cell Content:	
student_id	first_name	last_name	approved	rejected	category	roll_num	branch	year	books_issued	email					
1001	Alice	Johnson	1	0	1	EN1001	1	2023	1	alice@					
1002	Bob	Smith	1	0	2	AR2001	2	2024	1	bob.s@					
1003	Charlie	Brown	1	0	1	SC3001	3	2022	1	charli@					
1004	Steven	Rich	1	0	2	SR4001	4	2021	2	steve@					
1005	Mia	Lane	1	0	1	ME5001	5	2022	1	mia.l@					



# Find all books that belong to category ID 3.

```
SELECT
  *
FROM
  library.books
WHERE
  category_id = 3;
```

Result Grid							
	book_id	title	author	description	category_id	added_by	added_at_timestamp
▶	3	1984	George Orwell	Dystopian novel.	3	103	2024-03-05 16:55:30

# Retrieve students whose year of study is 2024.



**SELECT**

\*

**FROM**

**library.students**

**WHERE**

**year = 2024;**

Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: |

t_name	last_name	approved	rejected	category	roll_num	branch	year	books_issued	email_id
	Smith	1	0	2	AR2001	2	2024	1	bob.smi

# Display the titles of all books, sorted by title in ascending order.



```
SELECT  
    title  
FROM  
    library.books  
ORDER BY title ASC;
```

Result Grid		Filter Rows:
	title	
▶	1984	
	Artificial Intelligence: A Modern Approach	
	Introduction to Algorithms	
	The Great Gatsby	
	To Kill a Mockingbird	

# List the first 5 students from the students table, sorted by last\_name.



```
SELECT
```

```
    last_name
```

```
FROM
```

```
library.students
```

```
LIMIT 5;
```

Result Grid	
	last_name
▶	Johnson
	Smith
	Brown
	Rich
	Ton

# Count how many books are present in the books table.



```
SELECT
```

```
    COUNT(*)
```

```
FROM
```

```
library.books;
```

Result Grid	
	COUNT(*)
→	5

# Retrieve all book titles along with their respective categories.



`SELECT`

`title, category`

`FROM`

`books,`

`book_categories;`

	<code>title</code>	<code>category</code>
▶	The Great Gatsby	Dystopian Fiction
	The Great Gatsby	Technology
	The Great Gatsby	Fiction
	Introduction to Algorithms	Dystopian Fiction
	Introduction to Algorithms	Technology
	Introduction to Algorithms	Fiction
	1984	Dystopian Fiction
	1984	Technology
	1984	Fiction
	To Kill a Mockingbird	Dystopian Fiction
	To Kill a Mockingbird	Technology
	To Kill a Mockingbird	Fiction
	Artificial Intelligence: A M...	Dystopian Fiction
	Artificial Intelligence: A M...	Technology
	Artificial Intelligence: A M...	Fiction

# Get a list of books and their issue status from the book\_issue table.



```
SELECT  
    title, available_status  
FROM  
    books,  
    book_issue;
```

	title	available_status
▶	Artificial Intelligence: A Modern Approach	0
	To Kill a Mockingbird	0
	1984	0
	Introduction to Algorithms	0
	The Great Gatsby	0
▶	Artificial Intelligence: A Modern Approach	1
	To Kill a Mockingbird	1
	1984	1
	Introduction to Algorithms	1
	The Great Gatsby	1
	Artificial Intelligence: A Modern Approach	0
	To Kill a Mockingbird	0

# Find the number of books issued by each student.



```
SELECT
```

```
    first_name, last_name, COUNT(books_issued)
```

```
FROM
```

```
    students
```

```
GROUP BY first_name , last_name;
```

Result Grid | Filter Rows:  | Export

	first_name	last_name	COUNT(books_issued)
▶	Alice	Johnson	1
	Bob	Smith	1
	Charlie	Brown	1
	Steven	Rich	1
	Michael	Ton	1

# Find the maximum number of books allowed per student category.



SELECT

```
category, max_allowed as maximum_no_of_books_allowed
```

FROM

```
student_categories;
```

Result Grid		Filter Rows:
	category	maximum_no_of_books_allowed
▶	Undergraduate	3
	Postgraduate	5

# Find students who have issued more than 2 books.



```
SELECT  
    first_name, last_name  
FROM  
    students  
WHERE  
    books_issued > 2;
```

Result Grid | Filter Rows:

	first_name	last_name
▶	Michael	Ton

# List the books that have not been issued (i.e., available\_status = 1).



SELECT

    title, available\_status

FROM

    books

    JOIN

        book\_issue ON books.book\_id = book\_issue.book\_id

WHERE

    available\_status = 1;

Result Grid		Filter Rows:	
	title	available_status	
▶	Introduction to Algorithms	1	
	To Kill a Mockingbird	1	

Retrieve a list of all students along with the books they have issued, including students who have not issued any books.



**SELECT**

```
first_name,  
last_name,  
issue_id,  
available_status,  
books_issued
```

**FROM**

```
students,  
book_issue;
```

	first_name	last_name	issue_id	available_status	books_issued
▶	Michael	Ton	1	0	4
	Steven	Rich	1	0	2
	Charlie	Brown	1	0	1
	Bob	Smith	1	0	1
	Alice	Johnson	1	0	1
	Michael	Ton	2	1	4
	Steven	Rich	2	1	2
	Charlie	Brown	2	1	1
	Bob	Smith	2	1	1
	Alice	Johnson	2	1	1
	Michael	Ton	3	0	4

# For each branch, find the



# number of students who have

# issued more than one book.

**SELECT**

branch, COUNT(student\_id), first\_name, last\_name

**FROM**

students

**WHERE**

books\_issued > 1

**GROUP BY** branch , first\_name , last\_name;

Result Grid | Filter Rows:  Export:

	branch	COUNT(student_id)	first_name	last_name
▶	4	1	Steven	Rich
	5	1	Michael	Ton

# Rank the students based on the number of books they have issued.



```
select student_id, first_name, last_name, books_issued,  
rank() over (order by books_issued) as ranked from students;
```

	student_id	first_name	last_name	books_issued	ranked
▶	1001	Alice	Johnson	1	1
	1002	Bob	Smith	1	1
	1003	Charlie	Brown	1	1
	1004	Steven	Rich	2	4
	1005	Michael	Ton	4	5