Lab Assignment 7

-----------------------------------------------------------------------------------------------------------------------------

Name: Prathamesh Sadashiv Gadekar

Roll no.:15

Batch: S1

Class :SE-IT

-----------------------------------------------------------------------------------------------------------------------------

Microsoft Windows [Version 10.0.26100.3624]

(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>MySQL -u root -p

Enter password: \*\*\*\*

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 16

Server version: 8.0.40 MySQL Community Server - GPL

Copyright (c) 2000, 2024, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its

affiliates. Other names may be trademarks of their respective

owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.mysql> CREATE DATABASE ASS\_7 ;

Query OK, 1 row affected (0.02 sec)

mysql> **USE ASS\_7 ;**

Database changed

mysql> **CREATE TABLE students (**

**-> student\_id INT PRIMARY KEY,**

**-> name VARCHAR(50),**

**-> age INT,**

**-> grade CHAR(1),**

**-> join\_date DATE**

**-> );**

Query OK, 0 rows affected (0.03 sec)

mysql> **INSERT INTO students VALUES**

**-> (1, 'Alice', 20, 'A', '2023-01-10'),**

**-> (2, 'Bob', 21, 'B', '2022-12-11'),**

**-> (3, 'Charlie', 22, 'C', '2022-11-05'),**

**-> (4, 'David', 19, 'A', '2023-03-19'),**

**-> (5, 'Eve', 20, 'B', '2023-05-23'),**

**-> (6, 'Frank', 23, 'C', '2021-07-13'),**

**-> (7, 'Grace', 22, 'A', '2023-08-17'),**

**-> (8, 'Heidi', 20, 'B', '2022-09-01'),**

**-> (9, 'Ivan', 24, 'C', '2021-10-12'),**

**-> (10, 'Judy', 19, 'A', '2022-03-30'),**

**-> (11, 'Kathy', 21, 'B', '2023-01-21'),**

**-> (12, 'Leo', 22, 'C', '2023-06-14'),**

**-> (13, 'Mallory', 23, 'A', '2023-07-01'),**

**-> (14, 'Niaj', 20, 'B', '2023-05-10'),**

**-> (15, 'Oscar', 21, 'C', '2022-04-11'),**

**-> (16, 'Peggy', 20, 'A', '2022-12-31'),**

**-> (17, 'Quinn', 22, 'B', '2022-02-17'),**

**-> (18, 'Ruth', 23, 'C', '2023-01-06'),**

**-> (19, 'Sybil', 24, 'A', '2021-08-29'),**

**-> (20, 'Trudy', 22, 'B', '2021-09-15'),**

**-> (21, 'Uma', 21, 'C', '2023-02-05'),**

**-> (22, 'Victor', 20, 'A', '2022-11-19'),**

**-> (23, 'Wendy', 22, 'B', '2023-03-09'),**

**-> (24, 'Xavier', 19, 'C', '2022-06-28'),**

**-> (25, 'Yasmine', 23, 'A', '2023-01-11'),**

**-> (26, 'Alice', 20, 'A', '2023-01-10');**

Query OK, 26 rows affected (0.01 sec)

Records: 26 Duplicates: 0 Warnings: 0

mysql> **SELECT \* FROM STUDENTS ;**

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 2 | Bob | 21 | B | 2022-12-11 |

| 3 | Charlie | 22 | C | 2022-11-05 |

| 4 | David | 19 | A | 2023-03-19 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 6 | Frank | 23 | C | 2021-07-13 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 8 | Heidi | 20 | B | 2022-09-01 |

| 9 | Ivan | 24 | C | 2021-10-12 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 11 | Kathy | 21 | B | 2023-01-21 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 15 | Oscar | 21 | C | 2022-04-11 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 17 | Quinn | 22 | B | 2022-02-17 |

| 18 | Ruth | 23 | C | 2023-01-06 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 20 | Trudy | 22 | B | 2021-09-15 |

| 21 | Uma | 21 | C | 2023-02-05 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 23 | Wendy | 22 | B | 2023-03-09 |

| 24 | Xavier | 19 | C | 2022-06-28 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

26 rows in set (0.00 sec)

mysql**> CREATE TABLE author (**

**-> author\_id INT PRIMARY KEY,**

**-> name VARCHAR(50),**

**-> country VARCHAR(50)**

**-> );**

Query OK, 0 rows affected (0.02 sec)

mysql**> INSERT INTO author VALUES**

**-> (101, 'George Orwell', 'UK'),**

**-> (102, 'Jane Austen', 'UK'),**

**-> (103, 'Mark Twain', 'USA'),**

**-> (104, 'Leo Tolstoy', 'Russia'),**

**-> (105, 'Agatha Christie', 'UK'),**

**-> (106, 'J.K. Rowling', 'UK'),**

**-> (107, 'Ernest Hemingway', 'USA'),**

**-> (108, 'Fyodor Dostoevsky', 'Russia'),**

**-> (109, 'Charles Dickens', 'UK'),**

**-> (110, 'J.R.R. Tolkien', 'UK'),**

**-> (111, 'Stephen King', 'USA'),**

**-> (112, 'Dan Brown', 'USA'),**

**-> (113, 'Suzanne Collins', 'USA'),**

**-> (114, 'Harper Lee', 'USA'),**

**-> (115, 'H.G. Wells', 'UK'),**

**-> (116, 'Isaac Asimov', 'Russia'),**

**-> (117, 'C.S. Lewis', 'UK'),**

**-> (118, 'Arthur Conan Doyle', 'UK'),**

**-> (119, 'Terry Pratchett', 'UK'),**

**-> (120, 'Kurt Vonnegut', 'USA'),**

**-> (121, 'Alice Asimov', 'Russia');**

Query OK, 21 rows affected (0.01 sec)

Records: 21 Duplicates: 0 Warnings: 0

mysql> **SELECT \* FROM AUTHOR ;**

+-----------+--------------------+---------+

| author\_id | name | country |

+-----------+--------------------+---------+

| 101 | George Orwell | UK |

| 102 | Jane Austen | UK |

| 103 | Mark Twain | USA |

| 104 | Leo Tolstoy | Russia |

| 105 | Agatha Christie | UK |

| 106 | J.K. Rowling | UK |

| 107 | Ernest Hemingway | USA |

| 108 | Fyodor Dostoevsky | Russia |

| 109 | Charles Dickens | UK |

| 110 | J.R.R. Tolkien | UK |

| 111 | Stephen King | USA |

| 112 | Dan Brown | USA |

| 113 | Suzanne Collins | USA |

| 114 | Harper Lee | USA |

| 115 | H.G. Wells | UK |

| 116 | Isaac Asimov | Russia |

| 117 | C.S. Lewis | UK |

| 118 | Arthur Conan Doyle | UK |

| 119 | Terry Pratchett | UK |

| 120 | Kurt Vonnegut | USA |

| 121 | Alice Asimov | Russia |

+-----------+--------------------+---------+

21 rows in set (0.00 sec)

mysql**> CREATE TABLE book (**

**-> book\_id INT PRIMARY KEY,**

**-> title VARCHAR(100),**

**-> author\_id INT,**

**-> price DECIMAL(6,2),**

**-> publish\_date DATE,**

**-> FOREIGN KEY (author\_id) REFERENCES author(author\_id)**

**-> );**

Query OK, 0 rows affected (0.04 sec)

mysql> **INSERT INTO book VALUES**

**-> (201, '1984', 101, 15.99, '2022-06-15'),**

**-> (202, 'Pride and Prejudice', 102, 13.50, '2021-09-12'),**

**-> (203, 'Adventures of Huckleberry Finn', 103, 21.00, '2023-03-20'),**

**-> (204, 'War and Peace', 104, 25.00, '2021-05-30'),**

**-> (205, 'Murder on the Orient Express', 105, 18.75, '2022-11-11'),**

**-> (206, 'Harry Potter', 106, 27.99, '2020-07-07'),**

**-> (207, 'The Old Man and the Sea', 107, 14.25, '2023-02-01'),**

**-> (208, 'Crime and Punishment', 108, 19.60, '2022-12-12'),**

**-> (209, 'Great Expectations', 109, 16.80, '2021-08-20'),**

**-> (210, 'The Hobbit', 110, 24.99, '2023-01-15'),**

**-> (211, 'The Shining', 111, 22.20, '2022-10-17'),**

**-> (212, 'Inferno', 112, 17.40, '2023-05-06'),**

**-> (213, 'Mockingjay', 113, 16.00, '2021-03-19'),**

**-> (214, 'To Kill a Mockingbird', 114, 19.75, '2023-04-03'),**

**-> (215, 'The Time Machine', 115, 12.50, '2022-02-22'),**

**-> (216, 'Foundation', 116, 18.30, '2023-03-25'),**

**-> (217, 'The Lion, the Witch and the Wardrobe', 117, 15.00, '2023-06-10'),**

**-> (218, 'Sherlock Holmes', 118, 20.00, '2021-12-31'),**

**-> (219, 'The Colour of Magic', 119, 17.60, '2022-07-13'),**

**-> (220, 'Slaughterhouse-Five', 120, 14.99, '2023-01-01');**

Query OK, 20 rows affected (0.01 sec)

Records: 20 Duplicates: 0 Warnings: 0

mysql> **SELECT \* FROM BOOK ;**

+---------+--------------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------------+-----------+-------+--------------+

| 201 | 1984 | 101 | 15.99 | 2022-06-15 |

| 202 | Pride and Prejudice | 102 | 13.50 | 2021-09-12 |

| 203 | Adventures of Huckleberry Finn | 103 | 21.00 | 2023-03-20 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 205 | Murder on the Orient Express | 105 | 18.75 | 2022-11-11 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 207 | The Old Man and the Sea | 107 | 14.25 | 2023-02-01 |

| 208 | Crime and Punishment | 108 | 19.60 | 2022-12-12 |

| 209 | Great Expectations | 109 | 16.80 | 2021-08-20 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

| 212 | Inferno | 112 | 17.40 | 2023-05-06 |

| 213 | Mockingjay | 113 | 16.00 | 2021-03-19 |

| 214 | To Kill a Mockingbird | 114 | 19.75 | 2023-04-03 |

| 215 | The Time Machine | 115 | 12.50 | 2022-02-22 |

| 216 | Foundation | 116 | 18.30 | 2023-03-25 |

| 217 | The Lion, the Witch and the Wardrobe | 117 | 15.00 | 2023-06-10 |

| 218 | Sherlock Holmes | 118 | 20.00 | 2021-12-31 |

| 219 | The Colour of Magic | 119 | 17.60 | 2022-07-13 |

| 220 | Slaughterhouse-Five | 120 | 14.99 | 2023-01-01 |

+---------+--------------------------------------+-----------+-------+--------------+

20 rows in set (0.00 sec)

mysql> **SHOW databases;**

+--------------------+

| Database |

+--------------------+

| ass\_7 |

| dumy |

| exp\_7 |

| exp\_9 |

| information\_schema |

| it\_dept |

| mysql |

| performance\_schema |

| sys |

| xyzsolutions |

+--------------------+

10 rows in set (0.00 sec)

mysql> **SHOW TABLES ;**

+-----------------+

| Tables\_in\_ass\_7 |

+-----------------+

| author |

| book |

| students |

+-----------------+

3 rows in set (0.00 sec)

mysql> **CREATE TABLE student\_publisher (**

**-> student\_id INT,**

**-> book\_id INT,**

**-> fine DECIMAL(6,2),**

**-> FOREIGN KEY (student\_id) REFERENCES students(student\_id),**

**-> FOREIGN KEY (book\_id) REFERENCES book(book\_id)**

**-> );**

Query OK, 0 rows affected (0.04 sec)

mysql> **INSERT INTO student\_publisher VALUES**

**-> (1, 201, 2.50),**

**-> (2, 202, 0.00),**

**-> (3, 203, 1.00),**

**-> (4, 204, 0.00),**

**-> (5, 205, 1.25),**

**-> (6, 206, 2.00),**

**-> (7, 207, 0.00),**

**-> (8, 208, 0.75),**

**-> (9, 209, 3.00),**

**-> (10, 210, 1.00),**

**-> (11, 211, 0.00),**

**-> (12, 212, 2.00),**

**-> (13, 213, 0.00),**

**-> (14, 214, 1.50),**

**-> (15, 215, 0.00),**

**-> (16, 216, 0.25),**

**-> (17, 217, 0.00),**

**-> (18, 218, 1.00),**

**-> (19, 219, 0.50),**

**-> (20, 220, 0.00),**

**-> (21, 201, 2.25),**

**-> (22, 204, 0.00),**

**-> (23, 202, 0.00),**

**-> (24, 205, 1.75),**

**-> (25, 210, 2.00);**

Query OK, 25 rows affected (0.01 sec)

Records: 25 Duplicates: 0 Warnings: 0

mysql> **SHOW TABLES ;**

+-------------------+

| Tables\_in\_ass\_7 |

+-------------------+

| author |

| book |

| student\_publisher |

| students |

+-------------------+

4 rows in set (0.00 sec)

mysql> **-- Implementing 6 relational operators**

mysql> **-- 1. Equal to (=)**

mysql> SELECT \* FROM students

-> WHERE grade = 'A';

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 4 | David | 19 | A | 2023-03-19 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

10 rows in set (0.00 sec)

mysql> **-- 2. Not equal to (<> or !=)**

mysql> SELECT \* FROM book

-> WHERE author\_id != 101;

+---------+--------------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------------+-----------+-------+--------------+

| 202 | Pride and Prejudice | 102 | 13.50 | 2021-09-12 |

| 203 | Adventures of Huckleberry Finn | 103 | 21.00 | 2023-03-20 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 205 | Murder on the Orient Express | 105 | 18.75 | 2022-11-11 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 207 | The Old Man and the Sea | 107 | 14.25 | 2023-02-01 |

| 208 | Crime and Punishment | 108 | 19.60 | 2022-12-12 |

| 209 | Great Expectations | 109 | 16.80 | 2021-08-20 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

| 212 | Inferno | 112 | 17.40 | 2023-05-06 |

| 213 | Mockingjay | 113 | 16.00 | 2021-03-19 |

| 214 | To Kill a Mockingbird | 114 | 19.75 | 2023-04-03 |

| 215 | The Time Machine | 115 | 12.50 | 2022-02-22 |

| 216 | Foundation | 116 | 18.30 | 2023-03-25 |

| 217 | The Lion, the Witch and the Wardrobe | 117 | 15.00 | 2023-06-10 |

| 218 | Sherlock Holmes | 118 | 20.00 | 2021-12-31 |

| 219 | The Colour of Magic | 119 | 17.60 | 2022-07-13 |

| 220 | Slaughterhouse-Five | 120 | 14.99 | 2023-01-01 |

+---------+--------------------------------------+-----------+-------+--------------+

19 rows in set (0.00 sec)

mysql> **-- 3. Greater than (>)**

mysql> SELECT \* FROM book

-> WHERE price > 20;

+---------+--------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------+-----------+-------+--------------+

| 203 | Adventures of Huckleberry Finn | 103 | 21.00 | 2023-03-20 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

+---------+--------------------------------+-----------+-------+--------------+

5 rows in set (0.00 sec)

mysql> **-- 4. Less than (<)**

mysql> SELECT \* FROM students

-> WHERE age < 21;

+------------+--------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+--------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 4 | David | 19 | A | 2023-03-19 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 8 | Heidi | 20 | B | 2022-09-01 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 24 | Xavier | 19 | C | 2022-06-28 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+--------+------+-------+------------+

10 rows in set (0.00 sec)

mysql> **-- 5. Greater than or equal to (>=)**

mysql> SELECT \* FROM students

-> WHERE join\_date >= '2023-01-01';

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 4 | David | 19 | A | 2023-03-19 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 11 | Kathy | 21 | B | 2023-01-21 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 18 | Ruth | 23 | C | 2023-01-06 |

| 21 | Uma | 21 | C | 2023-02-05 |

| 23 | Wendy | 22 | B | 2023-03-09 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

13 rows in set (0.00 sec)

mysql> **-- 6. Less than or equal to (<=)**

mysql> SELECT \* FROM book

-> WHERE publish\_date <= '2022-12-31';

+---------+------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+------------------------------+-----------+-------+--------------+

| 201 | 1984 | 101 | 15.99 | 2022-06-15 |

| 202 | Pride and Prejudice | 102 | 13.50 | 2021-09-12 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 205 | Murder on the Orient Express | 105 | 18.75 | 2022-11-11 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 208 | Crime and Punishment | 108 | 19.60 | 2022-12-12 |

| 209 | Great Expectations | 109 | 16.80 | 2021-08-20 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

| 213 | Mockingjay | 113 | 16.00 | 2021-03-19 |

| 215 | The Time Machine | 115 | 12.50 | 2022-02-22 |

| 218 | Sherlock Holmes | 118 | 20.00 | 2021-12-31 |

| 219 | The Colour of Magic | 119 | 17.60 | 2022-07-13 |

+---------+------------------------------+-----------+-------+--------------+

12 rows in set (0.00 sec)

mysql> **-- Implement 3 Boolean operators (AND, OR, NOT)**

mysql> **-- 1. AND**

mysql> SELECT \* FROM students

-> WHERE age > 20 AND grade = 'A';

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 7 | Grace | 22 | A | 2023-08-17 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

+------------+---------+------+-------+------------+

4 rows in set (0.00 sec)

mysql> **-- 2. OR**

mysql> SELECT \* FROM book

-> WHERE price < 15 OR price > 25;

+---------+-------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+-------------------------+-----------+-------+--------------+

| 202 | Pride and Prejudice | 102 | 13.50 | 2021-09-12 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 207 | The Old Man and the Sea | 107 | 14.25 | 2023-02-01 |

| 215 | The Time Machine | 115 | 12.50 | 2022-02-22 |

| 220 | Slaughterhouse-Five | 120 | 14.99 | 2023-01-01 |

+---------+-------------------------+-----------+-------+--------------+

5 rows in set (0.00 sec)

mysql> **-- 3. NOT**

mysql> SELECT \* FROM students

-> WHERE NOT grade = 'B';

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 3 | Charlie | 22 | C | 2022-11-05 |

| 4 | David | 19 | A | 2023-03-19 |

| 6 | Frank | 23 | C | 2021-07-13 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 9 | Ivan | 24 | C | 2021-10-12 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 15 | Oscar | 21 | C | 2022-04-11 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 18 | Ruth | 23 | C | 2023-01-06 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 21 | Uma | 21 | C | 2023-02-05 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 24 | Xavier | 19 | C | 2022-06-28 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

18 rows in set (0.00 sec)

mysql> **-- Implement Pattern matching operations using LIKE operator**

mysql> **-- 1. %word%**

mysql> SELECT \* FROM students

-> WHERE name LIKE '%ar%';

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 3 | Charlie | 22 | C | 2022-11-05 |

| 15 | Oscar | 21 | C | 2022-04-11 |

+------------+---------+------+-------+------------+

2 rows in set (0.00 sec)

mysql> **-- 2. %word**

mysql> SELECT \* FROM book

-> WHERE title LIKE '%ing';

+---------+-------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+-------------+-----------+-------+--------------+

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

+---------+-------------+-----------+-------+--------------+

1 row in set (0.00 sec)

mysql> **-- 3. word%**

mysql> SELECT \* FROM author

-> WHERE name LIKE 'J%';

+-----------+----------------+---------+

| author\_id | name | country |

+-----------+----------------+---------+

| 102 | Jane Austen | UK |

| 106 | J.K. Rowling | UK |

| 110 | J.R.R. Tolkien | UK |

+-----------+----------------+---------+

3 rows in set (0.00 sec)

mysql> **-- 4. \_ (underscore = matches a single character)**

mysql> SELECT \* FROM students

-> WHERE name LIKE 'D\_\_\_\_';

+------------+-------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+-------+------+-------+------------+

| 4 | David | 19 | A | 2023-03-19 |

+------------+-------+------+-------+------------+

1 row in set (0.00 sec)

mysql> SELECT \* FROM author

-> WHERE name LIKE '\_a%';

+-----------+-------------+---------+

| author\_id | name | country |

+-----------+-------------+---------+

| 102 | Jane Austen | UK |

| 103 | Mark Twain | USA |

| 112 | Dan Brown | USA |

| 114 | Harper Lee | USA |

+-----------+-------------+---------+

4 rows in set (0.00 sec)

mysql> **-- Implement 5 Arithmetic operators**

mysql> **-- 1. Addition (+)**

mysql> SELECT name, age, age + 5 AS age\_in\_5\_years

-> FROM students;

+---------+------+----------------+

| name | age | age\_in\_5\_years |

+---------+------+----------------+

| Alice | 20 | 25 |

| Bob | 21 | 26 |

| Charlie | 22 | 27 |

| David | 19 | 24 |

| Eve | 20 | 25 |

| Frank | 23 | 28 |

| Grace | 22 | 27 |

| Heidi | 20 | 25 |

| Ivan | 24 | 29 |

| Judy | 19 | 24 |

| Kathy | 21 | 26 |

| Leo | 22 | 27 |

| Mallory | 23 | 28 |

| Niaj | 20 | 25 |

| Oscar | 21 | 26 |

| Peggy | 20 | 25 |

| Quinn | 22 | 27 |

| Ruth | 23 | 28 |

| Sybil | 24 | 29 |

| Trudy | 22 | 27 |

| Uma | 21 | 26 |

| Victor | 20 | 25 |

| Wendy | 22 | 27 |

| Xavier | 19 | 24 |

| Yasmine | 23 | 28 |

| Alice | 20 | 25 |

+---------+------+----------------+

26 rows in set (0.00 sec)

mysql> **-- 2. Subtraction (-)**

mysql> SELECT s.student\_id, b.title, b.price, sp.fine, b.price - sp.fine AS final\_amount

-> FROM student\_publisher sp

-> JOIN book b ON sp.book\_id = b.book\_id

-> JOIN students s ON s.student\_id = sp.student\_id;

+------------+--------------------------------------+-------+------+--------------+

| student\_id | title | price | fine | final\_amount |

+------------+--------------------------------------+-------+------+--------------+

| 1 | 1984 | 15.99 | 2.50 | 13.49 |

| 21 | 1984 | 15.99 | 2.25 | 13.74 |

| 2 | Pride and Prejudice | 13.50 | 0.00 | 13.50 |

| 23 | Pride and Prejudice | 13.50 | 0.00 | 13.50 |

| 3 | Adventures of Huckleberry Finn | 21.00 | 1.00 | 20.00 |

| 4 | War and Peace | 25.00 | 0.00 | 25.00 |

| 22 | War and Peace | 25.00 | 0.00 | 25.00 |

| 5 | Murder on the Orient Express | 18.75 | 1.25 | 17.50 |

| 24 | Murder on the Orient Express | 18.75 | 1.75 | 17.00 |

| 6 | Harry Potter | 27.99 | 2.00 | 25.99 |

| 7 | The Old Man and the Sea | 14.25 | 0.00 | 14.25 |

| 8 | Crime and Punishment | 19.60 | 0.75 | 18.85 |

| 9 | Great Expectations | 16.80 | 3.00 | 13.80 |

| 10 | The Hobbit | 24.99 | 1.00 | 23.99 |

| 25 | The Hobbit | 24.99 | 2.00 | 22.99 |

| 11 | The Shining | 22.20 | 0.00 | 22.20 |

| 12 | Inferno | 17.40 | 2.00 | 15.40 |

| 13 | Mockingjay | 16.00 | 0.00 | 16.00 |

| 14 | To Kill a Mockingbird | 19.75 | 1.50 | 18.25 |

| 15 | The Time Machine | 12.50 | 0.00 | 12.50 |

| 16 | Foundation | 18.30 | 0.25 | 18.05 |

| 17 | The Lion, the Witch and the Wardrobe | 15.00 | 0.00 | 15.00 |

| 18 | Sherlock Holmes | 20.00 | 1.00 | 19.00 |

| 19 | The Colour of Magic | 17.60 | 0.50 | 17.10 |

| 20 | Slaughterhouse-Five | 14.99 | 0.00 | 14.99 |

+------------+--------------------------------------+-------+------+--------------+

25 rows in set (0.00 sec)

mysql>

mysql> **-- 3. Multiplication (\*)**

mysql> SELECT student\_id, book\_id, fine, fine \* 2 AS double\_fine

-> FROM student\_publisher;

+------------+---------+------+-------------+

| student\_id | book\_id | fine | double\_fine |

+------------+---------+------+-------------+

| 1 | 201 | 2.50 | 5.00 |

| 2 | 202 | 0.00 | 0.00 |

| 3 | 203 | 1.00 | 2.00 |

| 4 | 204 | 0.00 | 0.00 |

| 5 | 205 | 1.25 | 2.50 |

| 6 | 206 | 2.00 | 4.00 |

| 7 | 207 | 0.00 | 0.00 |

| 8 | 208 | 0.75 | 1.50 |

| 9 | 209 | 3.00 | 6.00 |

| 10 | 210 | 1.00 | 2.00 |

| 11 | 211 | 0.00 | 0.00 |

| 12 | 212 | 2.00 | 4.00 |

| 13 | 213 | 0.00 | 0.00 |

| 14 | 214 | 1.50 | 3.00 |

| 15 | 215 | 0.00 | 0.00 |

| 16 | 216 | 0.25 | 0.50 |

| 17 | 217 | 0.00 | 0.00 |

| 18 | 218 | 1.00 | 2.00 |

| 19 | 219 | 0.50 | 1.00 |

| 20 | 220 | 0.00 | 0.00 |

| 21 | 201 | 2.25 | 4.50 |

| 22 | 204 | 0.00 | 0.00 |

| 23 | 202 | 0.00 | 0.00 |

| 24 | 205 | 1.75 | 3.50 |

| 25 | 210 | 2.00 | 4.00 |

+------------+---------+------+-------------+

25 rows in set (0.00 sec)

mysql> **-- 4. Division (/)**

mysql> SELECT title, price, price / 2 AS half\_price

-> FROM book;

+--------------------------------------+-------+------------+

| title | price | half\_price |

+--------------------------------------+-------+------------+

| 1984 | 15.99 | 7.995000 |

| Pride and Prejudice | 13.50 | 6.750000 |

| Adventures of Huckleberry Finn | 21.00 | 10.500000 |

| War and Peace | 25.00 | 12.500000 |

| Murder on the Orient Express | 18.75 | 9.375000 |

| Harry Potter | 27.99 | 13.995000 |

| The Old Man and the Sea | 14.25 | 7.125000 |

| Crime and Punishment | 19.60 | 9.800000 |

| Great Expectations | 16.80 | 8.400000 |

| The Hobbit | 24.99 | 12.495000 |

| The Shining | 22.20 | 11.100000 |

| Inferno | 17.40 | 8.700000 |

| Mockingjay | 16.00 | 8.000000 |

| To Kill a Mockingbird | 19.75 | 9.875000 |

| The Time Machine | 12.50 | 6.250000 |

| Foundation | 18.30 | 9.150000 |

| The Lion, the Witch and the Wardrobe | 15.00 | 7.500000 |

| Sherlock Holmes | 20.00 | 10.000000 |

| The Colour of Magic | 17.60 | 8.800000 |

| Slaughterhouse-Five | 14.99 | 7.495000 |

+--------------------------------------+-------+------------+

20 rows in set (0.00 sec)

mysql> **-- 5. Modulo (%)**

mysql> SELECT \* FROM students

-> WHERE age % 2 = 0;

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 3 | Charlie | 22 | C | 2022-11-05 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 8 | Heidi | 20 | B | 2022-09-01 |

| 9 | Ivan | 24 | C | 2021-10-12 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 17 | Quinn | 22 | B | 2022-02-17 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 20 | Trudy | 22 | B | 2021-09-15 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 23 | Wendy | 22 | B | 2023-03-09 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

15 rows in set (0.00 sec)

mysql> **-- Implement 5 Aggregate functions**

mysql> **-- 1. COUNT()**

mysql> SELECT COUNT(\*) AS total\_books

-> FROM book;

+-------------+

| total\_books |

+-------------+

| 20 |

+-------------+

1 row in set (0.00 sec)

mysql> **-- 2. SUM()**

mysql> SELECT SUM(fine) AS total\_fine\_collected

-> FROM student\_publisher;

+----------------------+

| total\_fine\_collected |

+----------------------+

| 22.75 |

+----------------------+

1 row in set (0.00 sec)

mysql> **-- 3. AVG()**

mysql> SELECT AVG(price) AS average\_price

-> FROM book;

+---------------+

| average\_price |

+---------------+

| 18.580500 |

+---------------+

1 row in set (0.00 sec)

mysql> **-- 4. MAX()**

mysql> SELECT MAX(age) AS oldest\_student

-> FROM students;

+----------------+

| oldest\_student |

+----------------+

| 24 |

+----------------+

1 row in set (0.00 sec)

mysql> **-- 5. MIN()**

mysql> SELECT MIN(price) AS cheapest\_book

-> FROM book;

+---------------+

| cheapest\_book |

+---------------+

| 12.50 |

+---------------+

1 row in set (0.00 sec)

mysql> **-- Implement Grouping functions**

mysql> **-- 1. GROUP BY**

mysql> SELECT grade, COUNT(\*) AS student\_count

-> FROM students

-> GROUP BY grade;

+-------+---------------+

| grade | student\_count |

+-------+---------------+

| A | 10 |

| B | 8 |

| C | 8 |

+-------+---------------+

3 rows in set (0.00 sec)

mysql> **-- 2. GROUP BY with HAVING**

mysql> SELECT grade, COUNT(\*) AS student\_count

-> FROM students

-> GROUP BY grade

-> HAVING COUNT(\*) < 9;

+-------+---------------+

| grade | student\_count |

+-------+---------------+

| B | 8 |

| C | 8 |

+-------+---------------+

2 rows in set (0.00 sec)

mysql> **-- 3. ORDER BY ASC**

mysql> SELECT book\_id , title, price

-> FROM book

-> ORDER BY price ASC;

+---------+--------------------------------------+-------+

| book\_id | title | price |

+---------+--------------------------------------+-------+

| 215 | The Time Machine | 12.50 |

| 202 | Pride and Prejudice | 13.50 |

| 207 | The Old Man and the Sea | 14.25 |

| 220 | Slaughterhouse-Five | 14.99 |

| 217 | The Lion, the Witch and the Wardrobe | 15.00 |

| 201 | 1984 | 15.99 |

| 213 | Mockingjay | 16.00 |

| 209 | Great Expectations | 16.80 |

| 212 | Inferno | 17.40 |

| 219 | The Colour of Magic | 17.60 |

| 216 | Foundation | 18.30 |

| 205 | Murder on the Orient Express | 18.75 |

| 208 | Crime and Punishment | 19.60 |

| 214 | To Kill a Mockingbird | 19.75 |

| 218 | Sherlock Holmes | 20.00 |

| 203 | Adventures of Huckleberry Finn | 21.00 |

| 211 | The Shining | 22.20 |

| 210 | The Hobbit | 24.99 |

| 204 | War and Peace | 25.00 |

| 206 | Harry Potter | 27.99 |

+---------+--------------------------------------+-------+

20 rows in set (0.00 sec)

mysql> **-- 4. ORDER BY DESC**

mysql> SELECT student\_id , name, age

-> FROM students

-> ORDER BY age DESC;

+------------+---------+------+

| student\_id | name | age |

+------------+---------+------+

| 9 | Ivan | 24 |

| 19 | Sybil | 24 |

| 6 | Frank | 23 |

| 13 | Mallory | 23 |

| 18 | Ruth | 23 |

| 25 | Yasmine | 23 |

| 3 | Charlie | 22 |

| 7 | Grace | 22 |

| 12 | Leo | 22 |

| 17 | Quinn | 22 |

| 20 | Trudy | 22 |

| 23 | Wendy | 22 |

| 2 | Bob | 21 |

| 11 | Kathy | 21 |

| 15 | Oscar | 21 |

| 21 | Uma | 21 |

| 1 | Alice | 20 |

| 5 | Eve | 20 |

| 8 | Heidi | 20 |

| 14 | Niaj | 20 |

| 16 | Peggy | 20 |

| 22 | Victor | 20 |

| 26 | Alice | 20 |

| 4 | David | 19 |

| 10 | Judy | 19 |

| 24 | Xavier | 19 |

+------------+---------+------+

26 rows in set (0.00 sec)

mysql> **-- Implement all the Date functions**

mysql> **-- 1. CURRENT\_DATE or GETDATE()**

mysql> SELECT CURRENT\_DATE AS today\_date;

+------------+

| today\_date |

+------------+

| 2025-04-06 |

+------------+

1 row in set (0.00 sec)

mysql> **-- 2. YEAR(), MONTH(), DAY()**

mysql> SELECT name, join\_date,

-> YEAR(join\_date) AS join\_year,

-> MONTH(join\_date) AS join\_month,

-> DAY(join\_date) AS join\_day

-> FROM students;

+---------+------------+-----------+------------+----------+

| name | join\_date | join\_year | join\_month | join\_day |

+---------+------------+-----------+------------+----------+

| Alice | 2023-01-10 | 2023 | 1 | 10 |

| Bob | 2022-12-11 | 2022 | 12 | 11 |

| Charlie | 2022-11-05 | 2022 | 11 | 5 |

| David | 2023-03-19 | 2023 | 3 | 19 |

| Eve | 2023-05-23 | 2023 | 5 | 23 |

| Frank | 2021-07-13 | 2021 | 7 | 13 |

| Grace | 2023-08-17 | 2023 | 8 | 17 |

| Heidi | 2022-09-01 | 2022 | 9 | 1 |

| Ivan | 2021-10-12 | 2021 | 10 | 12 |

| Judy | 2022-03-30 | 2022 | 3 | 30 |

| Kathy | 2023-01-21 | 2023 | 1 | 21 |

| Leo | 2023-06-14 | 2023 | 6 | 14 |

| Mallory | 2023-07-01 | 2023 | 7 | 1 |

| Niaj | 2023-05-10 | 2023 | 5 | 10 |

| Oscar | 2022-04-11 | 2022 | 4 | 11 |

| Peggy | 2022-12-31 | 2022 | 12 | 31 |

| Quinn | 2022-02-17 | 2022 | 2 | 17 |

| Ruth | 2023-01-06 | 2023 | 1 | 6 |

| Sybil | 2021-08-29 | 2021 | 8 | 29 |

| Trudy | 2021-09-15 | 2021 | 9 | 15 |

| Uma | 2023-02-05 | 2023 | 2 | 5 |

| Victor | 2022-11-19 | 2022 | 11 | 19 |

| Wendy | 2023-03-09 | 2023 | 3 | 9 |

| Xavier | 2022-06-28 | 2022 | 6 | 28 |

| Yasmine | 2023-01-11 | 2023 | 1 | 11 |

| Alice | 2023-01-10 | 2023 | 1 | 10 |

+---------+------------+-----------+------------+----------+

26 rows in set (0.00 sec)

mysql> **-- 3. NOW()**

mysql> SELECT NOW() AS current\_datetime;

+---------------------+

| current\_datetime |

+---------------------+

| 2025-04-06 22:55:32 |

+---------------------+

1 row in set (0.00 sec)

mysql> **-- 4. FORMAT()**

mysql> SELECT book\_id , title, FORMAT(publish\_date, 'dd-MM-yyyy') AS formatted\_date

-> FROM book;

+---------+--------------------------------------+----------------+

| book\_id | title | formatted\_date |

+---------+--------------------------------------+----------------+

| 201 | 1984 | 20,220,615 |

| 202 | Pride and Prejudice | 20,210,912 |

| 203 | Adventures of Huckleberry Finn | 20,230,320 |

| 204 | War and Peace | 20,210,530 |

| 205 | Murder on the Orient Express | 20,221,111 |

| 206 | Harry Potter | 20,200,707 |

| 207 | The Old Man and the Sea | 20,230,201 |

| 208 | Crime and Punishment | 20,221,212 |

| 209 | Great Expectations | 20,210,820 |

| 210 | The Hobbit | 20,230,115 |

| 211 | The Shining | 20,221,017 |

| 212 | Inferno | 20,230,506 |

| 213 | Mockingjay | 20,210,319 |

| 214 | To Kill a Mockingbird | 20,230,403 |

| 215 | The Time Machine | 20,220,222 |

| 216 | Foundation | 20,230,325 |

| 217 | The Lion, the Witch and the Wardrobe | 20,230,610 |

| 218 | Sherlock Holmes | 20,211,231 |

| 219 | The Colour of Magic | 20,220,713 |

| 220 | Slaughterhouse-Five | 20,230,101 |

+---------+--------------------------------------+----------------+

20 rows in set, 20 warnings (0.00 sec)

mysql> **-- 5. SELECT NOW()**

mysql> SELECT now();

+---------------------+

| now() |

+---------------------+

| 2025-04-06 22:55:32 |

+---------------------+

1 row in set (0.00 sec)

mysql> **-- 6. SELECT DATE(NOW())**

mysql> SELECT DATE(NOW());

+-------------+

| DATE(NOW()) |

+-------------+

| 2025-04-06 |

+-------------+

1 row in set (0.00 sec)

mysql> **-- 7. Date formatting**

mysql> SELECT DATE\_FORMAT(CURDATE(), '%m/%d/%Y') today;

+------------+

| today |

+------------+

| 04/06/2025 |

+------------+

1 row in set (0.00 sec)

mysql> **-- 8. DateDiff()**

mysql> SELECT DATEDIFF('1997-12-31 23:59:59','1997-12-30');

+----------------------------------------------+

| DATEDIFF('1997-12-31 23:59:59','1997-12-30') |

+----------------------------------------------+

| 1 |

+----------------------------------------------+

1 row in set (0.00 sec)

mysql> **-- 9. DayName()**

mysql> SELECT DAYNAME('2022-03-30');

+-----------------------+

| DAYNAME('2022-03-30') |

+-----------------------+

| Wednesday |

+-----------------------+

1 row in set (0.00 sec)

mysql> **-- 10. Dayofmonth()**

mysql> SELECT DAYOFMONTH('2022-03-30');

+--------------------------+

| DAYOFMONTH('2022-03-30') |

+--------------------------+

| 30 |

+--------------------------+

1 row in set (0.00 sec)

mysql> **-- 11. Dayofweek()**

mysql> SELECT DAYOFWEEK('2022-03-30');

+-------------------------+

| DAYOFWEEK('2022-03-30') |

+-------------------------+

| 4 |

+-------------------------+

1 row in set (0.00 sec)

mysql> **-- 12. Selection and Extraction**

mysql> SELECT EXTRACT(YEAR FROM '2022-03-30');

+---------------------------------+

| EXTRACT(YEAR FROM '2022-03-30') |

+---------------------------------+

| 2022 |

+---------------------------------+

1 row in set (0.00 sec)

mysql> SELECT EXTRACT(YEAR\_MONTH FROM '2022-03-30 01:02:03');

+------------------------------------------------+

| EXTRACT(YEAR\_MONTH FROM '2022-03-30 01:02:03') |

+------------------------------------------------+

| 202203 |

+------------------------------------------------+

1 row in set (0.00 sec)

mysql> SELECT HOUR('10:05:03');

+------------------+

| HOUR('10:05:03') |

+------------------+

| 10 |

+------------------+

1 row in set (0.00 sec)

mysql> SELECT MONTHNAME('2022-03-30');

+-------------------------+

| MONTHNAME('2022-03-30') |

+-------------------------+

| March |

+-------------------------+

1 row in set (0.00 sec)

mysql> SELECT SECOND('10:05:03');

+--------------------+

| SECOND('10:05:03') |

+--------------------+

| 3 |

+--------------------+

1 row in set (0.00 sec)

mysql> SELECT SYSDATE();

+---------------------+

| SYSDATE() |

+---------------------+

| 2025-04-06 22:55:32 |

+---------------------+

1 row in set (0.00 sec)

mysql> SELECT TIMESTAMP('2022-03-30');

+-------------------------+

| TIMESTAMP('2022-03-30') |

+-------------------------+

| 2022-03-30 00:00:00 |

+-------------------------+

1 row in set (0.00 sec)

mysql> **-- Implement all the time functions**

mysql> **-- 1.Time extraction**

mysql> SELECT TIME("2017-08-15 19:30:10");

+-----------------------------+

| TIME("2017-08-15 19:30:10") |

+-----------------------------+

| 19:30:10 |

+-----------------------------+

1 row in set (0.00 sec)

mysql> SELECT TIME("2017-08-15 19:30:10.000001");

+------------------------------------+

| TIME("2017-08-15 19:30:10.000001") |

+------------------------------------+

| 19:30:10.000001 |

+------------------------------------+

1 row in set (0.00 sec)

mysql> **-- 2.Current time**

mysql> SELECT TIME(NOW());

+-------------+

| TIME(NOW()) |

+-------------+

| 22:55:32 |

+-------------+

1 row in set (0.00 sec)

mysql> **-- 3.Null**

mysql> SELECT TIME(NULL);

+------------+

| TIME(NULL) |

+------------+

| NULL |

+------------+

1 row in set (0.00 sec)

mysql> **-- 4.Time Formatting**

mysql> SELECT TIME\_FORMAT("19:30:10", "%H %i %s");

+-------------------------------------+

| TIME\_FORMAT("19:30:10", "%H %i %s") |

+-------------------------------------+

| 19 30 10 |

+-------------------------------------+

1 row in set (0.00 sec)

mysql> SELECT TIME\_FORMAT("19:30:10", "%r");

+-------------------------------+

| TIME\_FORMAT("19:30:10", "%r") |

+-------------------------------+

| 07:30:10 PM |

+-------------------------------+

1 row in set (0.00 sec)

mysql> SELECT TIME\_FORMAT("19:30:10", "%T");

+-------------------------------+

| TIME\_FORMAT("19:30:10", "%T") |

+-------------------------------+

| 19:30:10 |

+-------------------------------+

1 row in set (0.00 sec)

mysql> **-- Implement Set operations**

mysql> **-- 1. Union**

mysql> SELECT name FROM students

-> UNION

-> SELECT name FROM author;

+--------------------+

| name |

+--------------------+

| Alice |

| Bob |

| Charlie |

| David |

| Eve |

| Frank |

| Grace |

| Heidi |

| Ivan |

| Judy |

| Kathy |

| Leo |

| Mallory |

| Niaj |

| Oscar |

| Peggy |

| Quinn |

| Ruth |

| Sybil |

| Trudy |

| Uma |

| Victor |

| Wendy |

| Xavier |

| Yasmine |

| George Orwell |

| Jane Austen |

| Mark Twain |

| Leo Tolstoy |

| Agatha Christie |

| J.K. Rowling |

| Ernest Hemingway |

| Fyodor Dostoevsky |

| Charles Dickens |

| J.R.R. Tolkien |

| Stephen King |

| Dan Brown |

| Suzanne Collins |

| Harper Lee |

| H.G. Wells |

| Isaac Asimov |

| C.S. Lewis |

| Arthur Conan Doyle |

| Terry Pratchett |

| Kurt Vonnegut |

| Alice Asimov |

+--------------------+

46 rows in set (0.00 sec)

mysql> **-- 2. Union All**

mysql> SELECT name FROM students

-> UNION ALL

-> SELECT name FROM author;

+--------------------+

| name |

+--------------------+

| Alice |

| Bob |

| Charlie |

| David |

| Eve |

| Frank |

| Grace |

| Heidi |

| Ivan |

| Judy |

| Kathy |

| Leo |

| Mallory |

| Niaj |

| Oscar |

| Peggy |

| Quinn |

| Ruth |

| Sybil |

| Trudy |

| Uma |

| Victor |

| Wendy |

| Xavier |

| Yasmine |

| Alice |

| George Orwell |

| Jane Austen |

| Mark Twain |

| Leo Tolstoy |

| Agatha Christie |

| J.K. Rowling |

| Ernest Hemingway |

| Fyodor Dostoevsky |

| Charles Dickens |

| J.R.R. Tolkien |

| Stephen King |

| Dan Brown |

| Suzanne Collins |

| Harper Lee |

| H.G. Wells |

| Isaac Asimov |

| C.S. Lewis |

| Arthur Conan Doyle |

| Terry Pratchett |

| Kurt Vonnegut |

| Alice Asimov |

+--------------------+

47 rows in set (0.00 sec)

mysql> **-- 3. INTERSECT**

mysql> SELECT name FROM students

-> INTERSECT

-> SELECT name FROM author;

Empty set (0.00 sec)

mysql>

mysql> **-- 4. MINUS (or EXCEPT)**

mysql> SELECT name FROM students

-> EXCEPT

-> SELECT name FROM author;

+---------+

| name |

+---------+

| Alice |

| Bob |

| Charlie |

| David |

| Eve |

| Frank |

| Grace |

| Heidi |

| Ivan |

| Judy |

| Kathy |

| Leo |

| Mallory |

| Niaj |

| Oscar |

| Peggy |

| Quinn |

| Ruth |

| Sybil |

| Trudy |

| Uma |

| Victor |

| Wendy |

| Xavier |

| Yasmine |

+---------+

25 rows in set (0.00 sec)

mysql> **-- Implement IN and NOT IN**

mysql> **-- 1. IN**

mysql> SELECT \* FROM book

-> WHERE author\_id IN (101, 102, 103);

+---------+--------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------+-----------+-------+--------------+

| 201 | 1984 | 101 | 15.99 | 2022-06-15 |

| 202 | Pride and Prejudice | 102 | 13.50 | 2021-09-12 |

| 203 | Adventures of Huckleberry Finn | 103 | 21.00 | 2023-03-20 |

+---------+--------------------------------+-----------+-------+--------------+

3 rows in set (0.00 sec)

mysql> SELECT \* FROM students

-> WHERE grade IN ('A', 'B');

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 2 | Bob | 21 | B | 2022-12-11 |

| 4 | David | 19 | A | 2023-03-19 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 8 | Heidi | 20 | B | 2022-09-01 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 11 | Kathy | 21 | B | 2023-01-21 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 17 | Quinn | 22 | B | 2022-02-17 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 20 | Trudy | 22 | B | 2021-09-15 |

| 22 | Victor | 20 | A | 2022-11-19 |

| 23 | Wendy | 22 | B | 2023-03-09 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+---------+------+-------+------------+

18 rows in set (0.00 sec)

mysql> **-- 2. NOT IN**

mysql> SELECT \* FROM book

-> WHERE author\_id NOT IN (101, 102, 103);

+---------+--------------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------------+-----------+-------+--------------+

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 205 | Murder on the Orient Express | 105 | 18.75 | 2022-11-11 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 207 | The Old Man and the Sea | 107 | 14.25 | 2023-02-01 |

| 208 | Crime and Punishment | 108 | 19.60 | 2022-12-12 |

| 209 | Great Expectations | 109 | 16.80 | 2021-08-20 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

| 212 | Inferno | 112 | 17.40 | 2023-05-06 |

| 213 | Mockingjay | 113 | 16.00 | 2021-03-19 |

| 214 | To Kill a Mockingbird | 114 | 19.75 | 2023-04-03 |

| 215 | The Time Machine | 115 | 12.50 | 2022-02-22 |

| 216 | Foundation | 116 | 18.30 | 2023-03-25 |

| 217 | The Lion, the Witch and the Wardrobe | 117 | 15.00 | 2023-06-10 |

| 218 | Sherlock Holmes | 118 | 20.00 | 2021-12-31 |

| 219 | The Colour of Magic | 119 | 17.60 | 2022-07-13 |

| 220 | Slaughterhouse-Five | 120 | 14.99 | 2023-01-01 |

+---------+--------------------------------------+-----------+-------+--------------+

17 rows in set (0.00 sec)

mysql> SELECT \* FROM students

-> WHERE grade NOT IN ('A', 'B');

+------------+---------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+---------+------+-------+------------+

| 3 | Charlie | 22 | C | 2022-11-05 |

| 6 | Frank | 23 | C | 2021-07-13 |

| 9 | Ivan | 24 | C | 2021-10-12 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 15 | Oscar | 21 | C | 2022-04-11 |

| 18 | Ruth | 23 | C | 2023-01-06 |

| 21 | Uma | 21 | C | 2023-02-05 |

| 24 | Xavier | 19 | C | 2022-06-28 |

+------------+---------+------+-------+------------+

8 rows in set (0.00 sec)

mysql> **-- Implement complex queries using subqueries**

mysql> **-- 1 Find authors who have not written any books**

mysql> SELECT \* FROM author

-> WHERE author\_id NOT IN (

-> SELECT DISTINCT author\_id FROM book

-> );

+-----------+--------------+---------+

| author\_id | name | country |

+-----------+--------------+---------+

| 121 | Alice Asimov | Russia |

+-----------+--------------+---------+

1 row in set (0.00 sec)

mysql> **-- 2 List books issued by students who have grade 'A'**

mysql> SELECT \* FROM book

-> WHERE book\_id IN (

-> SELECT book\_id

-> FROM student\_publisher

-> WHERE student\_id IN (

-> SELECT student\_id FROM students

-> WHERE grade = 'A'

-> )

-> );

+---------+-------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+-------------------------+-----------+-------+--------------+

| 201 | 1984 | 101 | 15.99 | 2022-06-15 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 207 | The Old Man and the Sea | 107 | 14.25 | 2023-02-01 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 213 | Mockingjay | 113 | 16.00 | 2021-03-19 |

| 216 | Foundation | 116 | 18.30 | 2023-03-25 |

| 219 | The Colour of Magic | 119 | 17.60 | 2022-07-13 |

+---------+-------------------------+-----------+-------+--------------+

7 rows in set (0.00 sec)

mysql> **-- 3 Find books with price greater than the average price of all books**

mysql> SELECT \* FROM book

-> WHERE price > (

-> SELECT AVG(price) FROM book

-> );

+---------+--------------------------------+-----------+-------+--------------+

| book\_id | title | author\_id | price | publish\_date |

+---------+--------------------------------+-----------+-------+--------------+

| 203 | Adventures of Huckleberry Finn | 103 | 21.00 | 2023-03-20 |

| 204 | War and Peace | 104 | 25.00 | 2021-05-30 |

| 205 | Murder on the Orient Express | 105 | 18.75 | 2022-11-11 |

| 206 | Harry Potter | 106 | 27.99 | 2020-07-07 |

| 208 | Crime and Punishment | 108 | 19.60 | 2022-12-12 |

| 210 | The Hobbit | 110 | 24.99 | 2023-01-15 |

| 211 | The Shining | 111 | 22.20 | 2022-10-17 |

| 214 | To Kill a Mockingbird | 114 | 19.75 | 2023-04-03 |

| 218 | Sherlock Holmes | 118 | 20.00 | 2021-12-31 |

+---------+--------------------------------+-----------+-------+--------------+

9 rows in set (0.00 sec)

mysql> **-- DML Queries**

mysql> update students set name="Victoria" where student\_id=22;

Query OK, 1 row affected (0.02 sec)

Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT \* FROM students;

+------------+----------+------+-------+------------+

| student\_id | name | age | grade | join\_date |

+------------+----------+------+-------+------------+

| 1 | Alice | 20 | A | 2023-01-10 |

| 2 | Bob | 21 | B | 2022-12-11 |

| 3 | Charlie | 22 | C | 2022-11-05 |

| 4 | David | 19 | A | 2023-03-19 |

| 5 | Eve | 20 | B | 2023-05-23 |

| 6 | Frank | 23 | C | 2021-07-13 |

| 7 | Grace | 22 | A | 2023-08-17 |

| 8 | Heidi | 20 | B | 2022-09-01 |

| 9 | Ivan | 24 | C | 2021-10-12 |

| 10 | Judy | 19 | A | 2022-03-30 |

| 11 | Kathy | 21 | B | 2023-01-21 |

| 12 | Leo | 22 | C | 2023-06-14 |

| 13 | Mallory | 23 | A | 2023-07-01 |

| 14 | Niaj | 20 | B | 2023-05-10 |

| 15 | Oscar | 21 | C | 2022-04-11 |

| 16 | Peggy | 20 | A | 2022-12-31 |

| 17 | Quinn | 22 | B | 2022-02-17 |

| 18 | Ruth | 23 | C | 2023-01-06 |

| 19 | Sybil | 24 | A | 2021-08-29 |

| 20 | Trudy | 22 | B | 2021-09-15 |

| 21 | Uma | 21 | C | 2023-02-05 |

| 22 | Victoria | 20 | A | 2022-11-19 |

| 23 | Wendy | 22 | B | 2023-03-09 |

| 24 | Xavier | 19 | C | 2022-06-28 |

| 25 | Yasmine | 23 | A | 2023-01-11 |

| 26 | Alice | 20 | A | 2023-01-10 |

+------------+----------+------+-------+------------+

26 rows in set (0.00 sec)

mysql> **-- INNER Join**

mysql> select s.name from students s INNER JOIN author a where (s.Name=a.name);

Empty set (0.00 sec)

mysql> -- DISPLAY NAMES OF AUTHORS WHOSE NAME IS NOT IN STUDENT NAME

mysql> select DISTINCT name from author where name not in (select Name from students);

+--------------------+

| name |

+--------------------+

| George Orwell |

| Jane Austen |

| Mark Twain |

| Leo Tolstoy |

| Agatha Christie |

| J.K. Rowling |

| Ernest Hemingway |

| Fyodor Dostoevsky |

| Charles Dickens |

| J.R.R. Tolkien |

| Stephen King |

| Dan Brown |

| Suzanne Collins |

| Harper Lee |

| H.G. Wells |

| Isaac Asimov |

| C.S. Lewis |

| Arthur Conan Doyle |

| Terry Pratchett |

| Kurt Vonnegut |

| Alice Asimov |

+--------------------+

21 rows in set (0.00 sec)

mysql> **-- DISPLAY STUDENT PRNNO & NAME WHO HAS ISSUED BOOK.**

mysql> SELECT s.student\_id, s.name

-> FROM students s

-> JOIN student\_publisher sp ON s.student\_id = sp.student\_id;

+------------+----------+

| student\_id | name |

+------------+----------+

| 1 | Alice |

| 2 | Bob |

| 3 | Charlie |

| 4 | David |

| 5 | Eve |

| 6 | Frank |

| 7 | Grace |

| 8 | Heidi |

| 9 | Ivan |

| 10 | Judy |

| 11 | Kathy |

| 12 | Leo |

| 13 | Mallory |

| 14 | Niaj |

| 15 | Oscar |

| 16 | Peggy |

| 17 | Quinn |

| 18 | Ruth |

| 19 | Sybil |

| 20 | Trudy |

| 21 | Uma |

| 22 | Victoria |

| 23 | Wendy |

| 24 | Xavier |

| 25 | Yasmine |

+------------+----------+

25 rows in set (0.00 sec)

mysql> **-- DISPLAY STUDENT PRNNO & NAME WHO HAS NOT ISSUED BOOK.**

mysql> SELECT s.student\_id , s.name

-> FROM students s

-> WHERE s.student\_id NOT IN (

-> SELECT DISTINCT student\_id

-> FROM student\_publisher

-> );

+------------+-------+

| student\_id | name |

+------------+-------+

| 26 | Alice |

+------------+-------+

1 row in set (0.00 sec)

mysql>