EXPLORE AI
ACADEMY

SQL string, date, and miscellaneous functions

Datetime functions

Introduction

Datetime functions are **built-in functions** that operate on **date and time values**. They allow for various manipulations on **dates**, **times**, or **timestamps** stored in the database.

Benefits of SQL datetime functions

01. Data manipulation

Transform and format date and time values.

02. Querying and filtering

Filter data based on specific time conditions.

03. Reporting and analysis

Generate reports and perform time-based analysis.

04. Data consistency and integrity

Validate and format date and time values.

05. Application development

Efficiently handle time-related operations.

06. Collaboration and integration

Work effectively with others and integrate SQL with other tools.

Functions specific to MySQL – CURRENT_DATE()

The **CURRENT_DATE()** function is used to **retrieve the current date without the time component**.

Query

```
SELECT
    CURRENT_DATE() AS Current_date;
```

Output

Current_date
2023-06-26

There are functions that are **specific to a particular database management system (DBMS) such as MySQL**. These functions are provided by the DBMS to offer **additional functionality or cater to specific features** of that particular database system.

Functions specific to MySQL – NOW()

The **NOW()** function is used to **retrieve the current date and time from the system.** It returns a datetime value representing the current timestamp.

Query

```
SELECT
     NOW() AS Current_timestamp;
```

Output

Current_timestamp
2023-06-26 14:30:45

Functions specific to MySQL – CURRENT_TIMESTAMP()

The **`CURRENT_TIMESTAMP()`** function is used to **retrieve the current date and time**.

Query

```
SELECT
    CURRENT_TIMESTAMP() AS Current_timestamp;
```

Output

Current_timestamp
2023-06-26 14:30:45

There is no functional difference between **`NOW()`** and **`CURRENT_TIMESTAMP()`**. Both functions are used to retrieve the current date and time and can therefore be used interchangeably.

Data overview

To explain datetime functions that are universal in SQL, we will use the **`Water_consumption_data_sa`** table that represents the **amount of water (litres) consumed within South African cities**, as well as the **date**, **time**, and **timestamp** of their recording.

City	Water_consumption	Date_recorded	Time_recorded	Timestamp_recorded
Johannesburg	150000	2022-08-10	08:45:00	2023-06-26 08:45:00
Cape Town	100000	2022-07-25	09:15:00	2023-06-26 09:15:00
Durban	120000	2022-09-02	10:30:00	2023-06-26 10:30:00
Pretoria	140000	2022-08-15	11:45:00	2023-06-26 11:45:00
Port Elizabeth	80000	2022-09-01	12:15:00	2023-06-26 12:15:00
Bloemfontein	60000	2022-07-30	13:30:00	2023-06-26 13:30:00

Universal SQL functions – DAY(), MONTH(), and YEAR()

When working with a date or timestamp value, the `DAY()` function is used to **extract the day portion**, the `MONTH()` function is used to **extract the month portion**, and the `YEAR()` function is used to **extract the year portion**.

```
SELECT
    DAY(date_expression) AS Alias
FROM
    Table_name;
```

```
SELECT
    YEAR(date_expression) AS Alias
FROM
    Table_name;
```

```
SELECT
    MONTH(date_expression) AS Alias
FROM
    Table_name;
```

The date or timestamp value from which the day, month, or year is to be extracted.

Universal SQL functions – DAY()

For instance, if we want to retrieve the day component from all entries in the **`Date_recorded`** column, we can utilise the **`DAY()`** function.

Query

```
SELECT
     City,
     Date_recorded,
     DAY(Date_recorded) AS Day
FROM
     Water_sources_sa_2022;
```

Output

City	Date_recorded	Day
Johannesburg	2022-08-10	10
Cape Town	2022-07-25	25
Durban	2022-09-02	2
Pretoria	2022-08-15	15
Port Elizabeth	2022-09-01	1
Bloemfontein	2022-07-30	30

Universal SQL functions – MONTH()

If we aim to retrieve the month component from each entry in the **Date_recorded** column, we can utilise the **MONTH()** function.

Query

```
SELECT
     City,
     Date_recorded,
     MONTH(Date_recorded) AS Month
FROM
     Water_sources_sa_2022;
```

Output

City	Date_recorded	Month
Johannesburg	2022-08-10	8
Cape Town	2022-07-25	7
Durban	2022-09-02	9
Pretoria	2022-08-15	8
Port Elizabeth	2022-09-01	9
Bloemfontein	2022-07-30	7

Universal SQL functions – YEAR()

To extract the year portion from all entries of the **`Date_recorded`** column, we use the **`YEAR()`** column.

Query

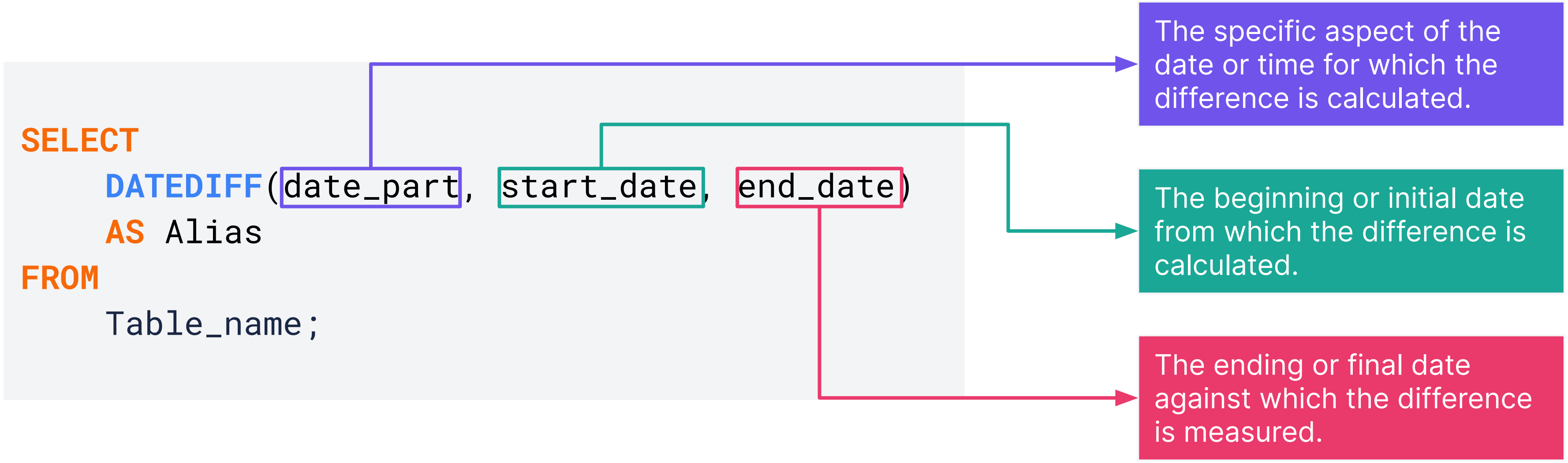
```
SELECT
    City,
    Date_recorded,
    YEAR(Date_recorded) AS Year
FROM
    Water_sources_sa_2022;
```

Output

City	Date_recorded	Year
Johannesburg	2022-08-10	2022
Cape Town	2022-07-25	2022
Durban	2022-09-02	2022
Pretoria	2022-08-15	2022
Port Elizabeth	2022-09-01	2022
Bloemfontein	2022-07-30	2022

Universal SQL functions – DATEDIFF()

The **`DATEDIFF()`** function is used to **calculate the difference between two dates.** It takes three parameters: the **part of the date** for which to calculate the difference (day, month, or year), the **start date**, and the **end date**.



```
SELECT
    DATEDIFF(date_part, start_date, end_date)
    AS Alias
FROM
    Table_name;
```

The specific aspect of the date or time for which the difference is calculated.

The beginning or initial date from which the difference is calculated.

The ending or final date against which the difference is measured.

Universal SQL functions – DATEDIFF()

By utilising the values in the **Date_recorded** column as the starting dates, we can determine the duration that has passed from the most recent recording until the present date.

Query

```
SELECT
     City,
     Date_recorded,
     DATEDIFF(day, Date_recorded, NOW()) AS
     Days_elapsed
FROM
     Water_sources_sa_2022;
```

Output

City	Date_recorded	Days_elapsed
Johannesburg	2022-08-10	320
Cape Town	2022-07-25	336
Durban	2022-09-02	297
Pretoria	2022-08-15	315
Port Elizabeth	2022-09-01	298
Bloemfontein	2022-07-30	331

Universal SQL functions – DATE_ADD()

The **DATE_ADD()** function is used to **add a specified interval to a date or datetime value**. It takes three parameters: a **date or datetime** to which the interval will be added, a **value** representing the interval you want to add, and an **interval unit** which can be DAY, MONTH, or YEAR.

```
SELECT
    DATE_ADD(date, INTERVAL value INTERVAL_UNIT)
    AS Alias
FROM
    Table_name;
```

date: The starting date or timestamp to which you want to add the interval.

value: Specifies the number of units to be added.

INTERVAL_UNIT: Defines the unit of measurement for the interval.

INTERVAL is a data type that represents a specific duration or interval of time. It allows for operations involving date and time values to be performed by specifying a certain amount of time to add or subtract.

Universal SQL functions – DATE_ADD()

Suppose we need to schedule a review exactly seven days after a recording has been made. In this case, we can utilise the **DATE_ADD()** function to calculate and set the review date for each entry accordingly.

Query

```
SELECT
     City,
     Date_recorded,
     DATE_ADD(Date_recorded, INTERVAL 7 DAY)
     AS Next_review
FROM
     Water_sources_sa_2022;
```

Output

City	Date_recorded	Next_review
Johannesburg	2022-08-10	2022-08-17
Cape Town	2022-07-25	2022-08-01
Durban	2022-09-02	2022-09-09
Pretoria	2022-08-15	2022-08-22
Port Elizabeth	2022-09-01	2022-09-08
Bloemfontein	2022-07-30	2022-08-06