

LAB 8

Title: Date and Time data types in SQL

Objective:

- To be familiar with date and time data types and its implementation

Theory:

MySQL comes with the following data types for storing a date or a date/time value in the database:

DATE - format YYYY-MM-DD

DATETIME - format: YYYY-MM-DD HH:MI:SS

TIMESTAMP - format: YYYY-MM-DD HH:MI:SS

YEAR - format YYYY or YY

TIME A time. Format: hh:mm:ss.

Commonly Used Date/Time Functions

✓ **CURDATE()**

This function is used to get the current date and time.

For example,

```
SELECT CURDATE();
```

Here, the function returns the current date and time.

✓ **DATEDIFF(date_part, start_date, end_date)**

This function is used to determine the difference between two dates. For example,

```
SELECT DATEDIFF(month, '2020-12-31', '2022-01-01');
```

-- output: 13

Here, the function returns the difference between the two dates in months.

The output 13 indicates that there's a difference of 13 months between 2020-12-31 and 2022-01-01 .

we can similarly find the difference in terms of years, days etc.

Note: In MYSQL DATEDIFF() function has only two parameters.

DATEDIFF(end_date, start_date)

This returns the date difference in terms of number of days.

✓ TIMEDIFF()

The TIMEDIFF() function returns the difference between two time/datetime expressions.

Note: time1 and time2 should be in the same format, and the calculation is time1 - time2.

Syntax

```
TIMEDIFF(time1, time2)
```

Problem 1:

1. Create table Orders with following columns and appropriate data types

Orders(order_id,product_name,price,quantity,order_date,delivery_date)

```
CREATE TABLE Orders (  
    order_id INT PRIMARY KEY,  
    product_name VARCHAR(50) ,  
    price DECIMAL(10, 2) ,  
    quantity INT ,  
    order_date DATE ,  
    delivery_date DATE  
);
```

2. Insert 8 rows in orders table

```
INSERT INTO Orders  
VALUES (1, 'T-shirt', 25.99, 2, '2023-07-15', '2023-07-25');
```

```
INSERT INTO Orders  
VALUES (2, 'Jeans', 49.95, 1, '2023-07-17', '2023-07-20');
```

```
INSERT INTO Orders  
VALUES (3, 'Shoes', 69.50, 1, '2023-07-20', '2023-07-30');
```

```
INSERT INTO Orders  
VALUES (4, 'Sunglasses', 12.75, 3, '2023-07-22', '2023-07-28');
```

```
INSERT INTO Orders  
VALUES (5, 'Backpack', 34.99, 2, '2023-07-25', '2023-07-29');
```

```
INSERT INTO Orders  
VALUES (6, 'Headphones', 59.99, 1, '2023-07-29', '2023-08-05');
```

```
INSERT INTO Orders  
VALUES (7, 'Smartphone', 299.99, 2, '2023-07-29', '2023-11-01');
```

```
INSERT INTO Orders  
VALUES (8, 'Laptop', 799.95, 1, '2023-07-29', '2025-08-01');
```

3) Retrieve all orders placed on a 2023-07-15

```
SELECT *  
FROM Orders  
WHERE order_date = '2023-07-15';
```

4) Find the number of days that required to delivered shoes

```
SELECT DATEDIFF(delivery_date, order_date) AS delivery_time  
FROM Orders  
where product_name='shoes';
```

5) Find all the orders that is received from '2023-07-15' to '2023-07-25'

```
SELECT *  
FROM Orders  
WHERE order_date BETWEEN '2023-07-15' AND '2023-07-25';
```

6) find all the orders that is received today

```
SELECT *  
FROM Orders  
WHERE order_date = CURDATE();
```

7) Calculate the average number of days it takes to deliver a orders

```
SELECT AVG(DATEDIFF(delivery_date, order_date)) AS avg_delivery_time  
FROM Orders;
```

Note:

Here, in DATDIFF() function we have passed two parameters that is

DATEDIFF(date1, date2)

This will returns date difference in terms of number of days (date1-date2)

This is for if we run query on **MySQL DBMS**.

But sometimes it is necessary to find out date difference in terms of number of month, week, year, quarter etc. In such case three parameters need to be passed three parameters.

Syntax

```
DATEDIFF(interval, date1, date2)
```

Parameter Values

Parameter	Description
<i>interval</i>	Required. The part to return. Can be one of the following values: <ul style="list-style-type: none">• year, yyyy, yy = Year• quarter, qq, q = Quarter• month, mm, m = month• dayofyear = Day of the year• day, dy, y = Day• week, ww, wk = Week• weekday, dw, w = Weekday• hour, hh = hour• minute, mi, n = Minute• second, ss, s = Second• millisecond, ms = Millisecond
<i>date1, date2</i>	Required. The two dates to calculate the difference between

Note:

- DATEDIFF() function with two parameters are supported in MySQL DBMS.
- DATEDIFF() function with three parameters are supported in MS SQL Server DBMS

If you want test query in different DBMS ,you can follow this link

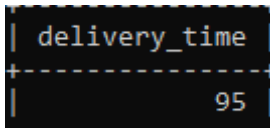
<http://www.sqlfiddle.com>

8) Find the number of months required to deliver smartphone

```
SELECT DATEDIFF(delivery_date, order_date) AS delivery_time  
FROM Orders  
where product_name='smartphone';
```

If we run this query in MySQL DBMS.

DATEDIFF() function will returns 95 for this query by considering above relations.



delivery_time
95

DATEDIFF() with three parameters are not supported in MySQL DBMS.

This query can be re-written as follows by passing three parameters in MS SQL server DBMS.

```
SELECT DATEDIFF(month, order_date, delivery_date) AS delivery_time  
FROM Orders  
where product_name='smartphone';
```

Note: you can write DATEDIFF() function with three parameters in exam.

9) Find the number of weeks required to deliver smartphone

```
SELECT DATEDIFF(week, order_date, delivery_date) AS delivery_time  
FROM Orders  
where product_name='smartphone';
```

10) Find the products that required more than 2 month to delivered

```
SELECT product_name  
FROM orders  
WHERE DATEDIFF(month, order_date, delivery_date) > 2;
```

11) Find the products that required more than 3 weeks to delivered

```
SELECT product_name  
FROM orders  
WHERE DATEDIFF(week, order_date, delivery_date) > 3;
```

12. Find the products that required more than 1 years to delivered.

```
SELECT product_name
FROM orders
WHERE DATEDIFF(year,order_date,delivery_date)>1;
```

Problem 2:

Write SQL statements for the following queries in reference to relation Emp_time provided.

Eid	Name	Start_time	End_time
E101	Hari	10:15	18:00
E102	Malati	8:00	15:30
E103	Kalyan	9:30	17:00

i) create the table Eid as primary key and insert the values provided

```
CREATE TABLE Emp_time (
  Eid VARCHAR(10) PRIMARY KEY,
  Name VARCHAR(30),
  Start_time TIME,
  End_time TIME
);
```

```
INSERT INTO Emp_time VALUES ('E101','Hari', '10:15:00', '18:00:00');
INSERT INTO Emp_time VALUES ('E102','Malati', '8:00:00', '15:30:00');
INSERT INTO Emp_time VALUES ('E103','Kalyan', '9:30:00', '17:00:00');
```

ii) Select all employees and their total working hours

```
SELECT Eid, Name, TIMEDIFF(End_time, Start_time) AS Total_Working_Hours
FROM Emp_time;
```

iii) Find the Employee information as per their least working hours.

```
SELECT Eid, Name, TIMEDIFF(End_time, Start_time) AS Work_Duration
FROM Emp_time
ORDER BY Work_Duration ASC;
```

iv) Find the Employee information as per their long working hours.

```
SELECT Eid, Name, TIMEDIFF(End_time, Start_time) AS Work_Duration
FROM Emp_time
ORDER BY Work_Duration DESC;
```

- v) **Select the employee name who works long hours among all the employees**

```
SELECT Eid, Name, TIMEDIFF(End_time, Start_time) AS Work_Duration
FROM Emp_time
ORDER BY Work_Duration DESC
LIMIT 1;
```

- vi) **find employees who worked more than 7 hours**

```
SELECT Name
FROM Emp_time
WHERE TIMEDIFF(End_time, Start_time) > '07:00:00';
```

- vii) **Display the name of the employee whose name start from letter 'M' and who work more than seven hours**

```
SELECT Name
FROM Emp_time
WHERE Name LIKE 'M%' AND TIMEDIFF(End_time, Start_time) > '07:00:00';
```

- viii) **Delete the entire content of the table so that new records can be inserted.**

```
TRUNCATE TABLE Emp_time;
```

Discussion: *(This portion is left for student)*

Conclusion: *(This portion is left for student)*

*****THE END*****