SINGLE ROW FUNCTIONS

1. SQRT(NUM)
   Returns the square root of the number
   Ex. Select SQRT(16);

```
mysql> Select SQRT(16);
+-----------+
| SQRT(16)  |
+-----------+
|         4 |
+-----------+
```

2. ABS(NUM)
   Returns the absolute value of a number
   Ex. Select ABS(-23);

```
mysql> Select ABS(-23);
+-----------+
| ABS(-23)  |
+-----------+
|        23 |
+-----------+
```

3. ROUND(NUM,N)
   Rounds up a NUM to N decimal places.

```
mysql> select ROUND(123.4567,2);
+--------------------+
| ROUND(123.4567,2)  |
+--------------------+
|             123.46 |
+--------------------+
```

4. TRUNCATE(NUM,N)
Truncates a NUM to N decimal places without rounding up.

```
mysql> SELECT TRUNCATE(123.4567,2);
+-----------------------+
| TRUNCATE(123.4567,2) |
+-----------------------+
|                123.45 |
+-----------------------+
```

SELECT TRUNCATE(123.4567,-2); -> ???

5. CONCAT(STR1,STR2)

```
mysql> SELECT CONCAT('Hello','Team');
+--------------------------+
| CONCAT('Hello','Team') |
+--------------------------+
| HelloTeam                |
+--------------------------+
```

```
mysql> select concat('NAME: ',ename) from
emp;
+--------------------------+
| concat('NAME: ',ename) |
+--------------------------+
| NAME: SMITH              |
| NAME: ALLEN              |
| NAME: WARD               |
| NAME: JONES              |
| NAME: MARTIN             |
| NAME: BLAKE              |
| NAME: CLARK              |
| NAME: SCOTT              |
| NAME: KING               |
```

```
| NAME: TURNER            |
| NAME: ADAMS             |
| NAME: JAMES             |
| NAME: FORD              |
| NAME: MILLER            |
+-------------------------+
```

6. CEIL(num)
   It returns the smallest integer greater than or equal to the number.
   - Rounds num up to nearest integer
   - It works even if the number is already an integer (no change)

```
mysql> select ceil(12.3);
+------------+
| ceil(12.3) |
+------------+
|         13 |
+------------+

mysql> select ceil(12.0);
+------------+
| ceil(12.0) |
+------------+
|         12 |
+------------+
```

```
mysql> select ceil(-12.3);
+-------------+
| ceil(-12.3) |
+-------------+
|         -12 |
+-------------+
1 row in set (0.00 sec)
```

7. Floor(num)
   Returns the largest integer less than or equal to the number.

```
select floor(12.3);
+--------------+
| floor(12.3) |
+--------------+
|           12 |
+--------------+
select floor(-12.3);
+---------------+
| floor(-12.3) |
+---------------+
|          -13 |
+---------------+
```

8. Substr(str, start, length)
   Extract the substring starting at a specified position

```
Select substr('database',2,4);
+-------------------------+
| substr('database',2,4) |
+-------------------------+
| atab                    |
+-------------------------+

Select substr('Hello',1,2);
+----------------------+
| substr('Hello',1,2) |
+----------------------+
| He                   |
+----------------------+
```

9. UPPER(str)
   Convert a string into upper case.

```
select upper('FlyNaUt');
+-------------------+
| upper('FlyNaUt') |
+-------------------+
| FLYNAUT           |
+-------------------+
```

10. LOWER(str)

```
select lower('FlyNaUt');
+-------------------+
| lower('FlyNaUt') |
+-------------------+
| flynaut           |
+-------------------+
```

11. Instr(str,substr)
    It returns the position of first
    occurrence of substr

    ```
    select instr('Database', 'base');
    +---------------------------+
    | instr('Database', 'base') |
    +---------------------------+
    |                         5 |
    +---------------------------+
    ```

12. TRIM(str)
    It removes all the leading and trailing
    spaces from a string

13. Lpad(str, length, padstr)
    Left pads a string with specified
    characters to a given length.

    ```
    select lpad('Hello', 8,'*');
    +----------------------+
    | lpad('Hello', 8,'*') |
    +----------------------+
    | ***Hello             |
    +----------------------+
    ```

14. Rpad(str, length, padstr)
    Right pads a string with specified
    characters to a given length.

    ```
    select rpad('Hello',8,'*');
    +----------------------+
    | rpad('Hello',8,'*') |
    +----------------------+
    | Hello***             |
    +----------------------+
    ```

15. Length(str)
    select length('Flynaut');
    +--------------------+
    | length('Flynaut') |
    +--------------------+
    | 7 |
    +--------------------+

16. Format(num, d)
    Formats a number to d decimal places, rounds a number to specified decimal places.
    select format(123.456,2);
    +--------------------+
    | format(123.456,2) |
    +--------------------+
    | 123.46 |
    +--------------------+

- Having Clause
  It is used to filter records based on aggregate functions.

  Purpose:
- It filters a group data based on a condition
- While where clause filter rows before grouping
- Having clause filters the group after aggregation

Ex. Get the departments whose salary is more than 9000.

```
Select deptno, sum(sal) as Total_salary
From emp
Group by deptno
Having sum(sal) > 9000;

Select deptno, sum(sal) as Total_salary
    -> From emp
    -> Group by deptno
    -> Having sum(sal) > 9000;
+--------+--------------+
| deptno | Total_salary |
+--------+--------------+
|     20 |     10875.00 |
|     30 |      9400.00 |
+--------+--------------+
```

Explanation:

- The data is grouped by department
- The sum(sal) for each department is calculated
- Only groups where total salary is more than 9000 will be in a resultset.

Ex. To get departments with more than 5 employees.

Ex. To get departments where total salary is more than 9200 and maximum salary is less than 10000.

Date Functions:

1. Curdate()
   Used to fetch the current date(YYYY-MM-DD)
   select curdate();
   +------------+
   | curdate() |
   +------------+
   | 2025-07-23 |
   +------------+

2. Now()
   Returns the current date and time (YYYY-MM-DD HH:MM:SS)
   Select now();
   +---------------------+
   | now() |
   +---------------------+
   | 2025-07-23 12:50:37 |
   +---------------------+
3. Date_Format()
   To display the date in user friendly format.
   There are placeholder
   %d : Day of month(2 digits)
   %D : Day of the month with suffix(1st , 2nd, 3rd)
   %m : Month in numeric format
   %M : Full month name(March,….)
   %y : year in 2 digit format(2025 -> 25)
   %Y : Year in 4 digit format(2025)

Ex. To display the curdate in custom format.

```
select DATE_FORMAT(curdate(), '%M %d %Y');
+-------------------------------------+
| DATE_FORMAT(curdate(), '%M %d %Y') |
+-------------------------------------+
| July 23 2025                        |
+-------------------------------------+

select DATE_FORMAT(curdate(), '%M %D %Y');
+-------------------------------------+
| DATE_FORMAT(curdate(), '%M %D %Y') |
+-------------------------------------+
| July 23rd 2025                      |
+-------------------------------------+

select ename, date_format(hiredate, '%D %M %Y') as DATE from emp;
+--------+---------------------+
| ename  | DATE                |
+--------+---------------------+
| SMITH  | 17th December 1980  |
| ALLEN  | 20th February 1981  |
| WARD   | 22nd February 1981  |
| JONES  | 2nd April 1981      |
| MARTIN | 28th September 1981 |
| BLAKE  | 1st May 1981        |
| CLARK  | 9th June 1981       |
| SCOTT  | 9th December 1982   |
| KING   | 17th November 1981  |
| TURNER | 8th September 1981  |
| ADAMS  | 12th January 1983   |
| JAMES  | 3rd December 1981   |
```

```
| FORD   | 3rd December 1981   |
| MILLER | 23rd January 1982   |
+--------+---------------------+
```

4. DateDiff()
   Calculates the number of days betn two dates.
   Datediff(from_date,to_date)

```
select datediff('2022-11-23', '2000-12-
01');
+----------------------------------------+
| datediff('2022-11-23', '2000-12-01') |
+----------------------------------------+
|                                   8027 |
+----------------------------------------+
```

TASK: to find the experience of employees in years from emp table.