

## Practical No. 5

**Aim:** Queries using

i. string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr, ELT(), Char\_Length(), Format(), Find\_In\_Set, Oct(), Reverse(), Repeat(), Ascii())

ii. date functions (Sysdate, next\_day, add\_months, last\_day, months\_between, least, greatest, trunc, round, to\_char, to\_date, PERIOD\_DIFF)

iii. numeric functions: Abs (), power (), sqrt (), greatest (), least (), round (), mod ().

iv. time functions (Localtime, Minute(datetime), Microsecond)

### Theory:

SQL functions such as string, date, numeric, time are predefined operations that can be applied to data in a relational database management system (RDBMS). These functions perform specific tasks on the data and return results. Here's a brief explanation of the usage of SQL functions and how they benefit users

### Queries:

#### 1. STRING FUNCTIONS

1) Concatenation: Concatenates two or more strings together

```
mysql> SELECT CONCAT('TONY','@','MIKAELSON') AS CONCATENATION;
+-----+
| CONCATENATION |
+-----+
| TONY@MIKAELSON |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

2) Lpad: Helps in padding or adding a string to the left of the given string

```
mysql> SELECT LPAD('TONY',11,'$') AS LPAD;
+-----+
| LPAD |
+-----+
| $$$$$$TONY |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

3) Rpad: Helps in padding or adding a string to the right of the given string

```
mysql> SELECT RPAD('TONY',11,'$') AS RPAD;
+-----+
| RPAD |
+-----+
| TONY$$$$$$$ |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

4) Ltrim: Helps to return remove all the space characters found on the left hand side of the string

```
mysql> SELECT LTRIM('          MIKAELSON') AS LTRIM;
+-----+
| LTRIM |
+-----+
| MIKAELSON |
+-----+
1 row in set (0.05 sec)

mysql> #202203103510097;
```

5) Rtrim: Helps to return remove all the space characters found on the right hand side of the string

```
mysql> SELECT RTRIM('MIKAELSON          ') AS RTRIM;
+-----+
| RTRIM |
+-----+
| MIKAELSON |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

6) Lower: Convert strings to lowercase

```
mysql> SELECT LOWER('TONY') AS LOWERCASE;
+-----+
| LOWERCASE |
+-----+
| tony |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

7) Upper: Convert strings to uppercase

```
mysql> SELECT UPPER('mikaelson') AS UPPERCASE;
+-----+
| UPPERCASE |
+-----+
| MIKAELSON |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

8) Length: Returns the length of a string.

```
mysql> SELECT LENGTH('TONY MIKAELSON') AS LENGTH;
+-----+
| LENGTH |
+-----+
| 14 |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

9) Substr: Extracts a portion of a string.

```
mysql> SELECT SUBSTR('HYBRID BILLIONAIRE',8,11) AS SUB_STRING;
+-----+
| SUB_STRING |
+-----+
| BILLIONAIRE |
+-----+
1 row in set (0.04 sec)

mysql> #202203103510097;
```

10) Instr: Detects the first occurrence of a string or a character in the other string

```
mysql> SELECT INSTR('HYBRID BILLIONAIRE','A') AS POSITION_OF_STRING;
+-----+
| POSITION_OF_STRING |
+-----+
| 15 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

11) Elt: Returns the string from the list of string according to the given index number

```
mysql> SELECT ELT(2,'MR','TONY','MIKAELSON') AS RESULT;
+-----+
| RESULT |
+-----+
| TONY |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

12) Char\_Length: Find the length of a given string (in characters)

```
mysql> SELECT CHAR_LENGTH('NARCISSISTIC MANIPULATOR') AS STRING_LENGTH;
+-----+
| STRING_LENGTH |
+-----+
| 24 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

13) Format: Formats a value with the specified format

```
mysql> SELECT FORMAT(132247823.65000,2) AS FORMAT_NUMBER;
+-----+
| FORMAT_NUMBER |
+-----+
| 132,247,823.65 |
+-----+
1 row in set (0.03 sec)

mysql> #202203103510097;
```

14) Find\_In\_Set: Allows you to determine the position of a value within a comma - Separated list

```
mysql> SELECT FIND_IN_SET('H','H,Y,B,R,I,D') AS POSITION_OF_CHARACTER;
+-----+
| POSITION_OF_CHARACTER |
+-----+
| 1 |
+-----+
1 row in set (0.03 sec)

mysql> #202203103510097;
```

15) Oct: To convert decimal number to octal

```
mysql> SELECT OCT(30) AS DECIMAL_TO_OCTAL;
+-----+
| DECIMAL_TO_OCTAL |
+-----+
| 36 |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

16) Reverse: Reverses a string and returns the result

```
mysql> SELECT REVERSE('STOIC') AS REVERSE;
+-----+
| REVERSE |
+-----+
| CIOTS |
+-----+
1 row in set (0.04 sec)

mysql> #202203103510097;
```

17) Repeat: Repeats a string as many times as specified

```
mysql> SELECT REPEAT('MONEY! ',3) AS STRING_REPEAT;
+-----+
| STRING_REPEAT |
+-----+
| MONEY! MONEY! MONEY! |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

18) Ascii: Returns the ASCII code value of the leftmost character of the specified number or character value

```
mysql> SELECT ASCII('H') AS ASCII_NUMBER;
+-----+
| ASCII_NUMBER |
+-----+
| 72 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

## 2. DATE FUNCTIONS

1) Sysdate: Returns the current date and time

```
mysql> SELECT SYSDATE() AS CURRENT_DATE_AND_TIME;
+-----+
| CURRENT_DATE_AND_TIME |
+-----+
| 2023-09-30 14:19:12 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

2) Last\_day: To know the last day of the month for a given date or a datetime

```
mysql> SELECT LAST_DAY('2023-08-01') AS LAST_DAY;
+-----+
| LAST_DAY |
+-----+
| 2023-08-31 |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

3) To\_date: Converts this value to a DATETIME value

```
mysql> SELECT STR_TO_DATE('JULY 30 2023', '%M %D %Y') AS STR_TO_DATE;
+-----+
| STR_TO_DATE |
+-----+
| 0023-07-30 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

4) Period\_diff: Return the difference between two specified periods(YYYY/MM)

```
mysql> SELECT PERIOD_DIFF(202309,202304) AS MONTH_DIFFERENCE;
+-----+
| MONTH_DIFFERENCE |
+-----+
| 5 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

## 3. NUMERIC FUNCTIONS

1) Abs: Return the absolute value of a specified number

```
mysql> SELECT ABS(-30) AS ABSOLUTE_VALUE;
+-----+
| ABSOLUTE_VALUE |
+-----+
| 30 |
+-----+
1 row in set (0.01 sec)

mysql> #202203103510097;
```

2) Power: Return a results after raising a specified exponent number to a specified base number

```
mysql> SELECT POWER(7,3) AS POWER;
+-----+
| POWER |
+-----+
|    343 |
+-----+
1 row in set (0.04 sec)

mysql> #202203103510097;
```

3) Sqrt: Returns the square root of a number

```
mysql> SELECT SQRT(900) AS SQUARE_ROOT;
+-----+
| SQUARE_ROOT |
+-----+
|          30 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

4) Least: Returns the smallest value of the list of arguments

```
mysql> SELECT LEAST(11,30,1,7,5) AS SMALLEST_VALUE;
+-----+
| SMALLEST_VALUE |
+-----+
|              1 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

5) Greatest: Returns the greatest value of the list of arguments.

```
mysql> SELECT GREATEST(1,30,11,69,106) AS GREATEST_VALUE;
+-----+
| GREATEST_VALUE |
+-----+
|             106 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

6) Truncate: Return a value that has been truncated (shortened) to a specific number of decimal places

```
mysql> SELECT TRUNCATE(3.14159265,3) AS TRUNCATE_VALUE;
+-----+
| TRUNCATE_VALUE |
+-----+
|          3.141 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

7) Round: Rounds a number to a specified number of decimal places.

```
mysql> SELECT ROUND(6.68732,2) AS ROUNDED_VALUE;
+-----+
| ROUNDED_VALUE |
+-----+
|          6.69 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

8) Mod: Find the remainder of one number divided by another

```
mysql> SELECT MOD(30,11) AS REMAINDER;
+-----+
| REMAINDER |
+-----+
|          8 |
+-----+
1 row in set (0.03 sec)

mysql> #202203103510097;
```

#### 4. TIME FUNCTIONS

1) Localtime: Returns the current date and time

```
mysql> SELECT LOCALTIME() AS CURRENT_DATE_TIME;
+-----+
| CURRENT_DATE_TIME |
+-----+
| 2023-09-30 14:56:23 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

2) Minute: Returns the minute part of a time/datetime

```
mysql> SELECT MINUTE(LOCALTIME()) AS MINUTE;
+-----+
| MINUTE |
+-----+
|      57 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

3) Microsecond: Returns the microsecond part of a value

```
mysql> SELECT MICROSECOND('2023-09-30 14:56:23.69106') AS MICROSECOND;
+-----+
| MICROSECOND |
+-----+
|        691060 |
+-----+
1 row in set (0.00 sec)

mysql> #202203103510097;
```

**Conclusion:** These functions are essential for data transformation, cleaning, analysis, and reporting in SQL queries. They enable you to format data for presentation, perform calculations, and extract meaningful insights from your database. Understanding how to use these functions effectively is crucial for SQL data manipulation and reporting tasks.