DBMS Lab Assignment - 4

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SQL Functions and its types

SQL provides many built-in functions to perform operations on data. These functions are useful while performing mathematical calculations, string concatenations, sub-strings etc.

Four types of SQL functions:

Aggregate Functions

MySQL supports the following aggregate functions:

Function	Description
AVG()	Returns the average of the values in the selected column
COUNT()	Returns the number of rows returned for a selection
MAX()	Returns the maximum value for a column
MIN()	Returns the minimum value of a column
SUM()	Returns the sum of the values in a specified column

Date Functions

Function	Description
NOW()	Returns the current date and time
CURDATE()	Returns the current date
CURTIME()	Returns the current time
DATE()	Extracts the date part of a date or date/time expression
EXTRACT()	Returns a single part of a date/time
DATE_ADD()	Adds a specified time interval to a date
DATE_SUB()	Subtracts a specified time interval from a date
DATEDIFF()	Returns the number of days between two dates
DATE_FORMAT()	Displays date/time data in different formats

Numeric Functions

Command	Query	Output
Abs(n)	Select abs(-15) from dual;	15
Ceil(n)	Select ceil(55.67) from dual;	56
Exp(n)	Select exp(4) from dual;	54.59
Floor(n)	Select floor(100.2) from dual;	100
Power(m,n)	Select power(4,2) from dual;	16
Mod(m,n)	Select mod(10,3) from dual;	1
Round(m,n)	Select round(100.256,2) from dual;	100.26
Trunc(m,n)	Select trunc(100.256,2) from dual;	100.23
Sqrt(m,n)	Select sqrt(16) from dual;	4

Char Functions

lower (char); upper (char);	*select lower ('HELLO') from dual;* *select upper ('hello') from dual;*	hello HELLO
ltrim (char,[set]);	*select ltrim ('cseit', 'cse') from dual;*	it
rtrim (char,[set]);	*select rtrim ('cseit', 'it') from dual;*	cse
replace (char,search string, replace string);	*select replace ('jack and jue', 'j', 'bl') from dual;*	black and blue
substr (char,m,n);	*select substr ('information', 3, 4) from dual;*	form

Assignment 4 Lab Questions

Perform following queries using SQL functions:

1. Find the cheapest book of SIBM library.

```
mysql> SELECT b.Bid, b.Bname, b.Price
    -> FROM books b
    -> JOIN Ilibrary l on b.Lid = l.Lid
    -> WHERE Lname = 'SIBMLib'
    -> AND b.Price = (SELECT MIN(Price) FROM books WHERE Lid = l.Lid);
+-----+---------------+---------+
| Bid | Bname         | Price   |
+-----+---------------+---------+
|  14 | Multimanagers | 2345.00 |
+-----+---------------+---------+
1 row in set (0.00 sec)
```

2. Which library has the costliest book?

```
mysql> SELECT l.Lid, l.Lname, b.Bid, b.Bname, b.Price
    -> FROM books b
    -> JOIN Ilibrary l ON b.Lid = l.Lid
    -> WHERE b.Price = (SELECT MAX(Price) FROM books);
+-----+--------+-----+------------+---------+
| Lid | Lname  | Bid | Bname      | Price   |
+-----+--------+-----+------------+---------+
|   1 | SITLib |  12 | Algorithms | 6754.00 |
+-----+--------+-----+------------+---------+
1 row in set (0.00 sec)
```

3. How many students from SIT issued the book?

```
mysql> SELECT COUNT(DISTINCT s.Stuid) AS student_count
    -> FROM issue i
    -> JOIN student s ON i.Memid = s.Memid
    -> JOIN department d ON s.Deptid = d.Deptid
    -> WHERE d.Iname = 'SIT';
+---------------+
| student_count |
+---------------+
|             3 |
+---------------+
1 row in set (0.01 sec)
```

4. What is the average cost of books in SITMN library?

```
mysql> SELECT AVG(b.Price) AS average_book_price
    -> FROM books b
    -> JOIN ilibrary l ON b.Lid = l.Lid
    -> WHERE l.lname = 'SITMNLib';
+--------------------+
| average_book_price |
+--------------------+
|         518.666667 |
+--------------------+
1 row in set (0.00 sec)
```

5. What is the total cost of purchase made by SIT in the month of January to June?

```
mysql> SELECT SUM(p.totalcost) AS total_purchase_cost
    -> FROM purchase p
    -> JOIN department d ON p.Lid = d.Lid
    -> WHERE d.Iname = 'SIT'
    -> AND MONTH(p.date) BETWEEN 1 AND 6;
+---------------------+
| total_purchase_cost |
+---------------------+
|             9000.00 |
+---------------------+
1 row in set (0.01 sec)
```

6. How many books are written by “Shruti”?

```
mysql> SELECT COUNT(DISTINCT w.Bid) AS total_books
    -> FROM writes w
    -> JOIN author a ON w.Aid = a.Aid
    -> WHERE a.Aname = 'Shruti';
+-------------+
| total_books |
+-------------+
|           5 |
+-------------+
1 row in set (0.03 sec)
```

7. What is the costliest book published by “Pragati Book Store”?

```
mysql> SELECT Bname, Price
    -> FROM books
    -> WHERE Price = (SELECT MAX(Price) FROM books b
    ->                JOIN writes w ON b.Bid = w.Bid
    ->                JOIN publisher p ON w.Pid = p.Pid
    ->                WHERE p.Pname = 'Pragati Book Store');
+------------+---------+
| Bname      | Price   |
+------------+---------+
| Algorithms | 6754.00 |
+------------+---------+
1 row in set (0.00 sec)
```

8. How many total copies of books do SIT has?

```
mysql> SELECT COUNT(*) AS total_copies_SIT
    -> FROM noofcopies
    -> WHERE Lid = (SELECT Lid FROM Ilibrary WHERE Lname = 'SITLib');
+------------------+
| total_copies_SIT |
+------------------+
|               17 |
+------------------+
1 row in set (0.03 sec)
```

9. What is the average cost of books written by “Shivam Kapoor”?

```
mysql> SELECT AVG(b.Price) AS avg_book_price
    -> FROM books b
    -> JOIN writes w ON b.Bid = w.Bid
    -> JOIN author a ON w.Aid = a.Aid
    -> WHERE a.Aname = 'Shivam Kapoor';
+----------------+
| avg_book_price |
+----------------+
|    2400.333333 |
+----------------+
1 row in set (0.00 sec)
```

10.How many books are sold by seller living in Pune?

```
mysql> SELECT COUNT(DISTINCT s.Bid) AS total_books_sold
    -> FROM sells s
    -> JOIN seller se ON s.Sid = se.Sid
    -> WHERE se.city = 'Pune';
+------------------+
| total_books_sold |
+------------------+
|                3 |
+------------------+
1 row in set (0.01 sec)
```

11.Print the student name in capital who belongs to SSBS

```
mysql> SELECT UPPER(s.Sname) AS Student_Name
    -> FROM student s
    -> JOIN department d ON s.Deptid = d.Deptid
    -> WHERE d.Iname = 'SSBS';
+--------------+
| Student_Name |
+--------------+
| ADIT         |
+--------------+
1 row in set (0.01 sec)
```

12.Add two months to the issue date of book written by “Shivam Kapoor”

```
mysql> SELECT i.Issueid, i.Memid, i.Bid, i.Lid, i.Issuedate,
    ->        DATE_ADD(i.Issuedate, INTERVAL 2 MONTH) AS New_Issue_Date
    -> FROM issue i
    -> JOIN writes w ON i.Bid = w.Bid
    -> JOIN author a ON w.Aid = a.Aid
    -> WHERE a.Aname = 'Shivam Kapoor';
+---------+-------+------+------+------------+----------------+
| Issueid | Memid | Bid  | Lid  | Issuedate  | New_Issue_Date |
+---------+-------+------+------+------------+----------------+
|     205 |    44 |    2 |    2 | 2020-03-12 | 2020-05-12     |
|     210 |    45 |    2 |    2 | 2020-04-06 | 2020-06-06     |
+---------+-------+------+------+------------+----------------+
2 rows in set (0.00 sec)
```

13.What was the last day of the month when Satish issued the book?

```
mysql> SELECT s.Sname, i.Issuedate,
    ->        LAST_DAY(i.Issuedate) AS Last_Day_of_Month
    -> FROM issue i
    -> JOIN student s ON i.Memid = s.Memid
    -> WHERE s.Sname = 'Satish';
Empty set (0.01 sec)
```

14.How many books are issued from January to march 2010 & 2020?

```
mysql> SELECT COUNT(*) AS Total_Books_Issued
    -> FROM issue
    -> WHERE (YEAR(Issuedate) = 2010 OR YEAR(Issuedate) = 2020)
    -> AND MONTH(Issuedate) BETWEEN 1 AND 3;
+--------------------+
| Total_Books_Issued |
+--------------------+
|                  1 |
+--------------------+
1 row in set (0.01 sec)
```

15.How many books have copies less than 5 available in the SIBM library?

```
mysql> SELECT COUNT(DISTINCT n.Bid)  AS Total_books_SIBMLib
    -> FROM noofcopies n
    -> JOIN Ilibrary i ON n.Lid = i.Lid
    -> WHERE i.lname = 'SIBMLib'
    -> AND (SELECT COUNT(*) FROM noofcopies WHERE Bid = n.Bid AND Lid = n.Lid) < 5;
+---------------------+
| Total_books_SIBMLib |
+---------------------+
|                  11 |
+---------------------+
1 row in set (0.00 sec)
```