Institut Informatika & Bisnis DARMAJAYA
Yayasan Alfian Husin

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Institut Informatika & Bisnis Darmajaya

Kampus Merdeka INDONESIA JAYA

MERDEKA BELAJAR

DATA SCIENCE DARMAJAYA
"YOUR BEST FUTURE IN DATA"

MEETING: [19 & 20]

STRUCTURE QUERY LANGUAGE (SQL)
DATA MANIPULATION LANGUAGE (DML)
INSERT, UPDATE, DELETE, SELECT

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[12-09-2023] | [KODE MK: SD23404 | MATAKULIAH: PENGANTAR BASIS DATA | SKS: 2/2 | VERSI: 01

STRUCTURE QUERY LANGUAGE (SQL)
DATA MANIPULATION LANGUAGE (DML)
INSERT, UPDATE, DELETE, SELECT

1. Introduction to SQL
2. Data Manipulation Language (DML)
3. Insert, Update, Delete Commands

Learning Objectives

1. Students be able to comprehend and apply the principles of Data Manipulation Language (DML),
2. Including Insert, Update, and delete value in attribute in table
3. Students will gain the skills to input, update, and delete value on the attribute.

Introduction to SQL

- A standard language used in most DBMS.
  - Well, not as standardized as one might hope
    - it keeps involving and growing
    - Vendors have the tendency to add “unique” features.
- Pronounced as “S-Q-L” or “Sequel.”
- Both as a DDL and DML language.
  - **DDL** (Data Definition Language): define the schema of the database.
  - **DML** (Data Manipulation Language): provides commands to manipulate the database (query, insert, update, delete).

- *Based* on relational algebra, but not entirely identical.
  - Relations ⇔ Tables
  - Tuples ⇔ Rows
  - Attributes ⇔ Columns
- Unlike a relation, a table is *not* a set. Duplicates are not automatically removed.
  - This is for practical reasons. Duplicate eliminations are inefficient in implementation.
- Like a relation, the order of rows in a table is irrelevant.

Basic DDL Commands in SQL

- **CREATE**: to define new tables (to define relation schemas)
- **DROP**: to delete table definitions (to delete relation schemas)
- **ALTER**: to change the definitions of existing tables (to change relation schema)
- Other features as DDL
  - Specify referential integrity constraints (FKs)
  - Specify user-defined attributes constraints

Basic DML Commands in SQL

- **INSERT**: to add new rows to table
- **UPDATE**: to change the “state” (the value) of rows.
- **DELETE**: to remove rows
- **SELECT**: a query command that uses relation algebra *like* expressions

- Various options available to handle the enforcement/violation of integrity constraints

Adding a New Row/Record

- The Data Manipulation Language (DML) statement INSERT is used to insert a new row/record into a table.

- The general syntax for the INSERT statement is as follows:
  INSERT INTO tablename [(column1, column2, column3,...)]
  VALUES (value1, value2, value3,...);

Adding a New Row/Record

- The column names are optional. If column names are omitted from the INSERT statement, you must enter a value for each column.
- If you know the order of column names in correct order, you can enter values in the same order following the VALUES keyword.
- (Use the SQL*Plus command DESCRIBE to display the table’s structure to make sure.)

Adding a New Row/Record

- If you do enter column names, they do not have to be in the same order as they were defined in table's structure at the time of creation.

INSERT INTO student (StudentID, LAST, FIRST, ZIP, Bdate, FacultyID)
VALUES ('00100', 'Will', 'Smith', '72034', '12-FEB-80', 123)

Adding a New Row/Record

- When entering values, numeric data is not enclosed within quotes
- The character and date type values are enclosed within single quotes.
- The default format to enter the date value is ‘DD-MON-YY’.

Adding a New Row/Record

- There are two methods for inserting a NULL value in a column.

1. *Implicit Method.* In the implicit method, the column's name is omitted from the column list in an INSERT statement. For example,

```
INSERT INTO dept (DeptId, DeptName)
VALUES (50, 'Production');
```

Adding a New Row/Record

2. ***Explicit Method.*** In the explicit method, the value NULL is used as a value for numeric column, and an empty string (‘’) is used for date or character columns. For example,

INSERT INTO dept (DeptId, DeptName, Location, EmployeeId)
VALUES (60, ‘Personnel’, ‘Chicago’, NULL);

Update Existing Rows/Records

- In SQL, the UPDATE statement is used to modify data.
- Only one table can be updated at one time.
- It is possible to change more than one column at a time

UPDATE tablename
SET column1 = newvalue [, column2 = newvalue,...]
[WHERE condition(s)];

Update Existing Rows/Records

- The condition is optional, but it is necessary

- Suppose the student with ID 00103 in the IU college's database switches major from BS---CS to BS---EE

UPDATE student
Set MajorID = 700
Where studentid='00103'

Delete Existing Rows/Records

- Deletion is another data maintenance operation.
- In Oracle, the SQL statement DELETE is used for deleting unwanted rows. Its general syntax is

DELETE FROM tablename
[WHERE condition(s)];

Delete Existing Rows/Records

- Example:

```
DELETE FROM dept
WHERE DeptID = 70
```

CONCLUSION

INSERT (Inserting Data):
Main Purpose: Adding new data to a table.
Process: Using the INSERT statement to specify the values to be inserted into the columns of a table.
Significance: Facilitates the addition of new data and enables the storage of fresh information in the database.

UPDATE (Updating Data):
Main Purpose: Replacing or modifying existing data in a table.
Process: Employing the UPDATE statement with specific criteria to identify which data to alter and the new values to be used.
Significance: Allows for the updating of existing information, such as correcting errors or replacing outdated data.

DELETE (Deleting Data):
Main Purpose: Removing data from a table.
Process: Using the DELETE statement with specific criteria to identify which data to remove.
Significance: Provides a method for managing irrelevant or unnecessary data, maintaining the integrity and cleanliness of the database.

REFERENCES

1. Connoly. T., Begg. Carolyn. 2015. Database System: A Pratical Approach to Design, Implementation, and Management. Sixth Edition. Global Edition. Pearson.

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