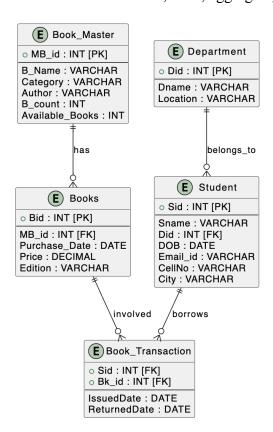
Assignment Number-3

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

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

mysql> Select * f	rom book	Transact	tion;	
Transaction_ID	Sid	Bk_ID	IssuedDate	ReturnedDate
T1001 T1002 T1003 T1004 T1005 T1006 T1007 T1009 T1010 T1011	B1500 B1501 B1503 B1504 B1505 B1506 B1507 B1509 B1503 B1503	1 2 3 4 5 6 7 9 3 5	2025-01-10 2025-01-15 2025-01-12 2025-01-18 2025-01-20 2025-01-14 2025-01-11 2025-01-13 2025-01-22 2025-01-25 2025-01-28	2025-01-20 2025-01-25 2025-01-22 2025-01-28 NULL 2025-01-24 2025-01-21 2025-01-23 NULL 2025-02-05 NULL
11 rows in set (0 mysql> Select SID + SID Count(*	,Count(*) +) from Bo	ook_transactio	on group by Sid;
B1501 B1503 B1504	+ 1 1 4 1 1 1 1 + 00 sec)			

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

ysql> select *from boo	k_master;	+	+	+	+	+	+
MB_ID Title		Author	ISBN	Category	B_Count	Available_Book	Publisher
2 Introduction 3 Database Syst 4 Operating Sys 5 Computer Netw 6 Modern Operat 7 Power Electro 8 Engineering T 9 Structural An 10 Electronic De	ttem Concepts iorks ing Systems nics hermodynamics ialysis vices and Circuit Theory	Stuart Russell Abraham Silberschatz Abraham Silberschatz Andrew S. Tanenbaum Andrew S. Tanenbaum M.H. Rashid P.K. Nag R.C. Hibbeler Robert L. Boylestad	9788134618994 97880262841232 97880788822159 9781119880368 9788133126953 9788133591623 9789353866211 9781259829565 9789134619989 9789135926491	Computer Science Computer Science Computer Science Electrical Engineering Mechanical Engineering	30 25 40 35 28 30 22 30 25 28	20 15 30 25 18 22 22 18 29 18	McGraw-Hill Wiley Prentice Hall Pearson Pearson
	book_Count						
Stuart Russell Abraham Silberschatz Andrew S. Tanenbaum M.H. Rashid P.K. Nag R.C. Hibbeler	2						

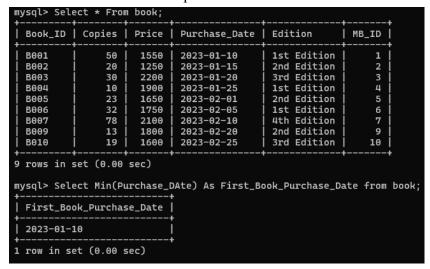
5. What is the average price of the books in the library.

mysql> Sele	ect * From	book;			·
Book_ID	Copies	Price	Purchase_Date	Edition	MB_ID
B001 B002 B003 B004 B005 B006 B007 B009 B010	50 20 30 10 23 32 78 13	1550 1250 2200 1900 1650 1750 2100 1800	2023-01-10 2023-01-15 2023-01-20 2023-01-25 2023-02-01 2023-02-05 2023-02-10 2023-02-20 2023-02-25	1st Edition 2nd Edition 3rd Edition 1st Edition 2nd Edition 1st Edition 4th Edition 2nd Edition 3rd Edition	1 2 3 4 5 6 7 9
mysql> Selo + Average_I +	Price + .5556	rice) As	Average_Price fi	rom book;	·•

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

```
mysql> Select * From book;
  Book_ID
              Copies
                        Price
                                  Purchase_Date
                                                     Edition
                                                                     MB_ID |
                                  2023-01-10
                                                                          1
2
3
4
5
                  20
30
10
                                  2023-01-15
2023-01-20
2023-01-25
                                                     2nd Edition
3rd Edition
  B002
                          1250
                         2200
1900
  B003
                                                     1st Edition
  B004
                  23
32
78
13
  B005
                                  2023-02-01
                                                     2nd Edition
                          1650
                                                                          6
7
                          1750
                                  2023-02-05
                                                     1st Edition
  B006
  B007
                          2100
                                  2023-02-10
                                                     4th Edition
  B009
                          1800
                                  2023-02-20
                                                     2nd Edition
  B010
                          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.



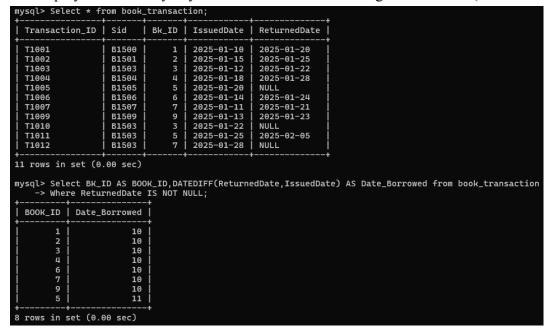
8. What is maximum count of books purchased of any book.

mysql> Sele	ect * From	ı book;			
Book_ID	Copies	Price	Purchase_Date	Edition	MB_ID
B001 B002 B003 B004 B005 B006 B007 B009 B010	50 20 30 10 23 32 78 13	1550 1250 2200 1900 1650 1750 2100 1800	2023-01-10 2023-01-15 2023-01-20 2023-01-25 2023-02-01 2023-02-05 2023-02-10 2023-02-20 2023-02-25	1st Edition 2nd Edition 3rd Edition 1st Edition 2nd Edition 1st Edition 4th Edition 2nd Edition 4th Edition 3rd Edition	1 2 3 4 5 6 7 9
MAX_COPIE	ect Max(Co + ES + 78 +	opies) AS	S MAX_COPIES from	n book;	·

9. Print names of each category in book master

HD_ID	Title	Author	ISBN	Category	B_Count	Available_Book	Publisher
	Artificial Intelligence: A Modern Approach				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		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
	Power Electronics	M.H. Rashid	9789353066211		22	18	Pearson
8	Engineering Thermodynamics	P.K. Nag	9781259029565		30	20	
9	Structural Analysis	R.C. Hibbeler	9780134610980		25	18	Pearson
10	Electronic Devices and Circuit Theory	Robert L. Boylestad	9780135026491	Electronics Engineering	28	22	Pearson
	in set (0.00 sec) ELECT DISTINCT Category FROM book_master; ry						
Comput	er Science ical Engineering						

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



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;
                                                                                  ReturnedDate |
   Transaction_ID | Sid
                                          | Bk_ID | IssuedDate |
                                                            2025-01-10
2025-01-15
2025-01-12
2025-01-18
2025-01-20
2025-01-14
2025-01-11
                                                                                   2025-01-20
2025-01-25
2025-01-22
2025-01-28
   T1001
T1002
                                B1500
B1501
                                                     1
2
3
4
                                B1503
B1504
   T1003
   T1004
   T1005
T1006
                                B1505
B1506
                                                     5679357
                                                                                   NULL
                                                                                  NULL
2025-01-24
2025-01-21
2025-01-23
NULL
                                 B1507
                                B1509
                                                            2025-01-13
2025-01-22
   T1009
   T1010
                                 B1503
                                B1503
B1503
                                                            2025-01-25
2025-01-28
                                                                                   2025-02-05
NULL
   T1011
   T1012
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;
             3
4
             6
7
             5
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
  B001
                       1550
                              2023-01-10
                                                1st Edition
                 50
                                                                   2
3
4
  B002
                20
                       1250
                               2023-01-15
                                                2nd Edition
  B003
                 30
                       2200
                               2023-01-20
                                                3rd Edition
                10
                               2023-01-25
                                                1st Edition
  B004
                       1900
  B005
                 23
                       1650
                               2023-02-01
                                                2nd Edition
  B006
                 32
                       1750
                               2023-02-05
                                                1st Edition
  B007
                 78
                       2100
                               2023-02-10
                                                4th Edition
                 13
  B009
                       1800
                               2023-02-20
                                                2nd Edition
 B010
                 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)
```

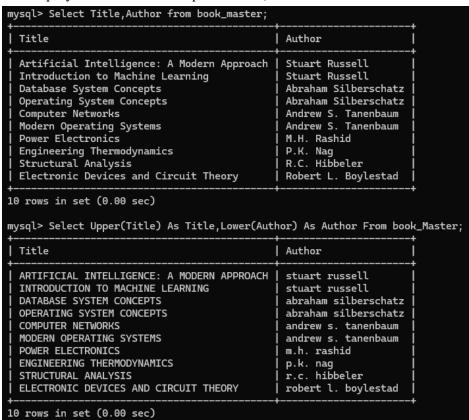
13. Display how many books are returned today.

```
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 *f	rom book_	transact:	ion;	
Transaction_ID	Sid	 Bk_ID	IssuedDate	+ ReturnedDate
T1001 T1002 T1003 T1004 T1005 T1006 T1007 T1009 T1010 T1011	B1500 B1501 B1503 B1504 B1505 B1506 B1507 B1509 B1503 B1503	B001 B002 B003 B004 B005 B007 B007 B010 B003 B006 B010	2025-01-10 2025-01-15 2025-01-12 2025-01-18 2025-01-20 2025-01-14 2025-01-11 2025-01-22 2025-02-01 2025-02-01	2025-01-20 2025-01-25 2025-01-22 2025-01-28 NULL 2025-01-24 2025-01-21 2025-01-23 NULL 2025-02-05
T1012 T1013 T1014	B1500 B1509	B018 B002 B005	2025-02-03 2025-02-04 2025-02-04	: :
13 rows in set (mysql> Select SI -> Where Mon	D,Count(I		e) from book_1 group by SID;	transaction
SID Count(IssuedDat	e)		
B1500 B1501 B1503 B1504 B1505 B1506 B1507 B1509		1 1 2 1 1 1 1 1 1 1		
8 rows in set (6	.00 sec)			

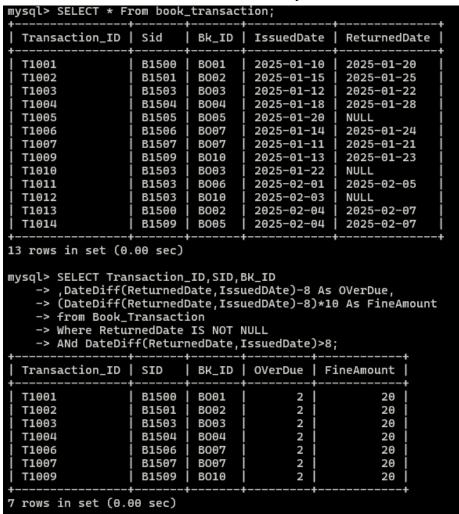
15. Display Books name in capital letters, author name in small letters.



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

+							+		+	+	+
JR_ID	Title			Autho	or	ISBN	Category		B_Count	Available_Book	Publisher +
1	Artificial Intellige	gence: A Modern Approach		Stuart Russell		97801346109	94 Computer S	cience	30	20	Pearson
2 j	Introduction to Mach	hine Learning			rt Russell	97802620412	32 Computer S	cience	25	j 15	MIT Press
3 j	Database System Conc			Abrah	ham Silberschatz	97800780221	59 Computer S	cience	40	30	McGraw-Hill
4	Operating System Con	ncepts		Abrah	ham Silberschatz	97811198003	68 Computer S	cience	35	25	Wiley
5	Computer Networks			Andre	ew S. Tanenbaum	97801321269			28	18	Prentice Ha
6	Modern Operating Sys	stems		Andre	ew S. Tanenbaum	97801335916	23 Computer S	cience	30	22	Pearson
7	Power Electronics			M.H.	Rashid	97893530662		Engineering	22	18	
	Engineering Thermody	/namics		P.K.		97812590295		Engineering	30	20	McGraw-Hill
	Structural Analysis				Hibbeler	97801346109			25	18	Pearson
	Electronic Devices a	and Circuit Th	eory		rt L. Boylestad	97801350264		s Engineering	28		Pearson
11	Python Programming			John	Doe	97812345678	90 Computer S	cience	40	30	Pearson
12 l	Python Programming			Jane	Smith	97809876543		mputer Science	35		McGraw-Hill
				Mike Johnson 9781122334455 Compute:							
13 + rows i sql> SE	Python Programming in set (0.00 sec) ELECT * FROM book_mast ERE Title = 'Python F			Mike +	Johnson	97811223344	55 Computer S	cience	50 +	40 	Wiley +
13 rows i sql> SE -> WH	in set (0.00 sec) ELECT * FROM book_mast	Programming';	ISBN		Johnson		55 Computer S 		50 	46 	Wiley +
13 rows i sql> SE -> WH + MB_ID	in set (0.00 sec) ELECT * FROM book_mast HERE Title = 'Python F	Programming'; + Author			i	 B_Count		 Publisher	50 	40	Wiley
13 rows i sql> SE -> WH + MB_ID + 11	n set (0.00 sec) ELECT * FROM book_mast ERE Title = 'Python F	Programming';	978123456		Category Computer Science	B_Count B_Count	Available_Book 30	 Publisher	50 	40	Wiley
13 + rows i sql> SE -> WH+ 1B_ID + 11 12 rows in	in set (0.00 sec) LECT * FROM book mast LERE Title = 'Python F Title Python Programming Python Programming set (0.00 sec)	Programming'; Author John Doe Jane Smith	978123456		Category Computer Science	B_Count B_Count	Available_Book 30	Publisher Pearson		40	Wiley
13 rows i sql> SE -> WH+ 11 12 rows in sql> Se	n set (0.00 sec) ELECT * FROM book_mast EERE Title = 'Python F Title Python Programming Python Programming	Programming'; Author John Doe Jane Smith	9781234565 9780987654		Category Computer Science	B_Count B_Count	Available_Book 30	Publisher Pearson		10 40	Wiley
13 rows i sql> SE -> WH	In set (0.00 sec) ELECT * FROM book_mast EEEE Title = 'Python F Title Python Programming Python Programming set (0.00 sec) Elect * From book_mast	Programming'; Author John Doe Jane Smith	9781234565 9780987654		Category Computer Science	B_Count 40 35	Available_Book 30	Publisher Pearson McGraw-Hill	50 	10 40	Wiley
13 rows i rows i sql> SE -> WH 11 12 rows in sql> Se -> WH 11 11 11 11 11 11 11 11	In set (0.00 sec) ELECT * FROM book_mast EERE Title = 'Python F Title Python Programming Python Programming Python Programming Python Programming Python Programming Python Programming Python Programming	Programming'; Author John Doe Jane Smith er thon Programm Author John Doe	978123456' 9780987654 	7890 14321 4321	Category Computer Science Computer Science Category Computer Science	B_Count 40 35	Available_Book 30 25 Available_Bo	Publisher Pearson McGraw-Hill pk Publisher 0 Pearson	· · · · · · · · · · · · · · · · · · ·	40	Wiley
13 rows i rows i sql> SE -> WH HB_ID 11 12 rows in sql> Se -> WH HB_ID 11 12	In set (0.00 sec) LECT * FROM book_mast LEKE Title = 'Python F Title Python Programming Python Programming set (0.00 sec) Lect * From book_mast LEKE TRIM(Title) = 'Py Title	Author John Doe Jane Smith er thon Programm Author John Doe John Doe John Doe John Smith	978123456' 978098765' ing'; 	7890 4321 4321 4567890	Category Computer Science Computer Science Category Computer Science	B_Count	Available_Book 30 25 Available_Book	Publisher Pearson McGraw-Hill	· · · · · · · · · · · · · · · · · · ·	40	Wiley

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.



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

nysql> Select * from student; ++										
S_ID Nar	ne l	Email		Mobile_No	DOB					
B1501 Viv B1503 Viv B1504 Arg B1505 Sas B1506 Rey B1507 Krs B1508 Rol B1509 And		Vivaan vihaan arjun. sai.ku reyans krishn rohan. anaya.	sharma@gmail.com @gmail.com .gupta@gmail.com rao@gmail.com mar@gmail.com h.singh@gmail.com a.iyer@gmail.com mehta@gmail.com joshi@gmail.com	9876543210 9123456789 9871234567 9988776655 9876543210 9123456789 9988776655 9871234567	2000-01-15 1999-02-20 2002-04-25 1998-05-30 2000-06-15 2003-07-20 1997-08-05 2001-09-12 2002-10-30					
S_ID Nar		+ Age								
B1501 Viv B1503 Viv B1504 Ar B1505 Sa: B1506 Rey B1507 Kr: B1508 Rol	rav Sharma vaan Patel haan Gupta jun Rao i Kumar yansh Singh ishna Iyer han Mehta aya Joshi	25 25 22 26 24 21 27 23 22								

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.