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BSCpe 3A

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;
```

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

Filter objects

librarymanagement

- books
- members
- transactions
- Views
- Stored Procedures
- Functions

zakila

sys

world

Administration Schemas

Information

Table: books

Columns:

- BookID int AI PK
- Title varchar(100)
- Author varchar(100)
- ISBN varchar(20)
- Genre varchar(50)

Query 1

1 • SELECT * FROM Books

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get the automatic help.

Result Grid

BookID	Title	Author	ISBN	Genre
1	The Great Gatsby	F. Scott Fitzgerald	9780743273565	Classic
2	To Kill a Mockingbird	Harper Lee	9780061120084	Fiction
3	1984	George Orwell	9780451524935	Dystopian
4	Pride and Prejudice	Jane Austen	9781503290563	Romance
5	Moby Dick	Herman Melville	9781503280786	Adventure
6	War and Peace	Leo Tolstoy	9781400079988	Historical Fiction
7	The Odyssey	Homer	9780140268867	Classical Literature
8	The Catcher in the Rye	J.D. Salinger	9780316769488	Fiction
9	The Lord of the Rings	J.R.R. Tolkien	9780261103573	Fantasy
10	Brave New World	Aldous Huxley	9780060850524	Science Fiction
11	Frankenstein	Mary Shelley	9780486282114	Horror
12	Dracula	Bram Stoker	9780141439846	Horror
13	The Picture of Dorian...	Oscar Wilde	9780141439570	Philosophical
14	Crime and Punishment	Fyodor Dostoevsky	9780140449136	Psychological Fiction
15	The Hobbit	J.R.R. Tolkien	9780618968633	Fantasy
16	The Great Alone	Kristin Hannah	9780312574810	Historical Fiction
17	The Shining	Stephen King	9780307743657	Horror
18	The Alchemist	Paulo Coelho	9780062315007	Adventure
19	The Hunger Games	Suzanne Collins	9780439023528	Dystopian
20	The Kite Runner	Khaled Hosseini	9781394631931	Drama
21	A Game of Thrones	George R.R. Martin	9780553103540	Fantasy
22	The Chronicles of Narnia	C.S. Lewis	9780066238500	Fantasy
23	Little Women	Louisa May Alcott	9780142408760	Classic
24	Anna Karenina	Leo Tolstoy	9780143035008	Literary Fiction
25	The Book Thief	Markus Zusak	9780375842207	Historical Fiction

Books 1 x

Apply Revert Context Help Snippets

Output

Action Output

#	Time	Action	Message
33	11:07:09	SELECT * FROM librarymanagement.transactions LIMIT 0, 1000	0 row(s) returned
34	11:07:09	INSERT INTO Transactions (MemberID, BookID, IssueDate, ReturnDate) VALUES (1, 1, '2025-01-10', '2025-01-17'), (2, 2, '2025-01-12', '2025-01-19'), ...	Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your M
35	11:07:23	SELECT * FROM librarymanagement.transactions LIMIT 0, 1000	0 row(s) returned
36	11:07:31	SELECT * FROM librarymanagement.transactions LIMIT 0, 1000	0 row(s) returned
37	11:07:31	INSERT INTO Transactions (MemberID, BookID, IssueDate, ReturnDate) VALUES (1, 1, '2025-01-10', '2025-01-17'), (2, 2, '2025-01-12', '2025-01-19'), ...	45 row(s) affected Records: 45 Duplicates: 0 Warnings: 0
38	11:10:51	SELECT * FROM Books LIMIT 0, 1000	154 row(s) returned

Object Info Session

1. Retrieve books with the genre 'Fiction':

sql

Copy code

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

MySQL Workbench

Local instance MySQL80 x

Edit View Query Database Server Tools Scripting Help

Navigator

HEMAS

Filter objects

librarymanagement

- books
- members
- transactions
- Views
- Stored Procedures
- Functions
- sakila
- sys
- world

Administration Schemas

Table: books

Columns:

BookID int AI PK
Title varchar(100)
Author varchar(100)
ISBN varchar(20)
Genre varchar(50)

Query 1

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

Result Grid

BookID	Title	Author	ISBN	Genre
2	To Kill a Mockingbird	Harper Lee	9780061120084	Fiction
8	The Catcher in the Rye	J.D. Salinger	9780316769488	Fiction
79	To Kill a Mockingbird	Harper Lee	9780061120084	Fiction
85	The Catcher in the Rye	J.D. Salinger	9780316769488	Fiction

Books 2 x

Output

Action Output

#	Time	Action	Message
34	11:07:09	INSERT INTO Transactions (MemberID, BookID, IssueDate, ReturnDate) VALUES (1, 1, '2025-01-10', '2025-01-17'), (2, 2, '2025-01-12', '2025-01-19'), ...	Error Code: 1064: You have an error in your SQL syntax; che
35	11:07:23	SELECT * FROM librarymanagement.transactions LIMIT 0, 1000	0 row(s) returned
36	11:07:31	SELECT * FROM librarymanagement.transactions LIMIT 0, 1000	0 row(s) returned
37	11:07:31	INSERT INTO Transactions (MemberID, BookID, IssueDate, ReturnDate) VALUES (1, 1, '2025-01-10', '2025-01-17'), (2, 2, '2025-01-12', '2025-01-19'), ...	45 row(s) affected Records: 45 Duplicates: 0 Warnings: 0
38	11:10:51	SELECT * FROM Books LIMIT 0, 1000	154 row(s) returned
39	11:12:06	SELECT * FROM Books WHERE Genre = 'Fiction' LIMIT 0, 1000	4 row(s) returned

1. Sort the books by Title in ascending order:

sql

Copy code

SELECT * FROM Books ORDER BY Title ASC;

The screenshot shows the MySQL Workbench interface with a query executed in the 'Query 1' tab. The query is `SELECT * FROM Books ORDER BY Title ASC;`. The result grid displays a list of books sorted by title. The left sidebar shows the 'librarymanagement' database structure with tables like books, members, transactions, and views. The bottom output pane shows the execution log with timestamps and row counts for various queries.

BookID	Title	Author	ISBN	Genre
3	1984	George Orwell	9780451524935	Dystopian
80	1984	George Orwell	9780451524935	Dystopian
21	A Game of Thrones	George R.R. Martin	9780553103540	Fantasy
98	A Game of Thrones	George R.R. Martin	9780553103540	Fantasy
105	A Tale of Two Cities	Charles Dickens	9780141192545	Historical Fiction
28	A Tale of Two Cities	Charles Dickens	9780141192545	Historical Fiction
125	All the Light We Cannot See	Anthony Doerr	9781501173219	Historical Fiction
48	All the Light We Cannot See	Anthony Doerr	9781501173219	Historical Fiction
24	Anna Karenina	Leo Tolstoy	9780143035008	Literary Fiction
101	Anna Karenina	Leo Tolstoy	9780143035008	Literary Fiction
75	Anxious People	Fredrik Backman	9781501160783	Contemporary ...
152	Anxious People	Fredrik Backman	9781501160783	Contemporary ...
137	Becoming	Michelle Obama	9781524763138	Memoir
60	Becoming	Michelle Obama	9781524763138	Memoir
69	Before We Were Strangers	Renée Carlino	9781501135101	Romance
146	Before We Were Strangers	Renée Carlino	9781501135101	Romance
70	Behind Closed Doors	B.A. Paris	9781250130921	Thriller
147	Behind Closed Doors	B.A. Paris	9781250130921	Thriller
115	Beloved	Toni Morrison	9781400033416	Historical Fiction
38	Beloved	Toni Morrison	9781400033416	Historical Fiction
71	Big Little Lies	Liane Moriarty	9780399167065	Drama
45	Big Little Lies	Liane Moriarty	9780399167065	Drama
122	Big Little Lies	Liane Moriarty	9780399167065	Drama
148	Big Little Lies	Liane Moriarty	9780399167065	Drama
10	Brave New World	Aldous Huxley	9780060850524	Science Fiction

Result:

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

Additional Questions/Discussions:

- How do WHERE and ORDER BY improve the functionality of SQL queries?

The WHERE and ORDER BY clauses enhance SQL query functionality by allowing users to filter data based on specific conditions with WHERE, and organize the results in a desired order using ORDER BY, thus improving query efficiency and making the data more relevant and easier to interpret.

Conclusions: Structured Query Language (SQL) - Basic Queries demonstrates the essential skills for retrieving, filtering, and organizing data using fundamental SQL commands, laying the foundation for effective data management and analysis.

