

# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES DEHRADUN

#### DATABASE SYSTEMS LAB

### LAB3

To understand DDL and DML Command

# MTECH-COMPUTER SCIENCE ENGINEERING ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

NAME : Khushi Vishwakarma

SAP ID: 590024539

Title: To understand DDL and DML Command

Objective: To understand the concept of designing issues 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.

- Create the tables for Company database as per ER diagram of Exp 2.
- Insert the following data into their respective tables of the Company database.

#### DDL (Data Definition Language): defines structure of database objects

DDL Commands are blueprint commands. Used to create, change, or remove the structure of the database. Exp: CREATE, ALTER, DROP, TRUNCATE, RENAME.

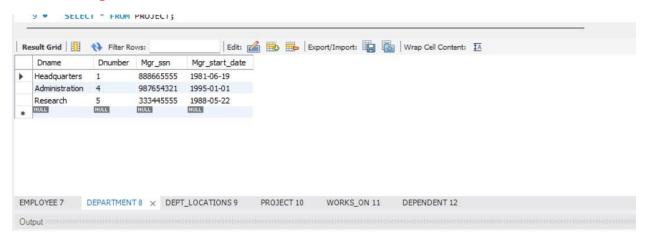
## DML(Data Manipulation Language): manipulates the data inside the tables

DML are the everyday use commands. Used to add, change, delete, or read the actual data inside the database. Exp: INSERT, UPDATE, DELETE, SELECT.

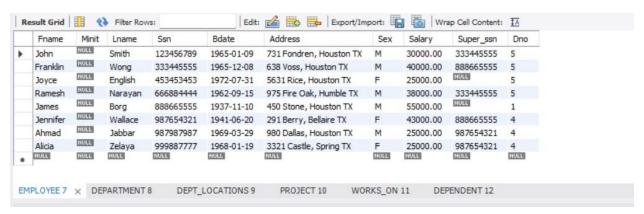
- 1. Created tables using **CREATE DATABASE**;
- 2. Insert data in the query using **INSERT INTO**;

While creating tables I encountered various errors which are listed at the end of the document.

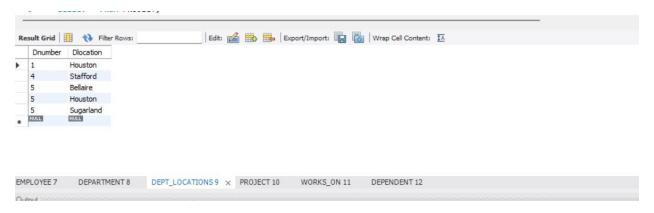
#### **Table1: Department**



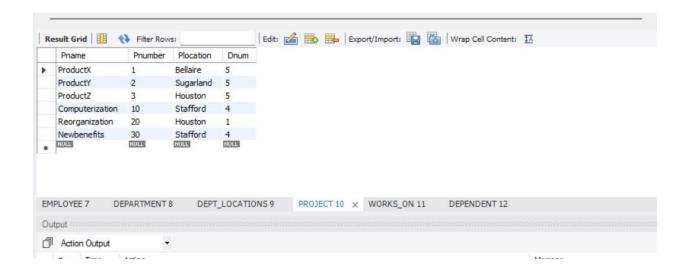
#### **Table 2: Employee**



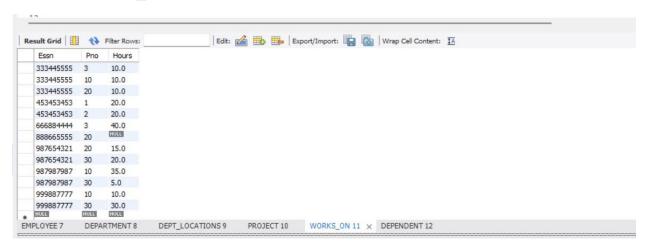
#### Table 3: Dept\_Locations



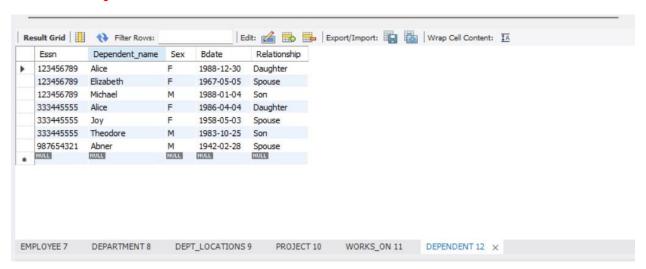
**Table 4: Project** 



#### Table 5: Works On



#### **Table 6: Dependent**



## **UPDATE**

```
CREATE DATABASE Company;
USE Company;
CREATE TABLE DEPARTMENT (
    Dname VARCHAR(15) NOT NULL,
    Dnumber INT NOT NULL,
   Mgr_ssn CHAR(9),
    Mgr_start_date DATE,
    PRIMARY KEY (Dnumber),
   UNIQUE (Dname)
);
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,
    PRIMARY KEY (Ssn),
    FOREIGN KEY (Dno) REFERENCES DEPARTMENT (Dnumber),
    FOREIGN KEY (Super_ssn) REFERENCES EMPLOYEE(Ssn)
);
ALTER TABLE DEPARTMENT
ADD CONSTRAINT fk_mgr FOREIGN KEY (Mgr_ssn) REFERENCES EMPLOYEE(Ssn);
CREATE TABLE DEPT_LOCATIONS (
    Dnumber INT NOT NULL,
   Dlocation VARCHAR(15) NOT NULL,
    PRIMARY KEY (Dnumber, Dlocation),
    FOREIGN KEY (Dnumber) REFERENCES DEPARTMENT(Dnumber)
);
CREATE TABLE PROJECT (
    Pname VARCHAR(15) NOT NULL,
    Pnumber INT NOT NULL,
    Plocation VARCHAR(15),
    Dnum INT NOT NULL,
    PRIMARY KEY (Pnumber),
   UNIQUE (Pname),
    FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber)
);
CREATE TABLE WORKS ON (
    Essn CHAR(9) NOT NULL,
    Pno INT NOT NULL,
    Hours DECIMAL(3,1),
    PRIMARY KEY (Essn, Pno),
    FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn),
```

```
FOREIGN KEY (Pno) REFERENCES PROJECT(Pnumber)
);
CREATE TABLE DEPENDENT (
    Essn CHAR(9) NOT NULL,
   Dependent name VARCHAR(15) NOT NULL,
   Sex CHAR,
   Bdate DATE,
    Relationship VARCHAR(8),
   PRIMARY KEY (Essn, Dependent name),
   FOREIGN KEY (ESSN) REFERENCES EMPLOYEE(SSN)
);
INSERT INTO DEPARTMENT VALUES ('Research', 5, '333445555', '1988-05-22');
INSERT INTO DEPARTMENT VALUES ('Administration', 4, '987654321', '1995-01-01');
INSERT INTO DEPARTMENT VALUES ('Headquarters', 1, '888665555', '1981-06-19');
INSERT INTO EMPLOYEE VALUES ('John', NULL, 'Smith', '123456789', '1965-01-09', '731
Fondren, Houston TX', 'M', 30000, '333445555', 5);
INSERT INTO EMPLOYEE VALUES ('Franklin', NULL, 'Wong', '333445555', '1965-12-08', '638
Voss, Houston TX', 'M', 40000, '888665555', 5);
INSERT INTO EMPLOYEE VALUES ('Alicia', NULL, 'Zelaya', '999887777', '1968-01-19', '3321
Castle, Spring TX', 'F', 25000, '987654321', 4);
INSERT INTO EMPLOYEE VALUES ('Jennifer', NULL, 'Wallace', '987654321', '1941-06-20', '291
Berry, Bellaire TX', 'F', 43000, '888665555', 4);
INSERT INTO EMPLOYEE VALUES ('Ramesh', NULL, 'Narayan', '666884444', '1962-09-15', '975
Fire Oak, Humble TX', 'M', 38000, '333445555', 5);
INSERT INTO EMPLOYEE VALUES ('Joyce', NULL, 'English', '453453453', '1972-07-31', '5631
Rice, Houston TX', 'F', 25000, '333445555', 5);
INSERT INTO EMPLOYEE VALUES ('Ahmad', NULL, 'Jabbar', '987987987', '1969-03-29', '980
Dallas, Houston TX', 'M', 25000, '987654321', 4);
INSERT INTO EMPLOYEE VALUES ('James', NULL, 'Borg', '888665555', '1937-11-10', '450 Stone,
Houston TX', 'M', 55000, NULL, 1);
INSERT INTO PROJECT VALUES ('ProductX', 1, 'Bellaire', 5);
INSERT INTO PROJECT VALUES ('Producty', 2, 'Sugarland', 5);
INSERT INTO PROJECT VALUES ('ProductZ', 3, 'Houston', 5);
INSERT INTO PROJECT VALUES ('Computerization', 10, 'Stafford', 4);
INSERT INTO PROJECT VALUES ('Reorganization', 20, 'Houston', 1);
INSERT INTO PROJECT VALUES ('Newbenefits', 30, 'Stafford', 4);
INSERT INTO WORKS_ON VALUES ('123456789', 1, 32.5);
INSERT INTO WORKS_ON VALUES ('123456789', 2, 7.5);
INSERT INTO WORKS ON VALUES ('666884444', 3, 40.0);
INSERT INTO WORKS_ON VALUES ('453453453', 1, 20.0);
INSERT INTO WORKS ON VALUES ('453453453', 2, 20.0);
INSERT INTO WORKS ON VALUES ('333445555', 2, 10.0);
INSERT INTO WORKS ON VALUES ('333445555', 3, 10.0);
INSERT INTO WORKS ON VALUES ('333445555', 10, 10.0);
INSERT INTO WORKS ON VALUES ('333445555', 20, 10.0);
INSERT INTO WORKS ON VALUES ('999887777', 30, 30.0);
INSERT INTO WORKS ON VALUES ('999887777', 10, 10.0);
INSERT INTO WORKS ON VALUES ('987987987', 10, 35.0);
INSERT INTO WORKS ON VALUES ('987987987', 30, 5.0);
INSERT INTO WORKS ON VALUES ('987654321', 30, 20.0);
INSERT INTO WORKS ON VALUES ('987654321', 20, 15.0);
INSERT INTO WORKS_ON VALUES ('888665555', 20, NULL);
```

```
INSERT INTO DEPENDENT VALUES ('333445555', 'Alice', 'F', '1986-04-04', 'Daughter');
INSERT INTO DEPENDENT VALUES ('333445555', 'Theodore', 'M', '1983-10-25', 'Son');
INSERT INTO DEPENDENT VALUES ('333445555', 'Joy', 'F', '1958-05-03', 'Spouse');
INSERT INTO DEPENDENT VALUES ('987654321', 'Abner', 'M', '1942-02-28', 'Spouse');
INSERT INTO DEPENDENT VALUES ('123456789', 'Michael', 'M', '1988-01-04', 'Son');
INSERT INTO DEPENDENT VALUES ('123456789', 'Alice', 'F', '1988-12-30', 'Daughter');
INSERT INTO DEPENDENT VALUES ('123456789', 'Elizabeth', 'F', '1967-05-05', 'Spouse');
INSERT INTO DEPT LOCATIONS VALUES (1, 'Houston');
INSERT INTO DEPT LOCATIONS VALUES (4, 'Stafford');
INSERT INTO DEPT LOCATIONS VALUES (5, 'Bellaire');
INSERT INTO DEPT LOCATIONS VALUES (5, 'Houston');
INSERT INTO DEPT LOCATIONS VALUES (5, 'Sugarland');
SELECT * FROM EMPLOYEE;
SELECT * FROM DEPARTMENT;
SELECT * FROM DEPT LOCATIONS;
SELECT * FROM PROJECT;
SELECT * FROM WORKS_ON;
SELECT * FROM DEPENDENT;
```