

Chapter 2: Structured Query Language (SQL)

Laboratory Activity 3:

Laboratory Title: Structured Query Language (SQL) - Basic Queries

Chapter No. and Topic: Chapter 2 - Structured Query Language (SQL)

Discussions:

This activity covers the basics of querying data from a table using SQL.

Activity Description:

Learn how to retrieve data using SELECT, filter with WHERE clauses, and sort results using ORDER BY.

Objectives:

- Write basic SQL queries using SELECT.
- Apply filters using WHERE clauses.
- Sort results using ORDER BY.

Materials:

- MySQL Workbench or SQL client

Procedure:

1. Open MySQL Workbench and connect to the `LibraryManagement` database.
2. Retrieve all columns from the `Books` table:

sql

Copy code

```
SELECT * FROM Books;
```

1. Retrieve books with the genre 'Fiction':

sql

Copy code

```
SELECT * FROM Books WHERE Genre = 'Fiction';
```

1. Sort the books by Title in ascending order:

sql

Copy code

```
SELECT * FROM Books ORDER BY Title ASC;
```

Result:

Basic queries to retrieve and filter data from the Books table.

Connection > Consoles > Database_mngt

DB Browser

Database_mngt

publicMainAuto-Commit OFF - connected

SELECT * FROM Books;

SELECT * FROM Books WHERE Genre = 'Fiction';

SELECT * FROM Books ORDER BY Title ASC;

DB Execution Console

	bookid	title	author	isbn	genre
1	1	The Great Gatsby	F. Scott Fitzgerald	9780743273565	Classic
2	2	To Kill a Mockingbird	Harper Lee	9780061120084	Fiction
3	3	1984	George Orwell	9780451524935	Dystopian
4	4	Pride and Prejudice	Jane Austen	9781503290563	Romance
5	5	Moby Dick	Herman Melville	9781503280786	Adventure
6	6	War and Peace	Leo Tolstoy	9781400079988	Historical Fiction
7	7	The Odyssey	Homer	9780140268867	Classical Literature
8	8	The Catcher in the Rye	J.D. Salinger	9780316769488	Fiction
9	9	The Lord of the Rings	J.R.R. Tolkien	9780261103573	Fantasy
10	10	Brave New World	Aldous Huxley	9780060850524	Science Fiction
11	11	Frankenstein	Mary Shelley	9780486282114	Horror
12	12	Dracula	Bram Stoker	9780141439846	Horror
13	13	The Picture of Dorian Gray	Oscar Wilde	9780141439570	Philosophical
14	14	Crime and Punishment	Fyodor Dostoevsky	9780140048136	Psychological Fiction
15	15	The Hobbit	J.R.R. Tolkien	9780061896833	Fantasy
16	16	The Great Alone	Kristin Hannah	9780312574810	Historical Fiction
17	17	The Shining	Stephen King	9780307743657	Horror

Connection (main): 73 records - executed in 110 ms. / fetched in 6 ms.

Result 13Result 14Result 17Result 19Result 21Result 26Result 32Result 38Result 40Result 41Result 42Result 43

DB Navigator - SESSION: Connected to database "Connection (Main... (today 9:17 am)

5:1LFUTF-84 spacesPython 3.11 (DATABASE)

Connection > Consoles > Database_mngt

DB Browser

Database_mngt

publicMainAuto-Commit OFF - connected

SELECT * FROM Books;

SELECT * FROM Books WHERE Genre = 'Fiction';

SELECT * FROM Books ORDER BY Title ASC;

DB Execution Console

	bookid	title	author	isbn	genre
1	2	To Kill a Mockingbird	Harper Lee	9780061120084	Fiction
2	8	The Catcher in the Rye	J.D. Salinger	9780316769488	Fiction

Connection (main): 2 records - executed in 574 ms. / fetched in 0 ms.

Result 13Result 14Result 17Result 19Result 21Result 26Result 32Result 38Result 40Result 41Result 42Result 43

DB Navigator - SESSION: Connected to database "Connection (Main... (today 9:17 am)

5:1LFUTF-84 spacesPython 3.11 (DATABASE)

Connection > Consoles > Database_mngt

DB Browser

Database_mngt

publicMainAuto-Commit OFF - connected

SELECT * FROM Books;

SELECT * FROM Books WHERE Genre = 'Fiction';

SELECT * FROM Books ORDER BY Title ASC;

DB Execution Console

	bookid	title	author	isbn	genre
1	3	1984	George Orwell	9780451524935	Dystopian
2	21	A Game of Thrones	George R.R. Martin	9780553103540	Fantasy
3	28	A Tale of Two Cities	Charles Dickens	9780141192545	Historical Fiction
4	47	All the Light We Cannot See	Anthony Doerr	9781501173219	Historical Fiction
5	24	Anna Karenina	Leo Tolstoy	9780140303508	Literary Fiction
6	71	Anxious People	Fredrik Backman	9781501160783	Contemporary Fiction
7	58	Becoming	Michelle Obama	9781524763138	Memoir
8	67	Before We Were Strangers	Renée Carlino	9781501135101	Romance
9	68	Behind Closed Doors	B.A. Paris	9781250130921	Thriller
10	38	Beloved	Toni Morrison	9781400033416	Historical Fiction
11	45	Big Little Lies	Liane Moriarty	9780399167065	Drama
12	10	Brave New World	Aldous Huxley	9780060850524	Science Fiction
13	53	Circe	Madeline Miller	9780316556347	Fantasy
14	14	Crime and Punishment	Fyodor Dostoevsky	9780140048136	Psychological Fiction
15	12	Dracula	Bram Stoker	9780141439846	Horror
16	57	Educated	Tara Westover	9780399590504	Memoir
17	56	Eleanor Oliphant Is Completely Fine	Gail Honeyman	9780735220683	Contemporary Fiction

Connection (main): 73 records - executed in 31 ms. / fetched in 2 ms.

Result 13Result 14Result 17Result 19Result 21Result 26Result 32Result 38Result 40Result 41Result 42Result 43

DB Navigator - SESSION: Connected to database "Connection (Main... (today 9:17 am)

5:1LFUTF-84 spacesPython 3.11 (DATABASE)

Additional Questions/Discussions:

- How do WHERE and ORDER BY improve the functionality of SQL queries?
 - The **WHERE** clause improves SQL queries by filtering records based on specific conditions, ensuring only relevant data is retrieved. The **ORDER BY** clause enhances functionality by sorting the results in ascending or descending order, making the output more organized and easier to analyze. Together, they optimize query efficiency and improve data presentation.

Conclusions:

In conclusion, the **WHERE** and **ORDER BY** clauses enhance SQL queries by filtering and organizing data efficiently. **WHERE** ensures only relevant records are retrieved, while **ORDER BY** sorts results for better readability. These functions improve query performance and data management.