

Using SQL to Insert, Update, Delete Data

Practical 10

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Lesson Objectives

- ❑ Insert data into database tables.
- ❑ Update and delete database records.
- ❑ Difference between truncate(DDL) and delete(DML).

Introduction to SQL

- ❑ Structured Query Language (SQL): The standard query language for relational databases.
 - Data Query Language (DQL)
 - ❑ View database data – Select.
 - **Data Manipulation Language (DML)**
 - ❑ **Insert, update, delete database data.**
 - Data Definition Language (DDL)
 - ❑ Create new database objects.
 - ❑ Modify or delete existing database objects.
 - Data Control Language (DCL)
 - ❑ Grant privileges and assign storage area to user.
 - Transaction Control Language (TCL)
 - ❑ Statement used to manage the changes made by DML.
 - ❑ COMMIT, ROLLBACK, SAVEPOINT.

Inserting Data into Tables

- ❑ INSERT command adds new records.
- ❑ Field values should match column order, or be specified in command.

*INSERT INTO TableName [(columnList)]
VALUES (dataValueList)*

- ❑ *columnList* is optional; if omitted, SQL assumes a list of all columns in their original CREATE TABLE order.
- ❑ Any columns omitted must have been declared as NULL or a DEFAULT was specified when table was created.

Inserting Data into Tables

- Insert value by specifying column name:

```
INSERT INTO location (LOC_ID, BLDG_CODE, ROOM, CAPACITY)
VALUES (14, 'BUS', '424', 1);
```

- Insert value without specifying column name:

```
INSERT INTO location
VALUES (15, 'BUS', '242', 2);
```

Inserting Data into Tables

- ❑ Insert value by specifying column name and having null value at one column:

```
INSERT INTO location (LOC_ID, BLDG_CODE, ROOM, CAPACITY)
VALUES (16, 'BUS', '123', NULL);
```

- ❑ Insert value without specifying column name and having null value at one column:

```
INSERT INTO location
VALUES (17, 'BUS', '321', NULL);
```

Inserting Data into Tables

```
INSERT INTO location VALUES ('BUS', 18, '123', 1);
```

Error: invalid number

(SQL assumes a list of all columns in their original order)

```
INSERT INTO faculty VALUES (1, 'Cox', 'Kim', 'J', 9);
```

Error: not enough values

```
INSERT INTO faculty (F_ID, F_LAST, F_FIRST,  
    F_MI, LOC_ID) VALUES (1, 'Cox', 'Kim', 'J', 9);
```

Error: unique constraint (SYSTEM.FACULTY_F_ID_PK)
violated

Inserting Date Values

- ❑ The default format for date DD-MON-RR.
- ❑ Use TO_DATE function to convert a character string to a date.
 - Specify date string and matching format model.
 - TO_DATE('08/24/2004', 'MM/DD/YYYY')
 - TO_DATE('10:00 AM', 'HH:MI AM')



Inserting Date Values

```
INSERT INTO student  
VALUES (7, 'Miller', 'Sarah', 'M', '144 Blvd.', 'Eau ',  
'WI', '54703', '7155559876', 'SR', '07/14/1985', 8891, 1,  
NULL);
```

Error: not a valid month

Inserting Date Values

```
INSERT INTO student  
VALUES (7, 'Miller', 'Sarah', 'M', '144 Blvd.', 'Eau ',  
'WI', '54703', '7155559876', 'SR',  
    TO_DATE('07/14/1985', 'MM/DD/YYYY'), 8891,  
    1, NULL);
```

Inserting Date Values

```
INSERT INTO student  
VALUES (8, 'Miller', 'Sarah', 'M', '144 Blvd.', 'Eau ',  
'WI', '54703', '7155559876', 'SR', '14-July-1985', 8891,  
1, NULL);
```

Inserting Date Values

- The SYSDATE function records the current date and time.

```
INSERT INTO student VALUES (9, 'Miller', 'Sarah',  
    'M', '144 Blvd.', 'Eau ', 'WI', '54703', '7155559876',  
    'SR', SYSDATE, 8891, 1, NULL);
```

Inserting Special Symbol

```
INSERT INTO student VALUES (10, 'O'Connell',  
'Sarah', 'M', '144 Blvd.', 'Eau ', 'WI', '54703',  
'7155559876', 'SR', SYSDATE, 8891, 1, NULL);
```

Error: quoted string not properly terminated

Inserting Special Symbol

```
INSERT INTO student VALUES (10, 'O"Connell',  
'Sarah', 'M', '144 Blvd.', 'Eau ', 'WI', '54703',  
'7155559876', 'SR', SYSDATE, 8891, 1, NULL);
```



Updating Existing Table Records

UPDATE:

- ❑ Updates field values in one or more records in a table.
- ❑ Only one table may be updated at a time.
- ❑ *UPDATE tablename SET field1 = new_value1, field2 = new_value2, ... WHERE search condition;*
- ❑ Specific row or rows are modified if you specify the WHERE clause.

```
SELECT f_id, f_rank FROM faculty;
```

```
UPDATE faculty  
SET f_rank = 'FULL'  
WHERE f_id = 1;
```

```
SELECT f_id, f_rank FROM faculty;
```


Updating Existing Table Records

- All rows in the table are modified if you omit the WHERE clause.

```
SELECT f_id, f_rank FROM faculty;
```

```
UPDATE faculty
```

```
SET f_rank = 'FULL';
```

```
SELECT f_id, f_rank FROM faculty;
```

```
ROLLBACK;
```



Updating Existing Table Records

- ❑ Multiple columns of data can be updated at the same time as follows:

```
SELECT * FROM location;
```

```
UPDATE location
```

```
SET bldg_code = 'BUS', room = '100', capacity = 50
```

```
WHERE loc_id = 1;
```

```
SELECT * FROM location;
```

```
ROLLBACK;
```

Deleting Existing Table Records

DELETE:

- ❑ Removes specific records from a database table.
- ❑ If search condition is omitted, entire table data is removed.
- ❑ *DELETE FROM tablename WHERE condition;*
- ❑ Specific row or rows are deleted if you specify the WHERE clause.

```
SELECT * FROM enrollment;
```

```
DELETE FROM enrollment WHERE s_id = 4;
```

```
SELECT * FROM enrollment;
```

```
ROLLBACK;
```

```
SELECT * FROM enrollment;
```

Deleting Existing Table Records

- All rows in the table are deleted if you omit the WHERE clause.

```
DELETE FROM enrollment;
```

```
SELECT * FROM enrollment;
```

```
ROLLBACK;
```

```
SELECT * FROM enrollment;
```

Deleting Existing Table Records

- Specific row or rows are deleted if you specify the WHERE clause.

DELETE FROM student

WHERE s_first = 'Sarah' AND s_last = 'Miller';

DELETE FROM location WHERE loc_id = 9;

Error: integrity constraint violated – child record found

DELETE FROM enrollment WHERE s_id = 4;

TRUNCATE Table Records

- TRUNCATE is Data Definition Language.
- Removes all of the table data without saving any rollback information
- Must disable foreign key constraints before truncating table

TRUNCATE TABLE tablename;

```
SELECT * FROM ENROLLMENT;  
TRUNCATE TABLE ENROLLMENT;  
SELECT * FROM ENROLLMENT;  
Rollback;  
SELECT * FROM ENROLLMENT;
```

Truncate vs. Delete vs. Drop

- ❑ What is the different between truncate and delete?

TRUNCATE	DELETE
Removes all rows from a table and releases the storage space used by that table	Remove all rows from a table but does not release storage space
Cannot rollback (DDL)	Can rollback (DML)

- ❑ What is the different between truncate and drop?

TRUNCATE	DROP
To delete all rows from a table	To delete the entire table

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- Try the exercise given.