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| Introduction to Database |
| Lecture Notes Midterm |
| **American International University-Bangladesh** |

# Lecture Notes (Lecture09\_IDB)

#### Objectives:

To learn Data Definition Language (DDL) commands which allow you to perform these tasks:

* + create, alter, and drop objects
  + grant and revoke privileges and roles

#### Data Types

SQL is structure query language.SQL contains different data types those are:

* + char(size)
  + varchar(size)
  + varchar2(size)
  + date
  + number(p,s) //\*\* p-PRECISION s-SCALE \*\*//
  + number(size)
  + raw(size)
  + raw/long raw(size)

#### Create Table

It defines each column of the table uniquely. Each column has minimum of three attributes, a **name** ,

**data type** and **size**.

***Syntax:*** Create table <table name> (<col1> <datatype>(<size>),<col2><datatype><size>));

#### Modifying the structure of tables Add new columns:

***Syntax:*** Alter table <tablename> add(<new col> <datatype(size), <newcol> datatype(size));

#### Dropping a column from a table

***Syntax:*** Alter table <tablename> drop column <col>;

#### Modifying existing columns

***Syntax:*** Alter table <tablename> modify(<col><newdatatype>(<newsize>));

## Renaming the tables

***Syntax:*** Rename <oldtable> to <new table>;

## Truncating the tables

***Syntax:*** Truncate table <tablename>;

## Destroying tables

***Syntax:*** Drop table <tablename>;

**Data Manipulation Language (DML)** statements are used for managing data within schema objects.

* + INSERT - insert data into a table
  + UPDATE - updates existing data within a table
  + DELETE - deletes all records from a table, the space for the records remain
  + MERGE - UPSERT operation (insert or update)

**Inserting Data into Tables:** Once a table is created the most natural thing to do is load this table with data to be manipulated later.

Syntax 1: insert into <tablename> (<col1>,<col2>…..<col n>) values(<val 1>,<val 2>…….<val n>); Syntax 2(takes input from user): insert into <tablename> values(&<col1>,&<col2>……,&<col n>);

Syntax 3: insert into <tablename> values(<val 1>,<val 2>…….,<val n>);

### Delete operations

1. Remove all rows:

Syntax: delete from <tablename>;

1. Removal of a specified row/s:

Syntax: delete from <tablename> where <condition>;

### Updating the contents of a table

1. updating all rows:

Syntax: Update <tablename> set <col>=<exp>,<col>=<exp>;

1. Updating selected records:

Syntax: Update <tablename> set <col>=<exp>,<col>=<exp> where <condition>;

**Exercise**

1. Create a table named **Student** from following structure using SQL commands:

|  |  |
| --- | --- |
| Column Name | Data Type |
| **s\_id** | Number |
| **s\_name** | Varchar2(20) |
| **Phone** | number |
| **Address** | Varchar2(50) |
| **Email** | Varchar2(30) |
| **credit\_completed** | Number(3) |
| **course\_completed** | Number(2) |
| **Cgpa** | Number(5,2) |

1. Add following columns into the above **student** table:

|  |  |
| --- | --- |
| Column Name | Data Type |
| **Department** | Varchar2(5) |
| **Gender** | Varchar2(6) |

1. Modify the column name **department** into **dept**.
2. Change type of the column **cgpa** into **number(2,3).**
3. Drop column **email** from student table.
4. Change the table name from **student** to **students**.

Reference Table:

### Department

|  |  |  |
| --- | --- | --- |
| **Column name** | **Data type** | **Constraint** |
| deptid | number(3) | primary key |
| dept\_name | varchar(6) | only CSE, EEE, BBA,  Eng, Ach allowed |
| budget | number(6) | default value 0 |

**Course**

|  |  |  |
| --- | --- | --- |
| **Column name** | **Data type** | **Constraint** |
| crs\_id | number(4) | primary key |
| crs\_name | varchar2(20) | not null |
| dept\_id | number(3) | foreign key from department table |

1. Insert 4 rows into **department** table.
2. Insert 3 rows into **course** table.
3. Insert a row into department so it take dept\_name and budget as input from user.
4. Update budget of ‘CSE’ department to 4000$.
5. Delete all courses from course table.