DATABASE SYSTEMS – LAB 01

EC 5070
DATABASE SYSTEMS

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REGISTRATION NO.   : 2019/E/166

SEMESTER   : SEMESTER 05

DATE ASSIGNED   : 23 AUGUST 2022

Code:

```sql
CREATE DATABASE LAB01_166;
use LAB01_166;
CREATE TABLE EMPLOYEE
( Fname VARCHAR(15) NOT NULL, -- Adding columns
Minit CHAR,
Lname VARCHAR(15) NOT NULL, -- NOT NULL means the domain must have a value
Ssn CHAR(9) NOT NULL, -- CHAR padded to 9 spaces
Bdate DATE, -- Date, YYYY-MM-DD
Address VARCHAR(30), -- Variable length CHAR array (string)
Sex CHAR, -- Single character
Salary DECIMAL(10,2), -- Decimal up to a precision of two decimal points
Super_ssn CHAR(9),
Dno INT NOT NULL, PRIMARY KEY (Ssn));
 -- Primary key constraint);


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) NOT NULL,
PRIMARY KEY(Essn,Dependent_name),
FOREIGN KEY(Essn) REFERENCES EMPLOYEE(Ssn));

INSERT INTO EMPLOYEE values
('Nipuna', 'B', 'Vishwajith', '112346523', '1999-04-04', '17, Main Street, TY', 'M', 150000,
'123456789', 1),
('John', 'B', 'Smith', '123456789', '1955-01-09', '731 Fondren, Houston, TX', 'M', 30000,
'987654321', 5),
('Franklin', 'T', 'Wong', '333445555', '1945-12-08', '638 Voss, Houston, TX', 'M', 40000,
'888665555', 5),
('Joyce', 'A', 'English', '453453453', '1962-12-31', '5631 Rice, Houston, TX', 'F', 25000,
'333445555', 5),
('Ramesh', 'K', 'Narayan', '666884444', '1952-09-15', 'Fire Oak, Humble, TX', 'M', 38000,
'333445555', 5),
('James', 'E', 'Borg', '888665555', '1927-11-10', 'Stone, Houston, TX', 'M', 55000, NULL, 1),
('Jennifer', 'S', 'Wallace', '987654321', '1931-06-20', 'Berry, Bellaire, TX', 'F', 43000, '888665555',
4),
('Ahmad', 'V', 'Jabbar', '987987987', '1959-03-29', 'Dallas, Houston, TX', 'M', 25000, '987654321',
4),
('Alicia', 'J', 'Zelaya', '999887777', '1958-06-19', 'Castle, SPring, TX', 'F', 25000, '987654321', 4);

INSERT INTO DEPARTMENT values
('Research','5','333445555','1988-05-02'),
('Administration','4','987654321','1995-01-01'),
('Headquarters','3','888665555','1981-06-19'),
('Network','1','112346523','1989-08-01');

INSERT INTO DEPT_LOCATIONS values
('1','Houston'),
('4','Stafford'),
('5','Bellarie'),
('5','Sugarland');

INSERT INTO PROJECT values
('ProductX','1','Bellaire','5'),
('ProductY','2','Sugarland','5'),
('Computerization','10','Stafford','4'),
('Reorganization','20','Houston','1'),
```

```sql
('Newbenefits','30','Stafford','4');

INSERT INTO WORKS_ON values
('123456789','1','32.5'),
('123456789','2','7.5'),
('987654321','30','20'),
('333445555','20','10'),
('999887777','10','10');

INSERT INTO DEPENDENT values
('333445555','Alice','F','1986-04-05','Daughter'),
('333445555','Theodore','M','1983-10-25','Son'),
('987654321','Abner','M','1942-02-28','Spouse'),
('123456789','Alice','F','1988-12-30','Daughter');

SELECT * FROM lab01_166.employee;

SELECT Fname,Address
FROM lab01_166.employee
WHERE Salary > 30000;

SELECT Dname,Dlocation
FROM lab01_166.department , lab01_166.dept_locations
WHERE lab01_166.department.Dnumber = lab01_166.dept_locations.Dnumber;

SELECT Dlocation,Mgr_ssn
FROM lab01_166.dept_locations , lab01_166.department
WHERE lab01_166.dept_locations.Dnumber = lab01_166.department.Dnumber;

SELECT Dname,Fname
FROM lab01_166.DEPARTMENT , lab01_166.EMPLOYEE
WHERE lab01_166.DEPARTMENT.Mgr_ssn = lab01_166.EMPLOYEE.Ssn;

SELECT Fname,Dependent_name,Relationship
FROM lab01_166.EMPLOYEE , lab01_166.DEPENDENT
WHERE lab01_166.EMPLOYEE.Ssn = lab01_166.DEPENDENT.Essn;

SELECT Fname,Address
FROM lab01_166.EMPLOYEE
WHERE (Salary>25000) AND (Salary<50000);

SELECT Dname,Mgr_start_date,Dlocation
FROM lab01_166.DEPARTMENT,lab01_166.DEPT_LOCATIONS
WHERE lab01_166.DEPARTMENT.Dnumber = lab01_166.DEPT_LOCATIONS.Dnumber;

SELECT Pname,Dname,Dnumber
FROM lab01_166.PROJECT,lab01_166.DEPARTMENT
WHERE (lab01_166.DEPARTMENT.Dnumber = lab01_166.PROJECT.Dnum);
```
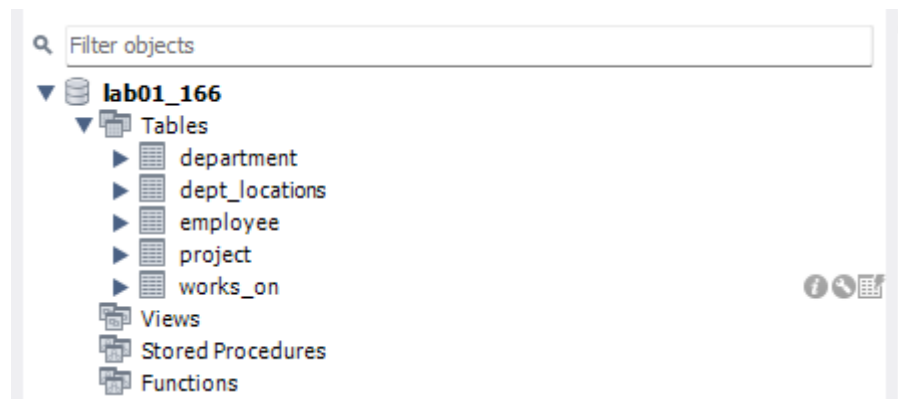
```
SELECT * , Dname
FROM lab01_166.EMPLOYEE , lab01_166.DEPARTMENT
WHERE (lab01_166.EMPLOYEE.Dno = lab01_166.DEPARTMENT.Dnumber) AND
lab01_166.EMPLOYEE.Sex = 'F';
```
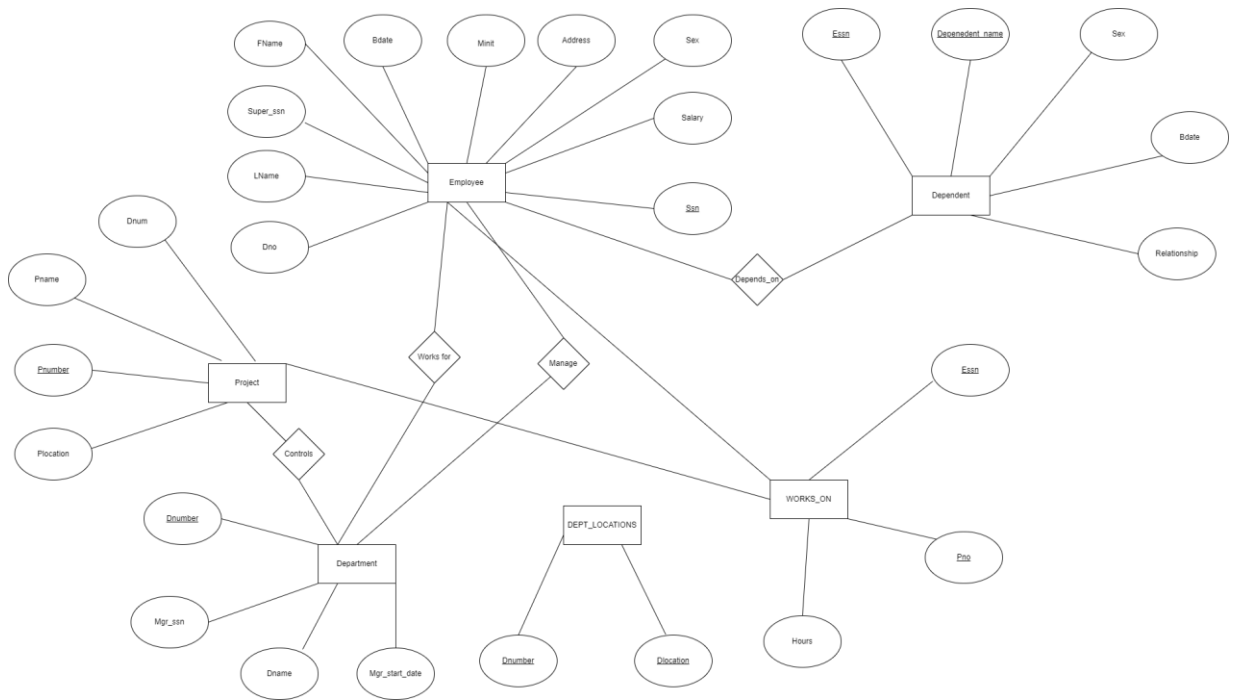
Screen Shots:

01.

02.

03.

✓	1	23:46:32	CREATE DATABASE LAB01_166	1 row(s) affected
✓	2	23:46:35	use LAB01_166	0 row(s) affected
✓	3	23:46:45	CREATE TABLE EMPLOYEE (Fname VARCHAR(15) NOT NULL, -- Adding columns Minit CHAR, Lname VARCHAR(15) ...	0 row(s) affected
✓	4	23:46:53	CREATE TABLE DEPARTMENT (Dname VARCHAR(15) NOT NULL, Dnumber INT NOT NULL, Mgr_ssn CHAR(9) NOT ...	0 row(s) affected
✓	5	23:46:54	CREATE TABLE DEPT_LOCATIONS (Dnumber INT NOT NULL, Dlocation VARCHAR(15) NOT NULL, PRIMARY KEY(D...	0 row(s) affected
✓	6	23:47:03	CREATE TABLE PROJECT (Pname VARCHAR(15) NOT NULL, Pnumber INT NOT NULL, Plocation VARCHAR(15) NOT...	0 row(s) affected
✓	7	23:47:03	CREATE TABLE WORKS_ON (Essn CHAR(9) NOT NULL, Pno INT NOT NULL, Hours DECIMAL(3,1) NOT NULL, PRIM...	0 row(s) affected
✓	8	23:47:03	CREATE TABLE DEPENDENT (Essn CHAR(9) NOT NULL, Dependent_name VARCHAR(15) NOT NULL, Sex CHAR, Bd...	0 row(s) affected
✓	9	23:47:12	INSERT INTO EMPLOYEE values ('Nipuna', 'B', 'Vishwajith', '112346523', '1999-04-04', '17, Main Street, TY', 'M', 150000,...	9 row(s) affected Records: 9 Duplicates: 0 Warnings: 0
✓	10	23:47:12	INSERT INTO DEPARTMENT values ('Research','5','333445555','1988-05-02'), ('Administration','4','987654321','1995-01-...	4 row(s) affected Records: 4 Duplicates: 0 Warnings: 0
✓	11	23:47:12	INSERT INTO DEPT_LOCATIONS values ('1','Houston'), ('4','Stafford'), ('5','Bellarie'), ('5','Sugarland')	4 row(s) affected Records: 4 Duplicates: 0 Warnings: 0
✓	12	23:47:12	INSERT INTO PROJECT values ('ProductX','1','Bellaire','5'), ('ProductY','2','Sugarland','5'), ('Computerization','10','Stafford',...	5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0
✓	13	23:47:12	INSERT INTO WORKS_ON values ('123456789','1','32.5), ('123456789','2','7.5'), ('987654321','30','20'), ('333445555','20'...	5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0
✓	14	23:47:12	INSERT INTO DEPENDENT values ('333445555','Alice','F','1986-04-05','Daughter'), ('333445555','Theodore','M','1983-10-...	4 row(s) affected Records: 4 Duplicates: 0 Warnings: 0

04.

05.

a.

```
102
103 •    SELECT * FROM lab01_166.employee;
104
```

	Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
▶	Nipuna	B	Vishwajith	112346523	1999-04-04	17, Main Street, TY	M	150000.00	123456789	1
	John	B	Smith	123456789	1955-01-09	731 Fondren, Houston, TX	M	30000.00	987654321	5
	Franklin	T	Wong	333445555	1945-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
	Joyce	A	English	453453453	1962-12-31	5631 Rice, Houston, TX	F	25000.00	333445555	5
	Ramesh	K	Narayan	666884444	1952-09-15	Fire Oak, Humble, TX	M	38000.00	333445555	5
	James	E	Borg	888665555	1927-11-10	Stone, Houston, TX	M	55000.00	NULL	1
	Jennifer	S	Wallace	987654321	1931-06-20	Berry, Bellaire, TX	F	43000.00	888665555	4
	Ahmad	V	Jabbar	987987987	1959-03-29	Dallas, Houston, TX	M	25000.00	987654321	4
	Alicia	J	Zelaya	999887777	1958-06-19	Castle, SPring, TX	F	25000.00	987654321	4
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

b.

```
104
105 •    SELECT Fname,Address
106      FROM lab01_166.employee
107      WHERE Salary > 30000;
108
```

	Fname	Address
▶	Nipuna	17, Main Street, TY
	Franklin	638 Voss, Houston, TX
	Ramesh	Fire Oak, Humble, TX
	James	Stone, Houston, TX
	Jennifer	Berry, Bellaire, TX

c.

```
108
109 •    SELECT Dname,Dlocation
110      FROM lab01_166.department , lab01_166.dept_locations
111      WHERE lab01_166.department.Dnumber = lab01_166.dept_locations.Dnumber;
```

	Dname	Dlocation
▶	Administration	Stafford
	Network	Houston
	Research	Bellarie
	Research	Sugarland

d.

```
112
113 •    SELECT Dlocation,Mgr_ssn
114      FROM lab01_166.dept_locations , lab01_166.department
115      WHERE lab01_166.dept_locations.Dnumber = lab01_166.department.Dnumber;
116
```

Dlocation	Mgr_ssn
Houston	112346523
Stafford	987654321
Bellarie	333445555
Sugarland	333445555

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

e.

```
116
117 •    SELECT Dname,Fname
118      FROM lab01_166.DEPARTMENT , lab01_166.EMPLOYEE
119      WHERE lab01_166.department.Mgr_ssn = lab01_166.EMPLOYEE.Ssn;
```

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

Dname	Fname
Network	Nipuna
Headquarters	James
Administration	Jennifer
Research	Franklin

f.

```
120
121 •    SELECT Fname,Dependent_name,Relationship
122      FROM lab01_166.EMPLOYEE , lab01_166.DEPENDENT
123      WHERE lab01_166.EMPLOYEE.Ssn = lab01_166.DEPENDENT.Essn;
```

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

Fname	Dependent_name	Relationship
John	Alice	Daughter
Franklin	Alice	Daughter
Franklin	Theodore	Son
Jennifer	Abner	Spouse

g.

```
124
125 •    SELECT Fname,Address
126      FROM lab01_166.EMPLOYEE
127      WHERE (Salary>25000) AND (Salary<50000);
```

Fname	Address
John	731 Fondren, Houston, TX
Franklin	638 Voss, Houston, TX
Ramesh	Fire Oak, Humble, TX
Jennifer	Berry, Bellaire, TX

h.

```
128
129 •    SELECT Dname,Mgr_start_date,Dlocation
130      FROM lab01_166.DEPARTMENT,lab01_166.DEPT_LOCATIONS
131      WHERE lab01_166.DEPARTMENT.Dnumber = lab01_166.DEPT_LOCATIONS.Dnumber;
132
133
```

Dname	Mgr_start_date	Dlocation
Network	1989-08-01	Houston
Administration	1995-01-01	Stafford
Research	1988-05-02	Bellarie
Research	1988-05-02	Sugarland

i.

```
132
133 •    SELECT Pname,Dname,Dnumber
134      FROM lab01_166.PROJECT,lab01_166.DEPARTMENT
135      WHERE (lab01_166.DEPARTMENT.Dnumber = lab01_166.PROJECT.Dnum);
136      |
137
```

Pname	Dname	Dnumber
Computerization	Administration	4
Newbenefits	Administration	4
Reorganization	Network	1
ProductX	Research	5
ProductY	Research	5

Result 10 ×

j.

```
137  •  SELECT * , Dname
138     FROM lab01_166.EMPLOYEE , lab01_166.DEPARTMENT
139     WHERE (lab01_166.EMPLOYEE.Dno = lab01_166.DEPARTMENT.Dnumber) AND lab01_166.EMPLOYEE.Sex = 'F';
140     |
141
142
```

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

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno	Dname	Dnumber	Mgr_ssn	Mgr_start_date	Dname
Joyce	A	English	453453453	1962-12-31	5631 Rice, Houston, TX	F	25000.00	333445555	5	Research	5	333445555	1988-05-02	Research
Jennifer	S	Wallace	987654321	1931-06-20	Berry, Bellaire, TX	F	43000.00	888665555	4	Administration	4	987654321	1995-01-01	Administration
Alicia	J	Zelaya	999887777	1958-06-19	Castle, SPring, TX	F	25000.00	987654321	4	Administration	4	987654321	1995-01-01	Administration