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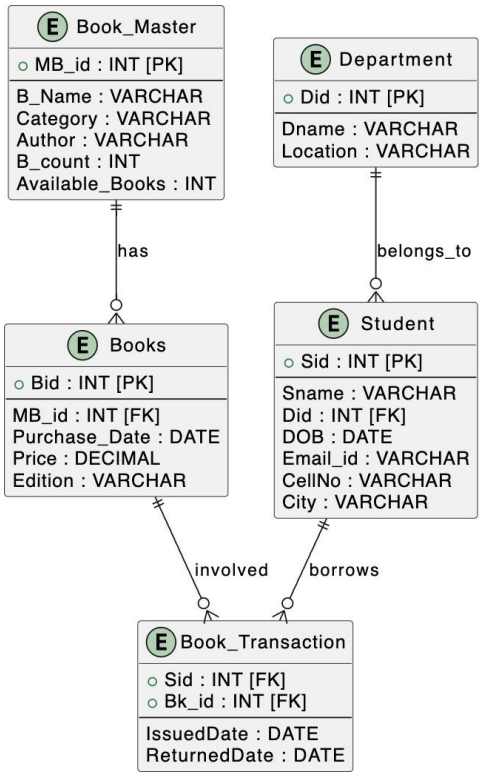
Department of Information Technology

DPBL Assignment Number: 3

Title:

Implement different types of SQL functions with suitable examples along with group by and Having clause and use of Functions for conversion, Date, aggregate, String and Number.



Queries:

1. **Display how many books are issued till date by the library.(including the repeated issues)**

```
mysql> Select * from book_Transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 |     1 | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 |     2 | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 |     3 | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 |     4 | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 |     5 | 2025-01-20 | NULL         |
| T1006          | B1506 |     6 | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 |     7 | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 |     9 | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 |     3 | 2025-01-22 | NULL         |
| T1011          | B1503 |     5 | 2025-01-25 | 2025-02-05   |
| T1012          | B1503 |     7 | 2025-01-28 | NULL         |
+----------------+-------+-------+------------+--------------+
11 rows in set (0.00 sec)

mysql> Select Count(*) As Book_Count From book_Transaction;
+------------+
| Book_Count |
+------------+
|         11 |
+------------+
1 row in set (0.00 sec)
```

2. **Display how many times a specific student has issued books from library .**

```
mysql> Select * from book_Transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 |     1 | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 |     2 | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 |     3 | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 |     4 | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 |     5 | 2025-01-20 | NULL         |
| T1006          | B1506 |     6 | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 |     7 | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 |     9 | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 |     3 | 2025-01-22 | NULL         |
| T1011          | B1503 |     5 | 2025-01-25 | 2025-02-05   |
| T1012          | B1503 |     7 | 2025-01-28 | NULL         |
+----------------+-------+-------+------------+--------------+
11 rows in set (0.00 sec)

mysql> Select SID,Count(*) from Book_transaction
    -> where Sid="B1503";
+-------+----------+
| SID   | Count(*) |
+-------+----------+
| B1503 |        4 |
+-------+----------+
1 row in set (0.00 sec)
```

3. **Display how many times each student has issued books from library.**

```
mysql> Select * from book_Transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 |     1 | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 |     2 | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 |     3 | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 |     4 | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 |     5 | 2025-01-20 | NULL         |
| T1006          | B1506 |     6 | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 |     7 | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 |     9 | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 |     3 | 2025-01-22 | NULL         |
| T1011          | B1503 |     5 | 2025-01-25 | 2025-02-05   |
| T1012          | B1503 |     7 | 2025-01-28 | NULL         |
+----------------+-------+-------+------------+--------------+
11 rows in set (0.00 sec)

mysql> Select SID,Count(*) from Book_transaction group by Sid;
+-------+----------+
| SID   | Count(*) |
+-------+----------+
| B1500 |        1 |
| B1501 |        1 |
| B1503 |        4 |
| B1504 |        1 |
| B1505 |        1 |
| B1506 |        1 |
| B1507 |        1 |
| B1509 |        1 |
+-------+----------+
8 rows in set (0.00 sec)
```

4. **Display how many books are written by each author.**

```
mysql> select *from book_master;
+-------+-----------------------------------------+---------------------+-------------+-----------------------+---------+---------------+---------------+
| MB_ID | Title                                   | Author              | ISBN        | Category              | B_Count | Available_Book | Publisher     |
+-------+-----------------------------------------+---------------------+-------------+-----------------------+---------+---------------+---------------+
|     1 | Artificial Intelligence: A Modern Approach | Stuart Russell      | 9780134610994 | Computer Science      |      30 |            20 | Pearson       |
|     2 | Introduction to Machine Learning        | Stuart Russell      | 9780262041232 | Computer Science      |      25 |            15 | MIT Press     |
|     3 | Database System Concepts                | Abraham Silberschatz | 9780078022159 | Computer Science      |      40 |            30 | McGraw-Hill   |
|     4 | Operating System Concepts               | Abraham Silberschatz | 9781119800368 | Computer Science      |      35 |            25 | Wiley         |
|     5 | Computer Networks                       | Andrew S. Tanenbaum | 9780132126953 | Computer Science      |      28 |            18 | Prentice Hall |
|     6 | Modern Operating Systems                | Andrew S. Tanenbaum | 9780133591623 | Computer Science      |      30 |            22 | Pearson       |
|     7 | Power Electronics                       | M.H. Rashid         | 9789353066211 | Electrical Engineering |      22 |            18 | Pearson       |
|     8 | Engineering Thermodynamics              | P.K. Nag            | 9781259029565 | Mechanical Engineering |      30 |            20 | McGraw-Hill   |
|     9 | Structural Analysis                     | R.C. Hibbeler       | 9780134610980 | Civil Engineering     |      25 |            18 | Pearson       |
|    10 | Electronic Devices and Circuit Theory   | Robert L. Boylestad | 9780135026491 | Electronics Engineering |      28 |            22 | Pearson       |
+-------+-----------------------------------------+---------------------+-------------+-----------------------+---------+---------------+---------------+
10 rows in set (0.00 sec)

mysql> Select Author,Count(*) As book_Count From Book_master Group By Author;
+---------------------+------------+
| Author              | book_Count |
+---------------------+------------+
| Stuart Russell      |          2 |
| Abraham Silberschatz |          2 |
| Andrew S. Tanenbaum |          2 |
| M.H. Rashid         |          1 |
| P.K. Nag            |          1 |
| R.C. Hibbeler       |          1 |
| Robert L. Boylestad |          1 |
+---------------------+------------+
7 rows in set (0.00 sec)
```

5. **What is the average price of the books in the library.**

```
mysql> Select * From book;
+---------+--------+-------+---------------+-------------+-------+
| Book_ID | Copies | Price | Purchase_Date | Edition     | MB_ID |
+---------+--------+-------+---------------+-------------+-------+
| B001    |     50 |  1550 | 2023-01-10    | 1st Edition |     1 |
| B002    |     20 |  1250 | 2023-01-15    | 2nd Edition |     2 |
| B003    |     30 |  2200 | 2023-01-20    | 3rd Edition |     3 |
| B004    |     10 |  1900 | 2023-01-25    | 1st Edition |     4 |
| B005    |     23 |  1650 | 2023-02-01    | 2nd Edition |     5 |
| B006    |     32 |  1750 | 2023-02-05    | 1st Edition |     6 |
| B007    |     78 |  2100 | 2023-02-10    | 4th Edition |     7 |
| B009    |     13 |  1800 | 2023-02-20    | 2nd Edition |     9 |
| B010    |     19 |  1600 | 2023-02-25    | 3rd Edition |    10 |
+---------+--------+-------+---------------+-------------+-------+
9 rows in set (0.00 sec)

mysql> Select Avg(Price) As Average_Price from book;
+---------------+
| Average_Price |
+---------------+
|     1755.5556 |
+---------------+
1 row in set (0.00 sec)
```

6. **What is the amount invested by the library on books.**

```
mysql> Select * From book;
+---------+--------+-------+---------------+-------------+-------+
| Book_ID | Copies | Price | Purchase_Date | Edition     | MB_ID |
+---------+--------+-------+---------------+-------------+-------+
| B001    |     50 |  1550 | 2023-01-10    | 1st Edition |     1 |
| B002    |     20 |  1250 | 2023-01-15    | 2nd Edition |     2 |
| B003    |     30 |  2200 | 2023-01-20    | 3rd Edition |     3 |
| B004    |     10 |  1900 | 2023-01-25    | 1st Edition |     4 |
| B005    |     23 |  1650 | 2023-02-01    | 2nd Edition |     5 |
| B006    |     32 |  1750 | 2023-02-05    | 1st Edition |     6 |
| B007    |     78 |  2100 | 2023-02-10    | 4th Edition |     7 |
| B009    |     13 |  1800 | 2023-02-20    | 2nd Edition |     9 |
| B010    |     19 |  1600 | 2023-02-25    | 3rd Edition |    10 |
+---------+--------+-------+---------------+-------------+-------+
9 rows in set (0.00 sec)

mysql> Select SUM(Price) As Total_Investment from book;
+------------------+
| Total_Investment |
+------------------+
|            15800 |
+------------------+
1 row in set (0.00 sec)
```

7. **When was the first book purchased.**

```
mysql> Select * From book;
+---------+--------+-------+---------------+-------------+-------+
| Book_ID | Copies | Price | Purchase_Date | Edition     | MB_ID |
+---------+--------+-------+---------------+-------------+-------+
| B001    |     50 |  1550 | 2023-01-10    | 1st Edition |     1 |
| B002    |     20 |  1250 | 2023-01-15    | 2nd Edition |     2 |
| B003    |     30 |  2200 | 2023-01-20    | 3rd Edition |     3 |
| B004    |     10 |  1900 | 2023-01-25    | 1st Edition |     4 |
| B005    |     23 |  1650 | 2023-02-01    | 2nd Edition |     5 |
| B006    |     32 |  1750 | 2023-02-05    | 1st Edition |     6 |
| B007    |     78 |  2100 | 2023-02-10    | 4th Edition |     7 |
| B009    |     13 |  1800 | 2023-02-20    | 2nd Edition |     9 |
| B010    |     19 |  1600 | 2023-02-25    | 3rd Edition |    10 |
+---------+--------+-------+---------------+-------------+-------+
9 rows in set (0.00 sec)

mysql> Select Min(Purchase_DAte) As First_Book_Purchase_Date from book;
+--------------------------+
| First_Book_Purchase_Date |
+--------------------------+
| 2023-01-10               |
+--------------------------+
1 row in set (0.00 sec)
```

8. **What is maximum count of books purchased of any book.**

```
mysql> Select * From book;
+---------+--------+-------+---------------+-------------+--------+
| Book_ID | Copies | Price | Purchase_Date | Edition     | MB_ID |
+---------+--------+-------+---------------+-------------+--------+
| B001    |     50 |  1550 | 2023-01-10    | 1st Edition |     1 |
| B002    |     20 |  1250 | 2023-01-15    | 2nd Edition |     2 |
| B003    |     30 |  2200 | 2023-01-20    | 3rd Edition |     3 |
| B004    |     10 |  1900 | 2023-01-25    | 1st Edition |     4 |
| B005    |     23 |  1650 | 2023-02-01    | 2nd Edition |     5 |
| B006    |     32 |  1750 | 2023-02-05    | 1st Edition |     6 |
| B007    |     78 |  2100 | 2023-02-10    | 4th Edition |     7 |
| B009    |     13 |  1800 | 2023-02-20    | 2nd Edition |     9 |
| B010    |     19 |  1600 | 2023-02-25    | 3rd Edition |    10 |
+---------+--------+-------+---------------+-------------+--------+
9 rows in set (0.00 sec)

mysql> Select Max(Copies) AS MAX_COPIES from book;
+-------------+
| MAX_COPIES |
+-------------+
|          78 |
+-------------+
1 row in set (0.00 sec)
```

9. **Print names of each category in book master**

```
mysql> select *from book_master;
+-------+---------------------------------------+---------------------+---------------+-------------------------+---------+---------------+--------------+
| MB_ID | Title                                 | Author              | ISBN          | Category                | B_Count | Available_Book | Publisher    |
+-------+---------------------------------------+---------------------+---------------+-------------------------+---------+---------------+--------------+
|     1 | Artificial Intelligence: A Modern Approach | Stuart Russell      | 9780134610994 | Computer Science        |      30 |            20 | Pearson      |
|     2 | Introduction to Machine Learning      | Stuart Russell      | 9780262041232 | Computer Science        |      25 |            15 | MIT Press    |
|     3 | Database System Concepts              | Abraham Silberschatz | 9780078022159 | Computer Science        |      40 |            30 | McGraw-Hill  |
|     4 | Operating System Concepts             | Abraham Silberschatz | 9781119800368 | Computer Science        |      35 |            25 | Wiley        |
|     5 | Computer Networks                     | Andrew S. Tanenbaum | 9780132126953 | Computer Science        |      28 |            18 | Prentice Hall |
|     6 | Modern Operating Systems              | Andrew S. Tanenbaum | 9780133591623 | Computer Science        |      30 |            22 | Pearson      |
|     7 | Power Electronics                     | M.H. Rashid         | 9789353066211 | Electrical Engineering  |      22 |            18 | Pearson      |
|     8 | Engineering Thermodynamics            | P.K. Nag            | 9781259029565 | Mechanical Engineering  |      30 |            20 | McGraw-Hill  |
|     9 | Structural Analysis                   | R.C. Hibbeler       | 9780134610980 | Civil Engineering       |      25 |            18 | Pearson      |
|    10 | Electronic Devices and Circuit Theory | Robert L. Boylestad | 9780135026491 | Electronics Engineering |      28 |            22 | Pearson      |
+-------+---------------------------------------+---------------------+---------------+-------------------------+---------+---------------+--------------+
10 rows in set (0.00 sec)

mysql> SELECT DISTINCT Category FROM book_master;
+-------------------------+
| Category                |
+-------------------------+
| Computer Science        |
| Electrical Engineering  |
| Mechanical Engineering  |
| Civil Engineering       |
| Electronics Engineering |
+-------------------------+
5 rows in set (0.00 sec)
```

10. **Display in how many days each book is returned along with book id (if returned) .**

```
mysql> Select * from book_transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 |     1 | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 |     2 | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 |     3 | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 |     4 | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 |     5 | 2025-01-20 | NULL         |
| T1006          | B1506 |     6 | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 |     7 | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 |     9 | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 |     3 | 2025-01-22 | NULL         |
| T1011          | B1503 |     5 | 2025-01-25 | 2025-02-05   |
| T1012          | B1503 |     7 | 2025-01-28 | NULL         |
+----------------+-------+-------+------------+--------------+
11 rows in set (0.00 sec)

mysql> Select BK_ID AS BOOK_ID,DATEDIFF(ReturnedDate,IssuedDate) AS Date_Borrowed from book_transaction
    -> Where ReturnedDate IS NOT NULL;
+---------+---------------+
| BOOK_ID | Date_Borrowed |
+---------+---------------+
|       1 |            10 |
|       2 |            10 |
|       3 |            10 |
|       4 |            10 |
|       6 |            10 |
|       7 |            10 |
|       9 |            10 |
|       5 |            11 |
+---------+---------------+
8 rows in set (0.00 sec)
```

11. **Display the number of days if it was returned late (if overdue) along with bid (assuming 8 days are permitted days).**

```
mysql> Select * from book_transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 |     1 | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 |     2 | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 |     3 | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 |     4 | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 |     5 | 2025-01-20 | NULL         |
| T1006          | B1506 |     6 | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 |     7 | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 |     9 | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 |     3 | 2025-01-22 | NULL         |
| T1011          | B1503 |     5 | 2025-01-25 | 2025-02-05   |
| T1012          | B1503 |     7 | 2025-01-28 | NULL         |
+----------------+-------+-------+------------+--------------+
11 rows in set (0.00 sec)

mysql> Select BK_ID AS BOOK_ID,DATEDIFF(ReturnedDate,IssuedDate)-8 AS OverDue from book_transaction
    -> Where ReturnedDate IS NOT NULL AND DateDiff(ReturnedDate,IssuedDate)>8;
+---------+---------+
| BOOK_ID | OverDue |
+---------+---------+
|       1 |       2 |
|       2 |       2 |
|       3 |       2 |
|       4 |       2 |
|       6 |       2 |
|       7 |       2 |
|       9 |       2 |
|       5 |       3 |
+---------+---------+
8 rows in set (0.00 sec)
```

12. **Display the count of books purchased after 2010;**

```
mysql> select *from book;
+---------+--------+-------+---------------+-------------+-------+
| Book_ID | Copies | Price | Purchase_Date | Edition     | MB_ID |
+---------+--------+-------+---------------+-------------+-------+
| BO01    |     50 |  1550 | 2023-01-10    | 1st Edition |     1 |
| BO02    |     20 |  1250 | 2023-01-15    | 2nd Edition |     2 |
| BO03    |     30 |  2200 | 2023-01-20    | 3rd Edition |     3 |
| BO04    |     10 |  1900 | 2023-01-25    | 1st Edition |     4 |
| BO05    |     23 |  1650 | 2023-02-01    | 2nd Edition |     5 |
| BO06    |     32 |  1750 | 2023-02-05    | 1st Edition |     6 |
| BO07    |     78 |  2100 | 2023-02-10    | 4th Edition |     7 |
| BO09    |     13 |  1800 | 2023-02-20    | 2nd Edition |     9 |
| BO10    |     19 |  1600 | 2023-02-25    | 3rd Edition |    10 |
+---------+--------+-------+---------------+-------------+-------+
9 rows in set (0.00 sec)

mysql> Select Count(*) From Book Where Purchase_Date>'2023-01-31';
+----------+
| Count(*) |
+----------+
|        5 |
+----------+
1 row in set (0.00 sec)
```

13. **Display how many books are returned today.**

```
mysql> Select Count(*) From Book_Transaction Where ReturnedDate=CURDATE();
+----------+
| Count(*) |
+----------+
|        2 |
+----------+
1 row in set (0.00 sec)
```

14. **Display how many books are taken (issued) by each student in this month.**

```
mysql> select *from book_transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 | BO01  | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 | BO02  | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 | BO03  | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 | BO04  | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 | BO05  | 2025-01-20 | NULL         |
| T1006          | B1506 | BO07  | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 | BO07  | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 | BO10  | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 | BO03  | 2025-01-22 | NULL         |
| T1011          | B1503 | BO06  | 2025-02-01 | 2025-02-05   |
| T1012          | B1503 | BO10  | 2025-02-03 | NULL         |
| T1013          | B1500 | BO02  | 2025-02-04 | 2025-02-07   |
| T1014          | B1509 | BO05  | 2025-02-04 | 2025-02-07   |
+----------------+-------+-------+------------+--------------+
13 rows in set (0.00 sec)

mysql> Select SID,Count(IssuedDate) from book_transaction
    -> Where Month(IssuedDate)=1 group by SID;
+-------+-------------------+
| SID   | Count(IssuedDate) |
+-------+-------------------+
| B1500 |                 1 |
| B1501 |                 1 |
| B1503 |                 2 |
| B1504 |                 1 |
| B1505 |                 1 |
| B1506 |                 1 |
| B1507 |                 1 |
| B1509 |                 1 |
+-------+-------------------+
8 rows in set (0.00 sec)
```

15. **Display Books name in capital letters, author name in small letters.**

```
mysql> Select Title,Author from book_master;
+-----------------------------------------+----------------------+
| Title                                   | Author               |
+-----------------------------------------+----------------------+
| Artificial Intelligence: A Modern Approach | Stuart Russell       |
| Introduction to Machine Learning        | Stuart Russell       |
| Database System Concepts                | Abraham Silberschatz |
| Operating System Concepts               | Abraham Silberschatz |
| Computer Networks                       | Andrew S. Tanenbaum  |
| Modern Operating Systems                | Andrew S. Tanenbaum  |
| Power Electronics                       | M.H. Rashid          |
| Engineering Thermodynamics              | P.K. Nag             |
| Structural Analysis                     | R.C. Hibbeler        |
| Electronic Devices and Circuit Theory   | Robert L. Boylestad  |
+-----------------------------------------+----------------------+
10 rows in set (0.00 sec)

mysql> Select Upper(Title) As Title,Lower(Author) As Author From book_Master;
+-----------------------------------------+----------------------+
| Title                                   | Author               |
+-----------------------------------------+----------------------+
| ARTIFICIAL INTELLIGENCE: A MODERN APPROACH | stuart russell       |
| INTRODUCTION TO MACHINE LEARNING        | stuart russell       |
| DATABASE SYSTEM CONCEPTS                | abraham silberschatz |
| OPERATING SYSTEM CONCEPTS               | abraham silberschatz |
| COMPUTER NETWORKS                       | andrew s. tanenbaum  |
| MODERN OPERATING SYSTEMS                | andrew s. tanenbaum  |
| POWER ELECTRONICS                       | m.h. rashid          |
| ENGINEERING THERMODYNAMICS              | p.k. nag             |
| STRUCTURAL ANALYSIS                     | r.c. hibbeler        |
| ELECTRONIC DEVICES AND CIRCUIT THEORY   | robert l. boylestad  |
+-----------------------------------------+----------------------+
10 rows in set (0.00 sec)
```

16. **Display All Python Programming books details (ignore the spaces entered by mistake by the data entry operator)**

```
mysql> Select * From book_master;
+-------+----------------------------------------+-----------------+---------------+-----------------------+---------+----------------+-------------+
| MB_ID | Title                                  | Author          | ISBN          | Category              | B_Count | Available_Book | Publisher   |
+-------+----------------------------------------+-----------------+---------------+-----------------------+---------+----------------+-------------+
|     1 | Artificial Intelligence: A Modern Approach | Stuart Russell  | 9780134610994 | Computer Science      |      30 |             20 | Pearson     |
|     2 | Introduction to Machine Learning       | Stuart Russell  | 9780262041232 | Computer Science      |      25 |             15 | MIT Press   |
|     3 | Database System Concepts               | Abraham Silberschatz | 9780078022159 | Computer Science  |      40 |             30 | McGraw-Hill |
|     4 | Operating System Concepts              | Abraham Silberschatz | 9781119800368 | Computer Science  |      35 |             25 | Wiley       |
|     5 | Computer Networks                      | Andrew S. Tanenbaum | 9780132126953 | Computer Science      |      28 |             18 | Prentice Hall |
|     6 | Modern Operating Systems               | Andrew S. Tanenbaum | 9780133591623 | Computer Science      |      30 |             22 | Pearson     |
|     7 | Power Electronics                      | M.H. Rashid     | 9789353066211 | Electrical Engineering |      22 |             18 | Pearson     |
|     8 | Engineering Thermodynamics             | P.K. Nag        | 9781259029565 | Mechanical Engineering |      30 |             20 | McGraw-Hill |
|     9 | Structural Analysis                    | R.C. Hibbeler   | 9780134610980 | Civil Engineering     |      25 |             18 | Pearson     |
|    10 | Electronic Devices and Circuit Theory  | Robert L. Boylestad | 9780135026491 | Electronics Engineering |  28 |             22 | Pearson     |
|    11 | Python Programming                     | John Doe        | 9781234567890 | Computer Science      |      40 |             30 | Pearson     |
|    12 | Python Programming                     | Jane Smith      | 9780987654321 | Computer Science      |      35 |             25 | McGraw-Hill |
|    13 |  Python Programming                    | Mike Johnson    | 9781122334455 | Computer Science      |      50 |             40 | Wiley       |
+-------+----------------------------------------+-----------------+---------------+-----------------------+---------+----------------+-------------+
13 rows in set (0.00 sec)

mysql> SELECT * FROM book_master
    -> WHERE Title = 'Python Programming';
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
| MB_ID | Title            | Author     | ISBN          | Category        | B_Count | Available_Book | Publisher   |
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
|    11 | Python Programming | John Doe   | 9781234567890 | Computer Science |      40 |             30 | Pearson     |
|    12 | Python Programming | Jane Smith | 9780987654321 | Computer Science |      35 |             25 | McGraw-Hill |
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
2 rows in set (0.00 sec)

mysql> Select * From book_master
    -> WHERE TRIM(Title) = 'Python Programming';
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
| MB_ID | Title            | Author     | ISBN          | Category        | B_Count | Available_Book | Publisher   |
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
|    11 | Python Programming | John Doe   | 9781234567890 | Computer Science |      40 |             30 | Pearson     |
|    12 | Python Programming | Jane Smith | 9780987654321 | Computer Science |      35 |             25 | McGraw-Hill |
|    13 |  Python Programming | Mike Johnson | 9781122334455 | Computer Science |      50 |             40 | Wiley       |
+-------+------------------+------------+---------------+-----------------+---------+----------------+-------------+
3 rows in set (0.00 sec)
```

17. **Find the fine amount for the each returned book assuming Rs 10 /day is the fine amount and a student is allowed to have book for 8 days.**

```
mysql> SELECT * From book_transaction;
+----------------+-------+-------+------------+--------------+
| Transaction_ID | Sid   | Bk_ID | IssuedDate | ReturnedDate |
+----------------+-------+-------+------------+--------------+
| T1001          | B1500 | BO01  | 2025-01-10 | 2025-01-20   |
| T1002          | B1501 | BO02  | 2025-01-15 | 2025-01-25   |
| T1003          | B1503 | BO03  | 2025-01-12 | 2025-01-22   |
| T1004          | B1504 | BO04  | 2025-01-18 | 2025-01-28   |
| T1005          | B1505 | BO05  | 2025-01-20 | NULL         |
| T1006          | B1506 | BO07  | 2025-01-14 | 2025-01-24   |
| T1007          | B1507 | BO07  | 2025-01-11 | 2025-01-21   |
| T1009          | B1509 | BO10  | 2025-01-13 | 2025-01-23   |
| T1010          | B1503 | BO03  | 2025-01-22 | NULL         |
| T1011          | B1503 | BO06  | 2025-02-01 | 2025-02-05   |
| T1012          | B1503 | BO10  | 2025-02-03 | NULL         |
| T1013          | B1500 | BO02  | 2025-02-04 | 2025-02-07   |
| T1014          | B1509 | BO05  | 2025-02-04 | 2025-02-07   |
+----------------+-------+-------+------------+--------------+
13 rows in set (0.00 sec)

mysql> SELECT Transaction_ID,SID,BK_ID
    -> ,DateDiff(ReturnedDate,IssuedDAte)-8 As OVerDue,
    -> (DateDiff(ReturnedDate,IssuedDAte)-8)*10 As FineAmount
    -> from Book_Transaction
    -> Where ReturnedDate IS NOT NULL
    -> ANd DateDiff(ReturnedDate,IssuedDate)>8;
+----------------+-------+-------+---------+------------+
| Transaction_ID | SID   | BK_ID | OVerDue | FineAmount |
+----------------+-------+-------+---------+------------+
| T1001          | B1500 | BO01  |       2 |         20 |
| T1002          | B1501 | BO02  |       2 |         20 |
| T1003          | B1503 | BO03  |       2 |         20 |
| T1004          | B1504 | BO04  |       2 |         20 |
| T1006          | B1506 | BO07  |       2 |         20 |
| T1007          | B1507 | BO07  |       2 |         20 |
| T1009          | B1509 | BO10  |       2 |         20 |
+----------------+-------+-------+---------+------------+
7 rows in set (0.00 sec)
```

18. **Find the age of students (using date and number functions)**

```
mysql> Select * from student;
+-------+--------------+------------------------+------------+------------+
| S_ID  | Name         | Email                  | Mobile_No  | DOB        |
+-------+--------------+------------------------+------------+------------+
| B1500 | Aarav Sharma | aarav.sharma@gmail.com | 9876543210 | 2000-01-15 |
| B1501 | Vivaan Patel | Vivaan@gmail.com       | 9123456789 | 1999-02-20 |
| B1503 | Vihaan Gupta | vihaan.gupta@gmail.com | 9871234567 | 2002-04-25 |
| B1504 | Arjun Rao    | arjun.rao@gmail.com    | 9988776655 | 1998-05-30 |
| B1505 | Sai Kumar    | sai.kumar@gmail.com    | 9876543210 | 2000-06-15 |
| B1506 | Reyansh Singh | reyansh.singh@gmail.com | 9123456789 | 2003-07-20 |
| B1507 | Krishna Iyer | krishna.iyer@gmail.com | 9988776655 | 1997-08-05 |
| B1508 | Rohan Mehta  | rohan.mehta@gmail.com  | 9871234567 | 2001-09-12 |
| B1509 | Anaya Joshi  | anaya.joshi@gmail.com  | 9123456789 | 2002-10-30 |
+-------+--------------+------------------------+------------+------------+
9 rows in set (0.00 sec)

mysql> Select S_ID,Name,TimestampDIff(Year,DOB,Current_Date) as Age From Student;
+-------+--------------+------+
| S_ID  | Name         | Age  |
+-------+--------------+------+
| B1500 | Aarav Sharma |   25 |
| B1501 | Vivaan Patel |   25 |
| B1503 | Vihaan Gupta |   22 |
| B1504 | Arjun Rao    |   26 |
| B1505 | Sai Kumar    |   24 |
| B1506 | Reyansh Singh |   21 |
| B1507 | Krishna Iyer |   27 |
| B1508 | Rohan Mehta  |   23 |
| B1509 | Anaya Joshi  |   22 |
+-------+--------------+------+
9 rows in set (0.00 sec)
```

Conclusion:

In this SQL assignment, we explored various SQL functions, including **conversion, date, aggregate, string, and number functions**, to extract insights from the **LibraryDb**. While using **DATEDIFF**, we encountered an error (**ERROR 1582 (42000)**) due to an incorrect parameter count, as MySQL only accepts two dates without a unit (e.g., YEAR). Additionally, when using **aggregate functions** like COUNT or SUM without proper **GROUP BY**, SQL returns the first non-aggregated field value while computing the aggregate. This assignment reinforced practical SQL skills and highlighted common pitfalls in database queries.