**East West University** 

**Department of Computer Science and Engineering**

**CSE 302 LAB 02 (Handout)**

**Course Instructor: Mahmuda Rawnak Jahan**

**Intermediate level DDL and Simple DML statements**

**Lab Objective**

Familiarize students with intermediate level DDL commands and simple DML statements in SQL.

**Lab Outcome**

After completing this lab successfully, students will be able to:

1. **Understand and execute** DDL commands to define integrity constraints and modify the database schema.

2. **Construct** DML statements to perform queries involving distinct keyword, generalized projection, simple multi-table queries and so on.

**Psychomotor Learning Levels**

This lab involves activities that encompass the following learning levels in psychomotor domain.

| **Level** | **Category Meaning Keywords** |
| --- | --- |
| P1 | Imitation Copy action of  Relate, Repeat, Choose, Copy,  another; observe  Follow, Show, Identify,  and replicate.  Isolate. |
| P2 | Manipulation Reproduce activity  Copy, response, trace, Show,  from instruction or  Start, Perform, Execute,  memory  Recreate. |

**Lab Activities**

**1. Schema Definition along with Integrity Constraints**

**CREATE TABLE <table\_name>**

**(**

**<attribute\_name1> <datatype> [NOT NULL],**

**<attribute\_name2> <datatype> [NOT NULL],**

**...,**

**[constraint <constraint\_name>] primary key (<attribute\_name,…>), [constraint <constraint\_name>] foreign key (<attribute\_name,…>) references <parent\_table\_name>(<attribute>) [ON DELETE CASCADE]), [constraint <constraint\_name>] check (<condition>)**

**);**

*Task:*

• *Create department relation with dept\_name, building and budget attributes where dept\_name must be the primary key and budget must be positive.*

• *Create another relation course with course\_id, title, dept\_name and credits where course\_id is the primary key, dept\_name is the foreign key and credits must be greater than or equal to 1.*

**2. Schema Modification**

Adding a new attribute:

**ALTER TABLE <table\_name> ADD <attribute\_name> <datatype>;**

Dropping an attribute:

**ALTER TABLE <table\_name> DROP column <attribute\_name>;** Modifying data type of an attribute (Column must be empty/has no values):

**ALTER TABLE <table\_name> MODIFY <attribute\_name> <new\_type>;** Renaming an attribute:

**ALTER TABLE <table\_name> RENAME column <attribute\_name> to <new\_attribute\_name>;**

Renaming a table:

**ALTER TABLE <table\_name> RENAME TO <new\_table\_name>;** Adding a constraint into a table (primary key constraint, foreign key constraint): **ALTER TABLE <table\_name> ADD CONSTRAINT <constraint\_name> <constraint>;**

Deleting a constraint from a table:

**ALTER TABLE <table\_name> DROP CONSTRAINT <constraint\_name>;** Checking all constraints:

**SELECT \* FROM user\_cons\_columns WHERE TABLE\_NAME =**

**<table\_name>;**

Dropping a Table (both data and schema):

**DROP TABLE <table\_name>;**

**3. Manipulating Data (DML)**

***Basic Query Structure***

**SELECT A1, A2, ..., An [list of attributes]**

**FROM r1, r2, ..., rm [list of relations]**

**WHERE P [condition]**

Inserting records into a table:

**INSERT INTO <table\_name> VALUES (…, …, …);**

Deleting records from a table:

**DELETE FROM <table\_name> WHERE <condition>;**

Updating values of a record in a table:

**UPDATE <table\_name>**

**SET <attribute\_name> = <value>**

**WHERE <condition>;**

***Multi-table queries***

Cartesian product:

**select \***

**from instructor, department;**

*This generates many tuples which are not meaningful. To get the meaningful tuples, you need to write:*

**select \***

**from instructor, department;**

**where instructor.dept\_name = department.dept\_name;**

Natural join:

**select \* from instructor natural join department;**

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**CSE 302: LAB 02 (Exercise - Offline)**

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**You must write all SQL statements in notepad first and save them with .sql extension. Then execute your SQL scripts.**

**Lab Task # 01 (Schema Definition):**

Write SQL statements to create the following tables with the given constraints.

i) account

| account\_no | char(5) | primary key |
| --- | --- | --- |
| balance | number | Not null and cannot be less than 0 |

ii) customer

| customer\_no | char(5) | primary key |
| --- | --- | --- |
| customer\_name | varchar2(20) | Not null |
| customer\_city | varchar2(10) |  |

iii) depositor

| account\_no | char(5) |  |
| --- | --- | --- |
| customer\_no | char(5) |  |
|  |  | primary key (account\_no, customer\_no) |

**Lab Task # 02 (Schema Modification):**

After executing each of these SQL statements execute the command – **desc <table\_name>** to confirm the changes.

i. Write SQL statement to add a new attribute ‘date\_of\_birth’ (date type) in customer table. ii. Write SQL statement to drop the attribute ‘date\_of\_birth’ from customer table. iii. Write SQL statement to rename the attribute account\_no, customer\_no from depositor table to a\_no and c\_no, respectively. iv. Write SQL statements to add two foreign key constraints ‘depositor\_fk1’ and ‘depositor\_fk2’ which identifies a\_no and c\_no as a foreign key.

**Lab Task # 03 (Inserting Records into Tables):**

Write appropriate SQL statements to insert the records as shown below.

| Account | Customer | Depositor |
| --- | --- | --- |
|  |  |  |

**Lab Task # 04 (Queries):**

i. Display customer name and customer city only.

ii. Display the unique customer city. No repetitions are allowed.

iii. Find account numbers with balance more than 7000.

iv. Find customer number and customer name who live in Khulna.

v. Find customer number and customer name who do not live in Dhaka.

vi. Find customer name and customer city who have accounts with balance more than 7000. vii. Find customer name and customer city who have accounts with balance more than 7000 and do not live in Khulna.

viii. Find account number and balance for those accounts which belong to a customer with id ‘C-102’. ix. Find all account number and balance for those accounts which belong to customers of Dhaka and Khulna city.

x. Find the customer who have no accounts. [Result of this query will be empty for this dataset. However, you must write the correct SQL]

**Submission**

Take screenshots of the execution and result of your queries in SQLPlus Tool and insert the captured image in a doc file for each and every question . Submit both doc and sql file in the given submission link in the Classroom. Submit files separately. Name the file as per the following format: 2022-1-60-001\_LAB02.pdf and 2022-1-60-001.sql\_LAB02.