

LAB REPORT

Lab 2 SQL Basics

CSE 4308
DATABASE MANAGEMENT SYSTEMS LAB

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PROGRAM: SWE

GROUP: 1A

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Tasks:

8 Lab Task

You have to write all SQL statements in an editor first and save them with .sql extension. Then execute the SQL script.

1. Create a user with username = <student_id> and password = cse4308 and grant necessary privileges to log in and execute DDL and DML statements. Then log in as that user.
2. Write SQL statement to create a table 'STUDENT' which has 4 attributes:
 - ID
 - NAME
 - DEPT_NAME
 - TOT_CRED
3. Write SQL statements to insert the following records into 'STUDENT' table:

ID	NAME	DEPT_NAME	TOT_CRED
00128	Zhang	Comp. Sci.	102
12345	Shankar	Comp. Sci.	32
19991	Brandt	History	80
23121	Chavez	Finance	110
44553	Peltier	Physics	56
45678	Levy	Physics	46
54321	Williams	Comp. Sci.	5
55739	Sanchez	Music	38
70557	Snow	Physics	0
76543	Brown	Comp. Sci.	58
76653	Aoi	Elec. Eng.	60
98765	Bourikas	Elec. Eng.	9
98988	Tanaka	Biology	120

4. Write SQL statements to perform the following queries:
 - (a) Display all records of 'STUDENT' table.
 - (b) Show student ID and name only.
 - (c) Find name and department of students who have completed more than 100 credits.
 - (d) Find name and department of students who have completed in between 80 and 120 credits (inclusive).
 - (e) Find ID and name of students of Comp. Sci. department.
 - (f) Find name and total credit of students of Physics department.
 - (g) Find ID and name of students of Comp. Sci. department or students who have completed less than 10 credits.
 - (h) Find the names of the department.

In this Lab Task we were given to perform the most basic tasks of Database Management System. We need to create a user and a password and later create a TABLE or Relation with 4 different fields or attributes ID,NAME,DEPT_NAME and TOT_CRED. Then we need to perform various queries like selecting all of the items in the STUDENT

Table, selecting only ID and name from the table etc. All these have to be done with DDL and DML.

Analysis of the problem:

First we need to create a table which is a part of DDL. The table contains 4 fields namely ID, NAME, DEPT_NAME and TOT_CRED. Their domains are varchar2(10), varchar2(10), varchar2(20) and varchar2(5) respectively.

Then the problem tells us to insert various values or tuples into the table which would be done with DML.

After that we need to select various data from the table which is done according to the user. 8 different selection operations or queries need to be performed. This will also be done with the help of DML.

Solution:

```
CREATE USER ash200042123 IDENTIFIED BY cse4308;

GRANT ALL PRIVILEGES TO ash200042123;

CREATE TABLE STUDENT
(
  ID varchar2(10) NOT NULL,
  NAME varchar2(10) NOT NULL,
  DEPT_NAME varchar2(20) NOT NULL,
  TOT_CRED varchar2(5)
);
```

```
INSERT INTO STUDENT VALUES ('00128','Zhang', 'Comp. Sci', '102');
INSERT INTO STUDENT VALUES ('12345','Shankar', 'Comp. Sci', '32');
INSERT INTO STUDENT VALUES ('19991','Brandt', 'History', '80');
INSERT INTO STUDENT VALUES ('23121','Chavez', 'Finance', '110');
INSERT INTO STUDENT VALUES ('44553','Peltier', 'Physics', '56');
INSERT INTO STUDENT VALUES ('45678','Levy', 'Physics', '46');
INSERT INTO STUDENT VALUES ('54321','Williams', 'Comp. Sci', '5');
INSERT INTO STUDENT VALUES ('55739','Sanchez', 'Music', '38');
INSERT INTO STUDENT VALUES ('70557','Snow', 'Physics', '0');
INSERT INTO STUDENT VALUES ('76543','Brown', 'Comp. Sci', '58');
INSERT INTO STUDENT VALUES ('76653','Aoi', 'Elec. Eng.', '60');
INSERT INTO STUDENT VALUES ('98765','Bourikas', 'Elec. Eng.', '9');
INSERT INTO STUDENT VALUES ('98988','Tanaka', 'Biology', '120');
```

OUTPUT:

[illegible]

```

SELECT * FROM STUDENT;

SELECT ID, NAME FROM STUDENT;

SELECT NAME, dept_name FROM STUDENT where tot_cred > 100;

SELECT NAME, dept_name FROM STUDENT where tot_cred >= 80 and tot_cred <= 120;

SELECT ID, NAME FROM STUDENT where dept_name = 'Comp. Sci';

SELECT NAME, tot_cred FROM STUDENT where dept_name = 'Physics';

SELECT ID, NAME FROM STUDENT where dept_name = 'Comp. Sci' or tot_cred < 10;

SELECT DISTINCT dept_name FROM STUDENT;

```

OUTPUT:

ID	NAME	DEPT_NAME	TOT
00128	Zhang	Comp. Sci	102
12345	Shankar	Comp. Sci	32
19991	Brandt	History	80
23121	Chavez	Finance	110
44553	Peltier	Physics	56
45678	Levy	Physics	46
54321	Williams	Comp. Sci	5
55739	Sanchez	Music	38
70557	Snow	Physics	0
76543	Brown	Comp. Sci	58
76653	Aoi	Elec. Eng.	60
98765	Bourikas	Elec. Eng.	9
98988	Tanaka	Biology	120

13 rows selected.

```

ID      NAME
-----
00128   Zhang
12345   Shankar
19991   Brandt
23121   Chavez
44553   Peltier
45678   Levy
54321   Williams
55739   Sanchez
70557   Snow
76543   Brown
76653   Aoi

ID      NAME
-----
98765   Bourikas
98988   Tanaka

13 rows selected.

```

```

NAME      DEPT_NAME
-----
Zhang     Comp. Sci
Chavez    Finance
Tanaka    Biology

```

```

NAME      DEPT_NAME
-----
Zhang     Comp. Sci
Brandt    History
Chavez    Finance
Tanaka    Biology

```

```

ID      NAME
-----
00128   Zhang
12345   Shankar
54321   Williams
76543   Brown

```

```

NAME      TOT
-----
Peltier    56
Levy       46
Snow       0

```

```

ID      NAME
-----
00128   Zhang
12345   Shankar
54321   Williams
70557   Snow
76543   Brown
98765   Bourikas

6 rows selected.

```

```

DEPT_NAME
-----
Elec. Eng.
Comp. Sci
Physics
Finance
Biology
History
Music

7 rows selected.

```

Explanation:

- At first we create a new user named as 'ash20042123' with password 'cse4308'. The command for the action is :

```
CREATE USER ash20042123 IDENTIFIED BY cse4308;
```

- Next we grant all privileges to the new user through the command:

```
GRANT ALL PRIVILEGES TO ash20042123;
```

- Then we are to create a table named as STUDENT which will have 4 attributes or columns. To create the columns the domain of each attribute have to be mentioned too.

```

CREATE TABLE STUDENT
(
  ID varchar2(10) NOT NULL,
  NAME varchar2(10) NOT NULL,
  DEPT_NAME varchar2(20) NOT NULL,
  TOT_CRED varchar2(5)
)
;

```

The domain of all the attributes here is varchar2 and the max length of them are 10, 10, 20, and 5 respectively. ID, name and dept_name are assigned NOT NULL which means the value of it can never be null.

Creation of a relation or table is part of DDL.

- After creating the table we are to insert data of different students into the table. For insert data we need to use the INSERT keyword. The format is: "INSERT INTO TABLE_NAME VALUES()". The following command is used to insert data in the table.

```
INSERT INTO STUDENT VALUES ('00128', 'Zhang', 'Comp. Sci', '102');
```

In this way we need to insert all of the data one by one.

- After all of the rows or tuples have been inserted we need to perform some query. At first we try to select all of the fields from the table. For that the code would be:

```
SELECT * FROM STUDENT;
```

In this way we perform all of the operations stated.

- Command to Select ID and Name from Student table.

```
SELECT ID, NAME FROM STUDENT;
```

- Command to Select Name and dept_name from Student table of those student who have completed more than 100 credits.

```
SELECT NAME, dept_name FROM STUDENT where tot_cred > 100;
```

- Command to Name and dept_name from Student table for those students who have completed 80 or more credit but not more than 120 credit.


```
SELECT NAME, dept_name FROM STUDENT where tot_cred >= 80 and tot_cred <= 120;
```

- Command to Select ID and Name from Student table for the students of Comp. Sci department.

```
SELECT ID, NAME FROM STUDENT where dept_name = 'Comp. Sci';
```

- Command to Select Name, total_credit from Student table for students of Physics department.

```
SELECT NAME, tot_cred FROM STUDENT where dept_name = 'Physics';
```

- Command to Select ID and Name from Student table for students of Comp sci department or those who have completed less than 10 credit.

```
SELECT ID, NAME FROM STUDENT where dept_name = 'Comp. Sci' or tot_cred < 10;
```

- Command to Select all the different dept_names from Student table.

```
SELECT DISTINCT dept_name FROM STUDENT;
```

Interesting Findings:

- SQL is case-insensitive.

Problems faced and solution:

- Installed Oracle 19c in my system previously but I forgot the username and password so I had to face lots of difficulties. I tried to uninstall oracle 19c and it was almost impossible as the task is very complex but after watching YouTube for 2 days finally I could uninstall it, Later I installed Oracle 11g and now the problem is solved.