School of Computer Science, UPES, Dehradun.

A

LABORATORY FILE

On

DATABASE MANAGEMENT SYSTEM (DBMS) LAB

B.TECH. -III Semester

AUG. – NOV.- 2024.

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Experiment 04

To understand DDL and DML Command

AIM:

To understand the concept of designing issue related to the database with creating, populating the tables. To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key and the Foreign Key.

Problem Statement:

a. Create the tables for Company database as per ER diagram of Exp 2.

b. Insert the following data into their respective tables of Company database.

THEORY:

Structured query language (SQL) is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values.

Command Used:

1. Table Creation: To create the tables according to the ER diagram.
2. Inserting Data: For inserting data into the tables.
3. Primary Key Constraint: A primary key was used to uniquely identify each record.
4. Foreign Key Constraint: A foreign key was applied to create relationships between tables.

Results:

```sql
-- Ayush Vashishth
-- 500119331

CREATE DATABASE lmn;
USE lmn;
CREATE TABLE EMPLOYEE (
    Fname VARCHAR(15) NOT NULL,
    Minit CHAR,
    Lname VARCHAR(15) NOT NULL,
    Ssn CHAR(9) NOT NULL,
    Bdate DATE,
    Address VARCHAR(30),
    Sex CHAR,
    Salary DECIMAL(10,2),
    Super_ssn CHAR(9),
    Dno INT NOT NULL
);

INSERT INTO EMPLOYEE (Fname, Minit, Lname, Ssn, Bdate, Address, Sex, Salary, Super_ssn, Dno) VALUES
('John', 'B', 'Smith', '123456789', '1965-01-09', '731 Fondren, Houston TX', 'M', 30000, '333445555', 5),
('Franklin', 'T', 'Wong', '333445555', '1965-12-08', '638 Voss, Houston TX', 'M', 40000, '888665555', 5),
('Alicia', 'J', 'Zelaya', '999887777', '1968-01-19', '3321 Castle, Spring TX', 'F', 25000, '987654321', 4),
('Jennifer', 'S', 'Wallace', '987654321', '1941-06-20', '291 Berry, Bellaire TX', 'F', 43000, '888665555', 4),
('Ramesh', 'K', 'Narayan', '666884444', '1962-09-15', '975 Fire Oak, Humble TX', 'M', 38000, '333445555', 5),
('Joyce', 'A', 'English', '453453453', '1972-07-31', '5631 Rice, Houston TX', 'F', 25000, '333445555', 5),
('Ahmad', 'V', 'Jabbar', '987987987', '1969-03-29', '980 Dallas, Houston TX', 'M', 25000, '987654321', 4),
('James', 'E', 'Borg', '888665555', '1937-11-10', '450 Stone, Houston TX', 'M', 55000, NULL, 1);
CREATE TABLE DEPARTMENT (
    Dname VARCHAR(15) NOT NULL,
    Dnumber INT NOT NULL,
    Mgr_ssn CHAR(9) NOT NULL,
    Mgr_start_date DATE
);
INSERT INTO DEPARTMENT (Dname, Dnumber, Mgr_ssn, Mgr_start_date) VALUES
```

company employee_database employee_database(2)* university_database

Limit to 1000 rows

```
31      Mgr_start_date DATE
32  );
33  INSERT INTO DEPARTMENT (Dname, Dnumber, Mgr_ssn, Mgr_start_date) VALUES
34  ('Research', 5, '333445555', '1988-05-22'),
35  ('Administration', 4, '987654321', '1995-01-01'),
36  ('Headquarters', 1, '888665555', '1981-06-19');
37
38  CREATE TABLE PROJECT (
39      Pname VARCHAR(15) NOT NULL,
40      Pnumber INT NOT NULL,
41      Plocation VARCHAR(15),
42      Dnum INT NOT NULL
43  );
44  INSERT INTO PROJECT (Pname, Pnumber, Plocation, Dnum) VALUES
45  ('ProductX', 1, 'Bellaire', 5),
46  ('ProductY', 2, 'Sugarland', 5),
47  ('ProductZ', 3, 'Houston', 5),
48  ('Computerization', 10, 'Stafford', 4),
49  ('Reorganization', 20, 'Houston', 1),
50  ('Newbenefits', 30, 'Stafford', 4);
51
52  CREATE TABLE WORKS_ON (
53      Essn CHAR(9) NOT NULL,
54      Pno INT NOT NULL,
55      Hours DECIMAL(3,1) NOT NULL
56  );
57  INSERT INTO WORKS_ON (Essn, Pno, Hours) VALUES
58  ('123456789', 1, 32.5),
59  ('123456789', 2, 7.5),
60  ('666884444', 3, 40.0),
61  ('453453453', 1, 20.0);
```

company employee_database employee_database(2)* university_database department

Limit to 1000 rows

```
1  SELECT * FROM lmn.department;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	4	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

company employee_database employee_database(2)* university_database department employee

Limit to 1000 rows

```
1 •  SELECT * FROM lmn.employee;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston TX	M	30000.00	333445555	5
Franklin	T	Wong	333445555	1965-12-08	638 Voss, Houston TX	M	40000.00	888665555	5
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring TX	F	25000.00	987654321	4
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire TX	F	43000.00	888665555	4
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble TX	M	38000.00	333445555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston TX	F	25000.00	333445555	5
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston TX	M	25000.00	987654321	4
James	E	Borg	888665555	1937-11-10	450 Stone, Houston TX	M	55000.00	NULL	1

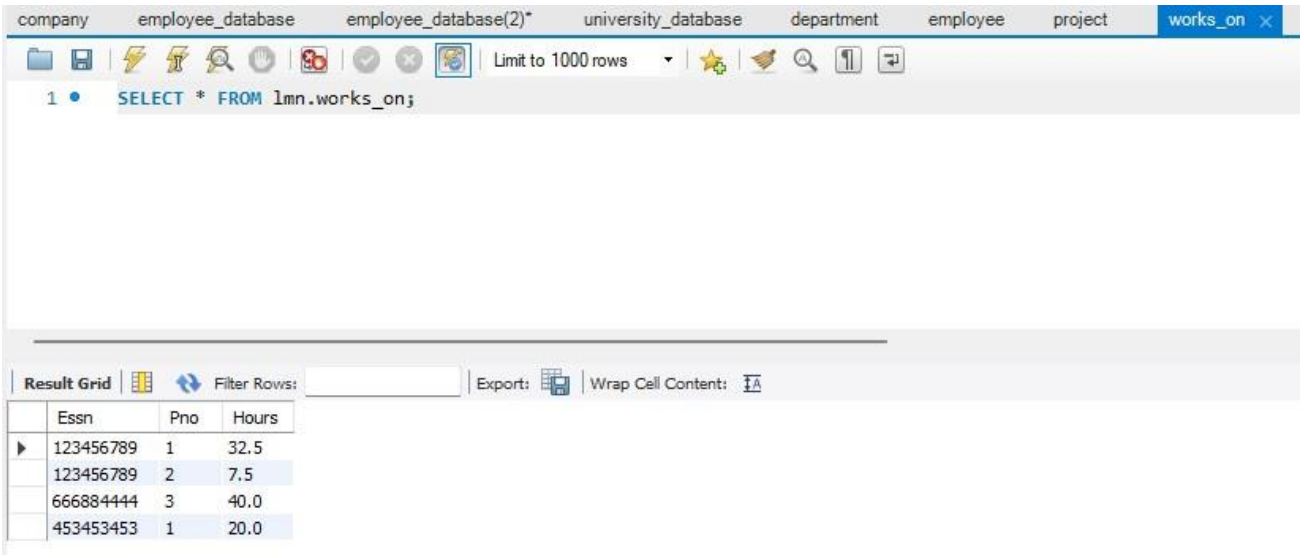
company employee_database employee_database(2)* university_database department employee project

Limit to 1000 rows

```
1 •  SELECT * FROM lmn.project;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4



Conclusion:

The database creation and table population offer fundamental insights into database management and relational design. By implementing the Entity-Relationship (ER) model into tables and applying constraints, SQL facilitates data creation, manipulation, and retrieval. Primary keys ensure each record is unique, while foreign keys establish relationships between tables based on shared attributes. These constraints maintain data integrity, enforce reliable connections, and prevent redundancy.