

ORACLE SQL

Merge statements, Time zones

Lesson Objectives



To understand the following topics:

- Merge statement
- Use data types similar to DATE that store fractional seconds and track time zones
- Use data types that store the difference between two datetime values
- Use datetime functions:



2.1: Merge MERGE statement



The MERGE statement, provides the ability to conditionally update or insert data into a database table.

The MERGE statement, performs an UPDATE if the row exists, and an INSERT if it is a new row:

- Increases performance and ease of use
- Is useful in data warehousing applications
- Avoids separate updates

2.1: Merge

MERGE statement



You can conditionally insert or update rows in a table by using the MERGE statement

```
MERGE INTO table_name table_alias
  USING (table|view|sub_query) alias
  ON (join condition)  WHEN MATCHED THEN
     UPDATE SET
     col1 = col_val1,
     col2 = col2_val
  WHEN NOT MATCHED THEN
     INSERT (column_list)
     VALUES (column_values);
```

2.1: Merge

Example on Merge

```
Example
/
```

```
CREATE table staff_copy as select staff_code,staff_name FROM staff_master where 1=2;

MERGE into staff_copy using staff_master
   ON (staff_master.deptno=staff_copy.deptno)
   WHEN MATCHED THEN
   UPDATE SET staff_code=staff_master.staff_code,
   staff_name=staff_master.staff_name
   WHEN NOT MATCHED THEN
   INSERT (staff_code,staff_name) values
   (staff_master.staff_code,staff_master.staff_name);
```

TIME_ZONE Session Parameter

TIME_ZONE may be set to: An absolute offset Database time zone OS local time zone A named region

```
ALTER SESSION SET TIME_ZONE = '-05:00';
ALTER SESSION SET TIME_ZONE = dbtimezone;
ALTER SESSION SET TIME_ZONE = local;
ALTER SESSION SET TIME_ZONE = 'America/New_York';
```



CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP

CURRENT_DATE:

- Returns the current date from the user session
- Has a data type of DATE

CURRENT TIMESTAMP:

- Returns the current date and time from the user session
- Has a data type of TIMESTAMP WITH TIME ZONE

LOCALTIMESTAMP:

- Returns the current date and time from the user session
- Has a data type of TIMESTAMP



Date and Time in a Session's Time Zone

The TIME_ZONE parameter is set to -5:00 and then SELECT statements for each date and time are executed to compare differences.

ALTER SESSION

SET NLS_DATE_FORMAT = 'DD-MON-YYYY HH24:MI:SS';

ALTER SESSION SET TIME_ZONE = '-5:00';

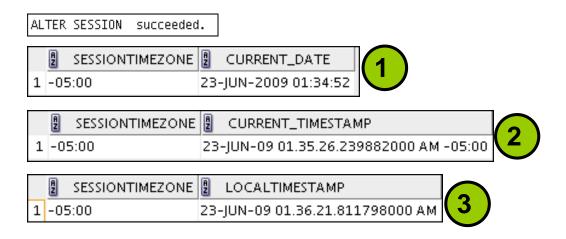
SELECT SESSIONTIMEZONE, CURRENT_DATE FROM DUAL;

SELECT SESSIONTIMEZONE, CURRENT_TIMESTAMP FROM DUAL;

SELECT SESSIONTIMEZONE, LOCALTIMESTAMP FROM DUAL;

Comparing Date and Time in a Session's Time Zone

Results of queries:





DBTIMEZONE and SESSIONTIMEZONE

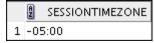
Display the value of the database time zone:





Display the value of the session's time zone:

SELECT SESSIONTIMEZONE FROM DUAL



TIMESTAMP Data Types

Data Type	Fields
TIMESTAMP	Year, Month, Day, Hour, Minute, Second with fractional seconds
TIMESTAMP WITH TIME ZONE	Same as the TIMESTAMP data type; also includes: TIMEZONE_HOUR, and TIMEZONE_MINUTE or TIMEZONE_REGION
TIMESTAMP WITH LOCAL TIME ZONE	Same as the TIMESTAMP data type; also includes a time zone offset in its value

TIMESTAMP Fields

Datetime Field	Valid Values	
YEAR	-4712 to 9999 (excluding year 0)	
MONTH	01 to 12	
DAY	01 to 31	
HOUR	00 to 23	
MINUTE	00 to 59	
SECOND	00 to 59.9(N) where 9(N) is precision	
TIMEZONE_HOUR	-12 to 14	
TIMEZONE_MINUTE	00 to 59	



Difference Between DATE and TIMESTAMP

A B

-- when hire_date is of type DA

SELECT hire_date FROM employees ALTER TABLE employees

MODIFY hire_date TIMESTAMP;

SELECT hire_date FROM employees;

	HIRE_DATE
1	21-JUN-99
2	13-JAN-00
3	17-SEP-87
4	17-FEB-96
5	17-AUG-97
6	07-JUN-94
7	07-JUN-94
8	07-JUN-94
_	07 1111 04

HIRE_DATE

1 21-JUN-99 12.00.00.000000000 AM

2 13-JAN-00 12.00.00.0000000000 AM

3 17-SEP-87 12.00.00.000000000 AM

4 17-FEB-96 12.00.00.000000000 AM

5 17-AUG-97 12.00.00.000000000 AM

6 07-JUN-94 12.00.00.000000000 AM

7 07-JUN-94 12.00.00.000000000 AM

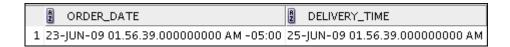
8 07-JUN-94 12.00.00.0000000000 AM

Comparing TIMESTAMP Data Types

```
CREATE TABLE web_orders
(order_date TIMESTAMP WITH TIME ZONE,
delivery_time TIMESTAMP WITH LOCAL TIME ZONE);
```

```
INSERT INTO web_orders values
(current_date, current_timestamp + 2);
```

SELECT * FROM web orders;



INTERVAL Data Types

INTERVAL data types are used to store the difference between two datetime values.

There are two classes of intervals:

Year-month

Day-time

The precision of the interval is:

The actual subset of fields that constitutes an interval

Specified in the interval qualifier

Data Type	Fields
INTERVAL YEAR TO MONTH	Year, Month
INTERVAL DAY TO SECOND	Days, Hour, Minute, Second with fractional seconds

2.2: Time Zones INTERVAL Fields



INTERVAL Field	Valid Values for Interval	
YEAR	Any positive or negative integer	
MONTH	00 to 11	
DAY	Any positive or negative integer	
HOUR	00 to 23	
MINUTE	00 to 59	
SECOND	00 to 59.9(N) where 9(N) is precision	



INTERVAL YEAR TO MONTH: Example

```
CREATE TABLE warranty

(prod_id number, warranty_time INTERVAL YEAR(3) TO MONTH);

INSERT INTO warranty VALUES (123, INTERVAL '8' MONTH);

INSERT INTO warranty VALUES (155, INTERVAL '200' YEAR(3));

INSERT INTO warranty VALUES (678, '200-11');

SELECT * FROM warranty;
```

	A	PROD_ID	2 WARRANTY_TIME
1		123	0-8
2		155	200-0
3		678	200-11

INTERVAL DAY TO SECOND Data Type: Example

```
CREATE TABLE lab

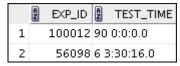
( exp_id number, test_time INTERVAL DAY(2) TO SECOND);

INSERT INTO lab VALUES (100012, '90 00:00:00');

INSERT INTO lab VALUES (56098,

INTERVAL '6 03:30:16' DAY TO SECOND);
```

SELECT * FROM lab;



2.2: Time Zones **EXTRACT**



Display the YEAR component from the SYSDATE.

2009

SELECT EXTRACT (YEAR FROM SYSDATE) FROM DUAL;

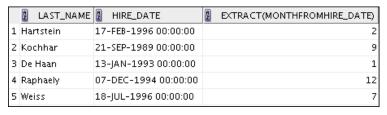
Display the MONTH component from the HIRE_DATE for those employees whose MANAGER_ID is 100.

SELECT last_name, hire_date,

EXTRACT (MONTH FROM HIRE_DATE)

FROM employees

WHERE manager_id = 100;



2.2: Time Zones TZ_OFFSET



Display the time zone offset for the 'US/Eastern', 'Canada/Yukon' and 'Europe/London' time zones:

```
SELECT TZ_OFFSET('US/Eastern'),

TZ_OFFSET('Canada/Yukon'),

TZ_OFFSET('Europe/London')

FROM DUAL;
```



2.2: Time Zones FROM_TZ



Display the TIMESTAMP value '2000-03-28 08:00:00' as a TIMESTAMP WITH TIME ZONE value for the 'Australia/North' time zone region.

SELECT FROM_TZ(TIMESTAMP

'2000-07-12 08:00:00', 'Australia/North')

FROM DUAL;

FROM_TZ(TIMESTAMP'2000-07-1208:00:00','AUSTRALIA/NORTH')

1 12-JUL-00 08.00.00.00000000 AM AUSTRALIA/NORTH

TO_TIMESTAMP

Display the character string '2007-03-06 11:00:00' as a TIMESTAMP value:



TO_YMINTERVAL

Display a date that is one year and two months after the hire date for the employees working in the department with the DEPARTMENT_ID 20.

SELECT hire_date,

hire_date + TO_YMINTERVAL('01-02') AS

HIRE_DATE_YMININTERVAL

FROM employees

WHERE department_id = 20;

TO_DSINTERVAL



Display a date that is 100 days and 10 hours after the hire date for all the employees.

```
SELECT last_name,

TO_CHAR(hire_date, 'mm-dd-yy:hh:mi:ss') hire_date,

TO_CHAR(hire_date +

TO_DSINTERVAL('100 10:00:00'),

'mm-dd-yy:hh:mi:ss') hiredate2

FROM employees;
```

	LAST_NAME	HIRE_DATE	2 HIREDATE2
1	OConnell	06-21-99:12:00:00	09-29-99:10:00:00
2	Grant	01-13-00:12:00:00	04-22-00:10:00:00
3	Whalen	09-17-87:12:00:00	12-26-87:10:00:00
4	Hartstein	02-17-96:12:00:00	05-27-96:10:00:00
5	Fay	08-17-97:12:00:00	11-25-97:10:00:00
6	Mavris	06-07-94:12:00:00	09-15-94:10:00:00
7	Baer	06-07-94:12:00:00	09-15-94:10:00:00
8	Higgins	06-07-94:12:00:00	09-15-94:10:00:00

Daylight Saving Time

First Sunday in April

- Time jumps from 01:59:59 AM to 03:00:00 AM.
- Values from 02:00:00 AM to 02:59:59 AM are not valid.

Last Sunday in October

- Time jumps from 02:00:00 AM to 01:00:01 AM.
- Values from 01:00:01 AM to 02:00:00 AM are ambiguous because they are visited twice.

SUMMARY

- In this lesson, you should have learned how to use the following functions:
 - CURRENT_DATE
 - CURRENT_TIMESTAMP
 - LOCALTIMESTAMP
 - DBTIMEZONE
 - SESSIONTIMEZONE
 - EXTRACT
 - TZ_OFFSET
 - FROM_TZ
 - TO_TIMESTAMP
 - TO_YMINTERVAL
 - TO_DSINTERVAL

Review Questions

♦ Question 1: _____ data types are used to store the difference between two datetime values.

Question 2: _____ statement, provides the ability to conditionally update or insert data into a database table.