

East West University

Department of Computer Science & Engineering

**Course Title:** Database System

**Course Code:** CSE301  
**Experiment No:** 02

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**Section:** 01

**Submitted By:**

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**Introduction**

SQL is an acronym for Structured Query Language. SQL is the standard language for communicating with relational databases. Short requests, called queries, are made to an SQL-compliant database and results are returned. SQL is designed not only to retrieve data from a database, but also to insert and update data. We need SQL to Manipulate Data, summarize, organize and manage. Moreover it is a procedure or path to manage a huge set of data easily.

**Problem Definition**

1. Create and insert the following values in the department table.

2. Create and insert the following values in the student table.

3. Create and insert the following values in the instructor table.

4. Create and insert the following values in student\_course table.

|  |  |  |
| --- | --- | --- |
| student | | |
| sid | sname | age |
| 701 | Asif | 20 |
| 907 | Ana | 19 |
| 1009 | David | 18 |

|  |  |  |
| --- | --- | --- |
| department | | |
| deptid | department | budget |
| 60 | CSE | 10000 |
| 80 | EEE | 18000 |
| 70 | ECE | 23000 |
| 10 | BBA | 35000 |

|  |  |  |  |
| --- | --- | --- | --- |
| instructor | | | |
| ins\_id | ins\_name | dept\_id | salary |
| 1001 | Anis | 60 | 10000 |
| 1002 | Arif | 80 | 10000 |
| 1011 | Eva | 80 | 20000 |
| 1021 | Mina | 70 | 25000 |

|  |  |  |  |
| --- | --- | --- | --- |
| student\_course | | | |
| sid | sname | deptid | course\_code |
| 701 | Asif | 60 | CSE301 |
| 701 | Asif | 60 | CSE325 |
| 702 | Ana | 70 | CSE301 |
| 702 | Ana | 70 | CSE325 |

**Query**

Create table student

(

id int not null ,

sname varchar(20),

age int ,

primary key (id)

)

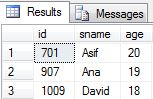
insert into student(id,sname,age) values(701,'Asif',20)

insert into student(id,sname,age) values(907,'Ana',19)

insert into student(id,sname,age) values(1009,'David',18)

select \* from student

*Output:*



Create table dept

(

deptid int ,

deptname varchar(50),

budget int,

primary key(deptid)

)

insert into dept(deptid,deptname,budget) values(60,'CSE',10000)

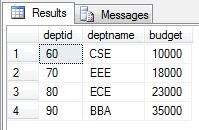
insert into dept(deptid,deptname,budget) values(70,'EEE',18000)

insert into dept(deptid,deptname,budget) values(80,'ECE',23000)

insert into dept(deptid,deptname,budget) values(90,'BBA',35000)

select \* from dept

*Output:*



Create table instructor

(

ins\_id int not null,

ins\_name varchar(50),

dept\_id int,

salary int,

primary key (ins\_id)

)

insert into instructor (ins\_id,ins\_name,dept\_id,salary) values (1001,'Anis',60,10000)

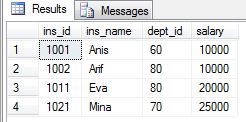
insert into instructor (ins\_id,ins\_name,dept\_id,salary) values (1002,'Arif',80,10000)

insert into instructor (ins\_id,ins\_name,dept\_id,salary) values (1011,'Eva',80,20000)

insert into instructor (ins\_id,ins\_name,dept\_id,salary) values (1021,'Mina',70,25000)

select \* from instructor

*Output:*

****

Create table student\_course

(

sid int,

sname varchar(50),

deptid int,

course\_code varchar(20),

primary key(sid,course\_code)

)

insert into student\_course(sid,sname,deptid,course\_code) values(701,'Asif',60,'CSE301')

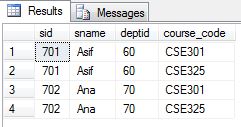
insert into student\_course(sid,sname,deptid,course\_code) values(701,'Asif',60,'CSE325')

insert into student\_course(sid,sname,deptid,course\_code) values(702,'Ana',70,'CSE301')

insert into student\_course(sid,sname,deptid,course\_code) values(702,'Ana',70,'CSE325')

select \* from student\_course

*Output:*



**Answers to Lab Report Questions:**

* **What is DDL?**

Answer: A data-definition language (DDL) is a language for specifying the database schema and as well as other properties of the data.

* **Discuss the various domain types in SQL**

Answer: Domain Types in SQL

* char(n) (or character(n)): fixed-length character string, with user-specified length n.
* varchar(n) (or character varying): variable-length character strings, with user-specified maximum length n.
* int or integer: an integer (a finite subset of the integer machine dependent).
* smallint: a small integer (a machine dependent subset of the integer domain type).
* numeric(p, d): a fixed-point number with user-specified precision, consists of p digits and d of p digits are to the right of the decimal point.
* real or double precision: floating-point or double-precision floating-point numbers, with machine-dependent precision.
* float(n): floating-point, with user-specified precision of at least n digits.
* **What is primary key? Why do we need it? Discuss with example.**

Answer: A **primary key** is a field in a table which uniquely identifies each row/record in a database table.

We need primary key in database table to uniquely identify entity and remove duplicacy. Primary keys must contain unique values. A primary key column cannot contain null values

Student table

|  |  |  |
| --- | --- | --- |
| Sid | Sname | address |
| 220 | Azim | Dhaka |
| 854 | Limon | Sylhet |
| 765 | Munna | Dhaka |
| 1250 | Tareq | Rajshahi |

For example, in a Student database table every student should have unique ID number and two students cannot have same IDs also their ID must not contain any null values. So, sid in student table is primary key.

* **What is foreign key? Why do we need it? Discuss with example.**

Answer: A foreign key is a primary key of another table which acts as a reference.

The purpose of the foreign key is to ensure referential integrity of the data.The foreign key constraint also prevents invalid data from being inserted into the foreign key column, because it has to be one of the values contained in the table it points to.

For example,

Instructor table

|  |  |  |  |
| --- | --- | --- | --- |
| insid | insname | salary | deptid |
| F125 | aa | 12000 | 60 |
| F236 | bb | 15200 | 70 |
| F425 | cc | 26500 | 60 |
| F635 | dd | 24000 | 70 |

Department table

|  |  |
| --- | --- |
| deptid | deptname |
| 60 | CSE |
| 70 | EEE |
| 80 | ECE |
| 10 | BBA |

For Example, In Department table “deptid” is our primary key because departmet id for every department must be unique. In Instructor table “insid” is our primary key and “deptid” is our foreign key because “deptid” in instructor table points “deptid” in department table. So, we cannot put any values in deptid column in Instructor table if it doesn’t match with the deptid column of Department table.

* **How can we create a table in a database? Discuss with example.**

Answer: We can create a table in Database by using the following command:

**create table R (**

**A1 D1,**

**A2 D2,**

**…..**

**An Dn,**

**(integrity-constraints) );**

Where,

R is the name of the relation

Each Ai is an attribute name in the schema of relation S

Di is the data type of values in the domain of attribute Ai

Example,

create table Instructor

(

insid varchar(20) not null,

insname varchar(20) not null,

salary numeric(8,2),

deptid int,

primary key(insid),

foreign key(deptid) references department

);

* **How we can drop a table from a database? Discuss with example. What is difference between drop and delete table? Discuss with example.**

Answer: We can drop a table from a database by using following command:

**drop table R**

Where, R is the name of the relation.

For example,

If we want to drop student table from our database we have to use the following command

drop table student

We can delete a table from a database by using the following command:

delete from R

Where, R is the name of the relation.

For example,

If we want to delete Student table from our database we have to use the following command

delete from Student

Difference between drop and delete table,

* drop table student
* Deletes the table and its contents.
* delete from student
* Deletes all contents of table but retains table.
* **How can we insert values in a table? Discuss with example.**

Answer: we can insert values in a table by using following command

**Insert into R( attributes1, attributes2……) values (value1, value2,…..)**

For Example, if we want to insert values in Student table we have to write following command

insert into student values(421,'abib','dhaka')

insert into student values(965,'moon','dhaka')

Output will be,

|  |  |  |
| --- | --- | --- |
| sid | Sname | address |
| 421 | abib | dhaka |
| 965 | moon | dhaka |

* **How can we alter table in a database? Discuss with example.**

Answer: we can alter table in a database by using following command

alter table R add regno int

Where, R is the name of the relation.

For Example, if we want to alter Student table and add student registration column then we have to write following command:

alter table student add regno int

**Tools:**

* Microsoft SQL server 2005.

**Procedure:**

1. Open SQL server management studio.
2. Create database and a new query.
3. Create table and write commands.

**Discussion**

In this lab I learn how to create a new database using Microsoft SQL Server. I also learn creating a new table and insert data to the table. Then I learn how to show data from the table and how to drop a table.