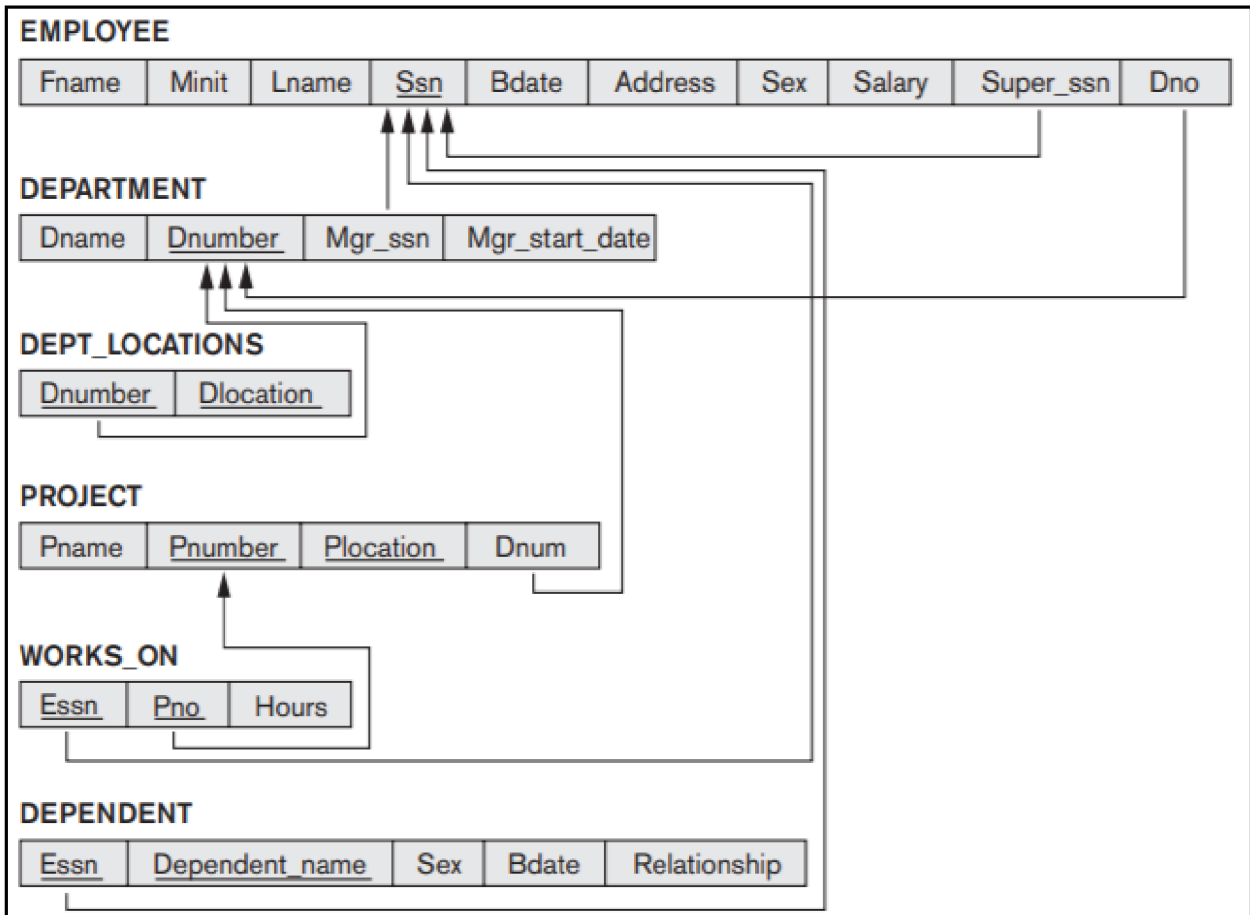


### Expt No 3

## CREATION OF DATABASE SCHEMA AND EXTRACTION OF ER DIAGRAM

**AIM:** Creation of database schema - DDL (create tables, set constraints, enforce relationships, create indices, delete and modify tables). Export ER diagram from the database and verify relationships (with the ER diagram designed in step 1).

Create a database schema for the below diagram.



**QUERY:**

```
CREATE TABLE EMPLOYEE
( Fname      VARCHAR(10)  NOT NULL,
  Minit      CHAR,
  Lname      VARCHAR(20)  NOT NULL,
  Ssn        CHAR(9)      NOT NULL,
  Bdate      DATE,
  Address    VARCHAR(30),
  Sex        CHAR(1),
  Salary     DECIMAL(5),
  Super_ssn  CHAR(9),
  Dno        INT          NOT NULL,
  PRIMARY KEY (Ssn));
```

```
CREATE TABLE DEPARTMENT
```

```
( Dname      VARCHAR(15)    NOT NULL,
  Dnumber    INT            NOT NULL,
  Mgr_ssn    CHAR(9)       NOT NULL,
  Mgr_start_date DATE,
PRIMARY KEY (Dnumber),
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),
FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber) );
```

```
CREATE TABLE WORKS_ON
( Essn      CHAR(9)        NOT NULL,
  Pno       INT            NOT NULL,
  Hours     DECIMAL(3,1)   NOT NULL,
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) );
```

```
ALTER TABLE DEPARTMENT
ADD CONSTRAINT Dep_emp FOREIGN KEY (Mgr_ssn) REFERENCES
EMPLOYEE(Ssn);
```

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT Emp_emp FOREIGN KEY (Super_ssn) REFERENCES
EMPLOYEE(Ssn);
```

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT Emp_dno FOREIGN KEY (Dno) REFERENCES
DEPARTMENT(Dnumber);
```

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT Emp_super FOREIGN KEY (Super_ssn) REFERENCES
EMPLOYEE(Ssn);
```

Export ER Diagram from Workbench

**RESULT:**

We successfully created the Database Schema from the problem description given. We were also able to export the ER diagram from the database and relationships are verified.

**Expt No 4**

**APPLICATION OF DML COMMANDS USING SQL**

**AIM :** Insertion, updation, deletion, and selection of databases using SQL Commands

**1. Insert data into the Employee schema created in Expt No 3.**

*SET FOREIGN\_KEY\_CHECKS=0;*

*INSERT INTO EMPLOYEE*

*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);*

*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 DEPT\_LOCATIONS (Dnumber, Dlocation) VALUES (1,'Houston');  
INSERT INTO DEPT\_LOCATIONS (Dnumber, Dlocation) VALUES (4,'Stafford');  
INSERT INTO DEPT\_LOCATIONS (Dnumber, Dlocation) VALUES (5,'Bellaire');  
INSERT INTO DEPT\_LOCATIONS (Dnumber, Dlocation) VALUES (5,'Sugarland');  
INSERT INTO DEPT\_LOCATIONS (Dnumber, Dlocation) VALUES (5,'Houston');*

*INSERT INTO PROJECT*

*VALUES ('ProductX',1,'Bellaire',5),  
('ProductY',2,'Sugarland',5),  
('ProductZ',3,'Houston',5),  
('Computerization',10,'Stafford',4),  
('Reorganization',20,'Houston',1),  
('Newbenefits',30,'Stafford',4);*

```
INSERT INTO WORKS_ON
VALUES (123456789,1,32.5),
      (123456789,2,7.5),
      (666884444,3,40.0),
      (453453453,1,20.0),
      (453453453,2,20.0),
      (333445555,2,10.0),
      (333445555,3,10.0),
      (333445555,10,10.0),
      (333445555,20,10.0),
      (999887777,30,30.0),
      (999887777,10,10.0),
      (987987987,10,35.0),
      (987987987,30,5.0),
      (987654321,30,20.0),
      (987654321,20,15.0),
      (888665555,20,16.0);
```

```
INSERT INTO DEPENDENT
VALUES (333445555,'Alice','F','1986-04-04','Daughter'),
      (333445555,'Theodore','M','1983-10-25','Son'),
      (333445555,'Joy','F','1958-05-03','Spouse'),
      (987654321,'Abner','M','1942-02-28','Spouse'),
      (123456789,'Michael','M','1988-01-04','Son'),
      (123456789,'Alice','F','1988-12-30','Daughter'),
      (123456789,'Elizabeth','F','1967-05-05','Spouse');
```

## **2. UPDATE QUERY**

- **Update Salary of all employee by 1000 \$**

```
update EMPLOYEE Set Salary = Salary+1000;
```

- **Update Address of Ssn 666884444 to "100 Centre, Stafford TX 77477"**

```
update EMPLOYEE set Address = '100 Centre, Stafford TX 77477' where Ssn =
'666884444';
```

## **3. SELECT QUERIES:**

- **Write a query to get the details of a Employee whose Ssn = 666884444.**

```
select *
from EMPLOYEE
where Ssn = '666884444';
```

- **Write a query to get the Address of Employee Ramesh Narayan**

```
select Address
from EMPLOYEE
where Fname = 'Ramesh' and Lname = 'Narayan';
```

- **Write a query to get the list of employees working in Department No = 5**

```
select Fname, Lname
from EMPLOYEE
where Dno = 5;
```

- **Write a query to get the list of Employees working in Research Department.**

```
select Fname, Lname
from EMPLOYEE, DEPARTMENT
where Dno = Dnumber and Dname = 'Research';
```

- **Write a query to get the Manager's Ssn of "Research" department.**

```
select Mgr_ssn
from DEPARTMENT
where Dname = 'Research';
```

- **Write a query to get the Manager's Name of "Research" department.**

```
select Fname, Lname
from EMPLOYEE, DEPARTMENT
where Dno = Dnumber and Dname = 'Research';
```

- **For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date**

```
select Pnumber, Dnum, Lname, Address, Bdate
from PROJECT, DEPARTMENT, EMPLOYEE
where Dnum=Dnumber AND Mgr_ssn=Ssn AND
Plocation='Stafford';
```

### **3. DELETE QUERIES:**

- **Delete the details of Research department from DEPARTMENT tables**

```
delete from DEPARTMENT where Dname = 'Research';
```

- **Delete the contents of DEPARTMENT Table**

```
delete from DEPARTMENT;
```

### **4. VIEW**

- **Create a view Emp(Ssn , Fname, Lname, Sex, Salary,Dno) from EMPLOYEE Table**

```
CREATE VIEW Emp AS SELECT Ssn,Fname, Lname, Sex, Salary, Dno FROM
EMPLOYEE;
```

- **Display the contents of View**

```
select * from Emp;
```

**RESULT:** Successfully executed the queries using SQL DML Commands