# LO6 – Data Manipulation Language

DML Statements

* Used to retrieve, store, modify, delete data in the DB
* INSERT, UPDATE, DELETE, and SELECT(LO7)

## Adding Data

* INSERT
* Syntax:
  + INSERT INTO tableName [(col1, col2, …)] VALUES (col1Value, col2Value, …);
  + You can also insert multiple records into a table with a SELECT

## Saving and Undoing Changes

COMMIT – command saves changes made since the last commit. Performed when you log off or exit most database tools.

ROLLBACK – Reverts any changes made since the last commit. In other words, removes any uncommitted changes.

## Modifying Data

* UPDATE
* Syntax:
  + UPDATE tableName SET col1 = newValue [, col2 = newValue, …] [WHERE condition];
  + If you omit the WHERE clause, you will update every record in the table.

## Deleting Data

* DELETE
* Syntax:
  + DELETE FROM tableName [WHERE condition];
  + If you omit the WHERE clause all of the records in the table will be deleted.

## Advanced Insert using SELECT and CREATE

Can use a SELECT statement to insert multiple rows.

Two syntaxes:

1. INSERT INTO tableName SELECT …..;
   1. The fields in the select must match the type and order of the table fields.
2. CREATE TABLE tableName AS SELECT …;
   1. Field names will match the fields from the select. Rows will be all of the rows selected.

## Sequences for creating “Auto Number” fields

* A sequence is a sequential list of numbers the Oracle generates to create unique surrogate key values.
* In Oracle, there’s no such thing as an auto number.
* Syntax:
  + CREATE SEQUENCE sequenceName
  + [INCREMENT BY number]
  + [START WITH startValue]
  + [MAXVALUE max] | [ NOMAXVALUE]
  + [MINVALUE min] | [NOMINVALUE]
  + [CYCLE] | [NOCYCLE]
  + [CACHE numberOfValues] | [NOCACHE]
  + [ORDER] | [NOORDER]
* [INCREMENT BY number]
  + The integer value (must be an integer) the sequence will go up or down by
* [START WITH startValue]
  + Integer starting point. Default is 1.
* [MAXVALUE max] | [ NOMAXVALUE]
  + Maximum value to which it will increment.
* [MINVALUE min] | [NOMINVALUE]
  + Opposite of max value. Used for negative increments.
* [CYCLE] | [NOCYCLE]
  + When max/min is reached will the sequence start over or not. If both max and min are set, it will then start with the value that was not reached. Ex: if max is hit, will start over at min.
* [CACHE numberOfValues] | [NOCACHE]
  + Number of values to store ready to give out. Mainly for performance purposes.
* [ORDER] | [NOORDER]
  + Granting sequence numbers to users in the exact chronological order in which users request the values.
* Using a sequence
  + Can access two pseudocolumns called CURRVAL and NEXTVAL in each sequence.
  + CURRVAL – most recent sequence value retrieved during the current user session.
  + NEXTVAL – Retrieves the next item in the sequence. Usually used in an INSERT.
  + Both are accessed with sequenceName.NEXTVAL or .CURRVAL