PRADYOTH SINGENAHALLI PRABHU

02071847

[psingenahalliprabhu@umassd.edu](mailto:psingenahalliprabhu@umassd.edu)

CIS 552: Database Design – Homework 2

In this homework assignment, a single database called "COMPANY" was established. The database includes the following entities: "DEPARTMENT", "DEPT\_LOCATION", "EMPLOYEES", "DEPENDENT", "PROJECT", and "WORKS\_ON". To prevent the need for later modifications, the tables with foreign key references were created after their parent tables. Data was inserted into the tables based on the information from figure 5.6 in chapter 5 slides and the "company-data.sql" insert script.

To avoid errors or empty result and to provide examples of query results, some modifications were made to the insert scripts.

The script demonstrates the use of SQL syntax and concepts such as data types, column constraints, and relationships between tables. The script helped me understand database design and SQL basics in a practical manner. By writing and executing the script, I have gain hands-on experience with database creation and management.

# Database creation and data population:

## Create database COMPANY in any installed RDBMS software on your laptop/ desktop. Create tables, columns, and constraints as per figure 6.1 of ch-6 slides.

**CREATE** **DATABASE** COMPANY;  
  
  
**USE** COMPANY;  
  
  
**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)  
);  
  
  
**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),  
 **UNIQUE** (Dname),  
 **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) **NOT** NULL,  
 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) **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)  
);

## Populate data as per figure 5.6 of ch-5 slides. Using insert command **or** GUI features of the database. (If you want more rows then use the file “company-data.sql” available at myCourse, though it is not required)

**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('John','E','Smith','123456789','1965-01-09','731 Fondren, Houston, TX','M',30000,333445555,5);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Franklin','T','Wong','333445555','1955-12-08','638 Voss, Houston, TX','M',40000,888665555,5);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Alicia','J','Zelaya','999887777','1968-01-19','3321 Castle, Spring, TX','F',25000,987654321,4);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Jennifer','S','Wallace','987654321','1941-06-20','291 Berry, Bellaire, TX','F',43000,'888665555',4);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Ramesh','K','Narayan','666884444','1962-09-15','975 Fire Oak, Humble, TX','M',38000,333445555,5);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Joyce','A','English','453453453','1972-07-31','5631 Rice, Houston, TX','F',25000,333445555,5);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Ahmad','V','Jabbar','987987987','1969-03-29','980 Dallas, Houston, TX','M',25000,987654321,4);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('James','E','Borg','888665555','1937-11-10','450 Stone, Houston, TX','M',55000,null,1);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Sam','S','Snedden','444444401','1977--07-31','987 Windy St, Milwaukee, WI','M',48000,'444444400',7);  
**INSERT** **INTO** EMPLOYEE **VALUES**  
 ('Chris','A','Carter','444444402','1960-03-21','565 Jordan, Milwaukee, WI','F',43000,'222222201',7);  
  
  
**INSERT** **INTO** DEPARTMENT **VALUES** ('Research', 5, '333445555', '1988-05-22');  
**INSERT** **INTO** DEPARTMENT **VALUES** ('Headquarters', 1, '888665555', '1981-06-19');  
**INSERT** **INTO** DEPARTMENT **VALUES** ('Administration', 4, '987654321', '1995-01-01');  
  
  
**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,'Sugarland');  
**INSERT** **INTO** DEPT\_LOCATIONS **VALUES** (5,'Houston');  
  
  
**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** DEPENDENT **VALUES** ('333445555','Alice','F','1986-04-05','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** DEPENDENT **VALUES** ('444444402','Chris','M','1969-04-19','Spouse');  
**INSERT** **INTO** DEPENDENT **VALUES** ('444444401','Sam','M','1964-02-14','Spouse');  
  
  
**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',20,20.0);

# 2. Queries – Data extraction:

Design and write the following queries in SQL on the COMPANY relational database, which you created as above and run it and show the result of each query.

## Retrieve the names of all employees in department 5 who work more than 10 hours per week on the ProductX project.

Query:



Output:

Graphical user interface, application

Description automatically generated

## List the names of all employees who have a dependent with the same first name as themselves.

Query:

Text

Description automatically generated

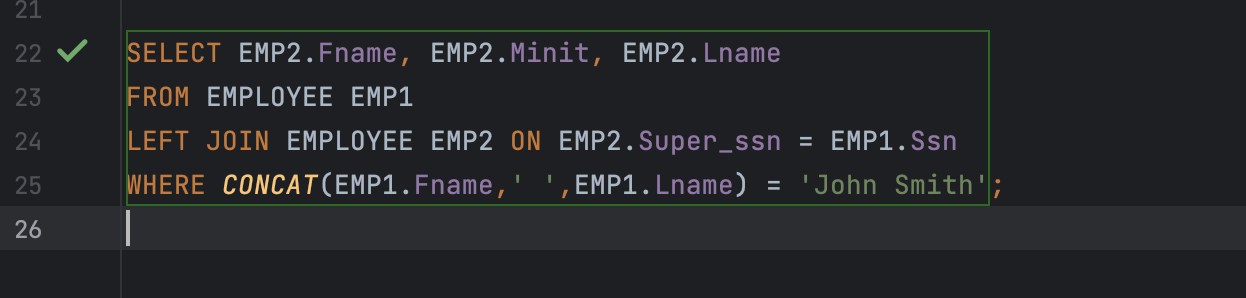
Output:

Graphical user interface, application

Description automatically generated

## Find the names of all employees who are directly supervised by ‘John smith’.

Query:



Output:

