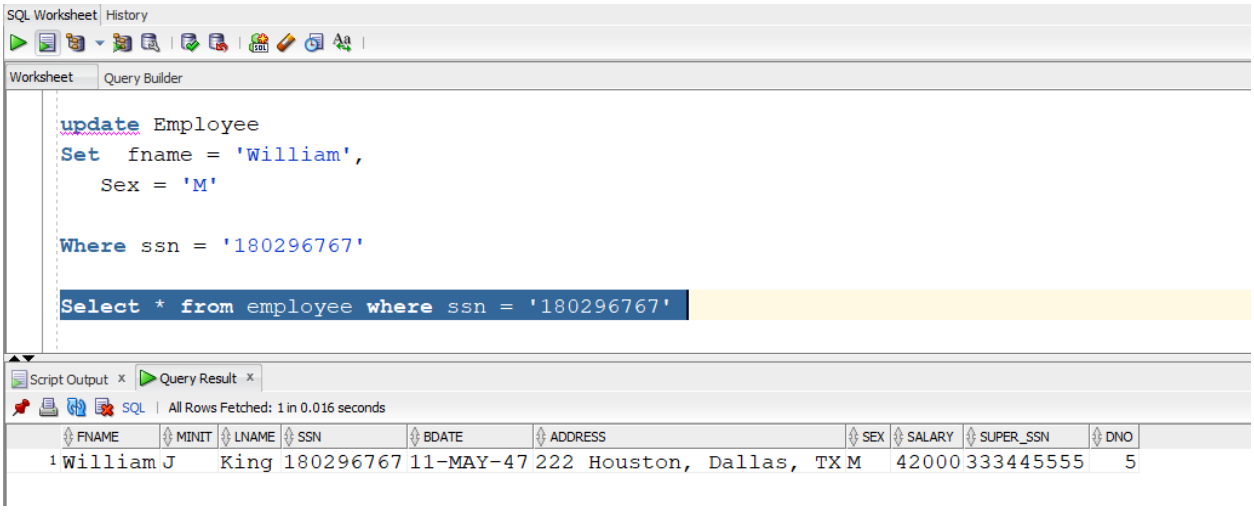
If you do not read the Guidelines and Submission Requirements, you will probably be giving away points.

Guidelines:

1. ***<u>All problems must be solved using SQL code. The SQL code and the output of your query should be cut and pasted into your submitted file (via Canvas).</u>***
    a. All SQL code must be displayed in your submission.
    b. Output Tables must be a screenshot taken from the DBMS output page.
    c. You must display the whole output. Points will be deducted for partial displays.
2. Do not paste outputs from multiple queries into a single result. This does not apply to problems 1,4, and 5. For example, if I asked you to display everyone making less then $30000 or more than $50000, I would ***<u>not</u>*** want to see one query for those making less than $30000 and a second query for those making more than $50000.
3. When creating your own column headings, NEVER use a column heading with an underbar ('_') in it. So, when modifying the display of fname, a heading of First Name is acceptable but First_Name is NOT.
4. Check your work carefully. I am not very sympathetic to errors that would easily turn up if checked.
5. You may assume the data base tables will not change in size (unless stated).
6. Certainly, if you have questions, you are welcome to call me (908-418-6078) or send an email. More specifically, this is not a math test, so if you do not know how to do a calculation, I will provide that information.
7. You do not need to include the code that shows how the original tables were created and table data was entered for the Employee database.
8. Here is a sample of what I expect to see.



Submission Requirements:

1. This assignment is due Wednesday 4/27/22 at 6pm. ***IT WILL NOT BE ACCEPTED LATE*** .
2. The assignment must be submitted via Canvas.
    a. Submit one document only, unzipped.
    b. It must be readable and it is your responsibility to confirm this. If I cannot read it, you run the risk of getting a zero.
    c. Handwritten problems will not be accepted.
3. All work must be your own. The only person you may discuss the assignment with is me (Professor Forman)
    a. You may **NOT** discuss problems with any other student.
    b. You may **NOT** get answers from sites such as Chegg or Homework Hero or any other online site.
    c. Use of an SQL code generator will be considered a violation of the "do your own work rule"
    d. Anything not mentioned, that constitutes "***not doing your own work"*** will be considered cheating.
    e. Violation of these requirements will result in a grade of 0.

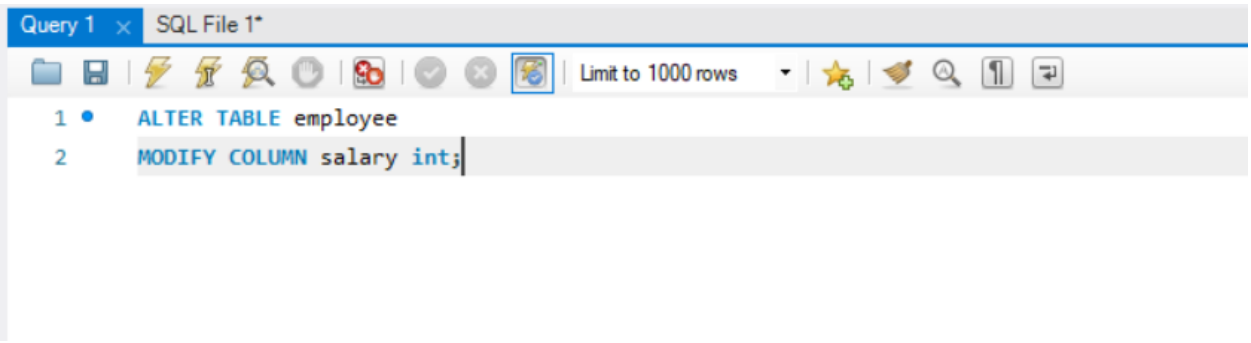
Problem 1 (10 points):

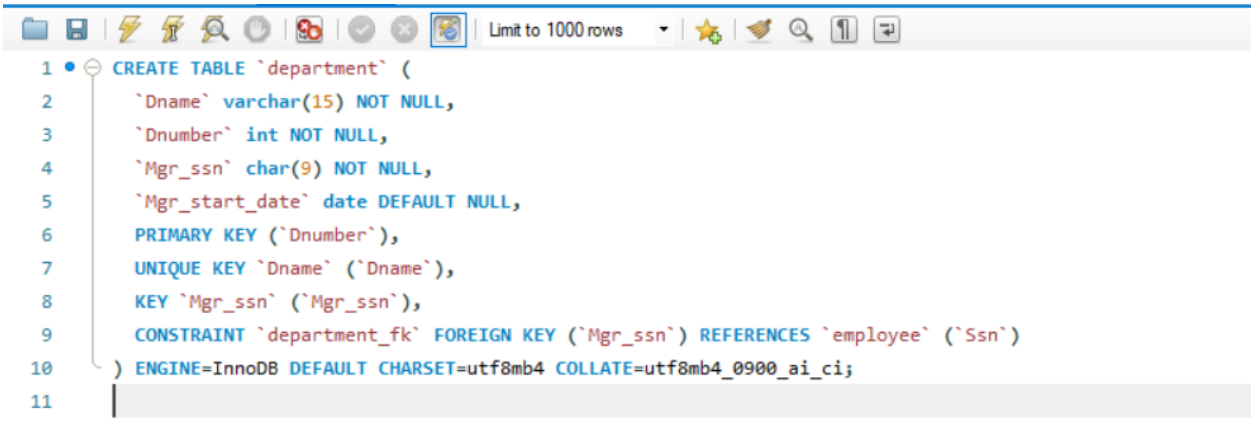
Add the following two records to the Employee table and the new department record to the Department table. Cut and paste the code and output. Display the modified tables.

Employee Table Attribute	**Person 1**	**Person 2**	**Person 3**
Fname	John	Richard	William
Minit	F	M	J
Lname	Kennedy	Nixon	Clinton
Ssn	333-44-7777	321-54-9876	585-66-3733
Bdate	1917-05-29	1913-01-09	1946-08-19
Home Address (#+Street), City, State)	246 Houston, Dallas, TX	369 Houbout, Houston, CA	4499 Houston, Plano, TX
Sex	M	M	M
Salary	100,000	150,000	250,000
Super_ssn	585-66-3733	585-66-3733	888-66-5555
Dno	7	7	7

Department Table Attribute	New Department
Dname	Government
Dnumber	7
Mgr_ssn	585-66-3733
Mgr_start_date	2022-03-14

Answer:





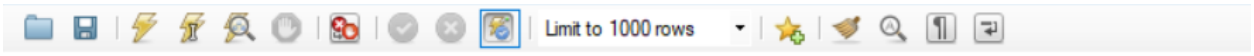
```
CREATE TABLE `employee` (
  `Fname` varchar(10) NOT NULL,
  `Minit` char(1) DEFAULT NULL,
  `Lname` varchar(20) NOT NULL,
  `Ssn` char(9) NOT NULL,
  `Bdate` date DEFAULT NULL,
  `Address` varchar(30) DEFAULT NULL,
  `Sex` char(1) DEFAULT NULL,
  `salary` int DEFAULT NULL,
  `Super_ssn` char(9) DEFAULT NULL,
  `Dno` int NOT NULL,
  PRIMARY KEY (`Ssn`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
```

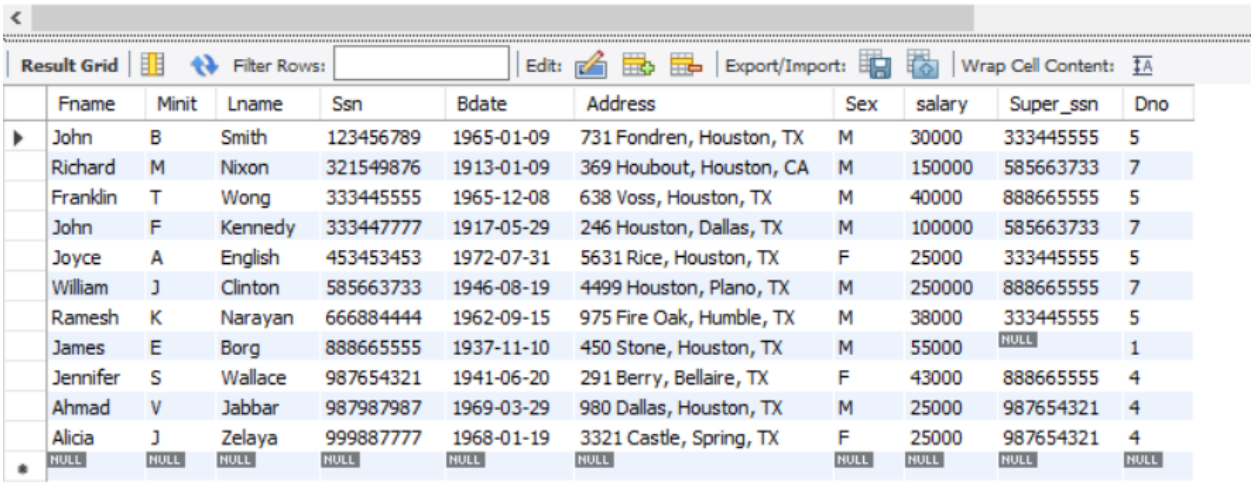
```
INSERT INTO EMPLOYEE
VALUES      ('John','F','Kennedy',333447777,'1917-05-29','246 Houston, Dallas, TX','M',100000,585663733,7);

INSERT INTO EMPLOYEE
VALUES      ('Richard','M','Nixon',321549876,'1913-01-09','369 Houbout, Houston, CA','M',150000,585663733,7);

INSERT INTO EMPLOYEE
VALUES      ('William','J','Clinton',585663733,'1946-08-19','4499 Houston, Plano, TX','M',250000,888665555,7);

INSERT INTO DEPARTMENT
VALUES      ('Government',7,585663733,'2022-03-14');
```

Output

Action Output

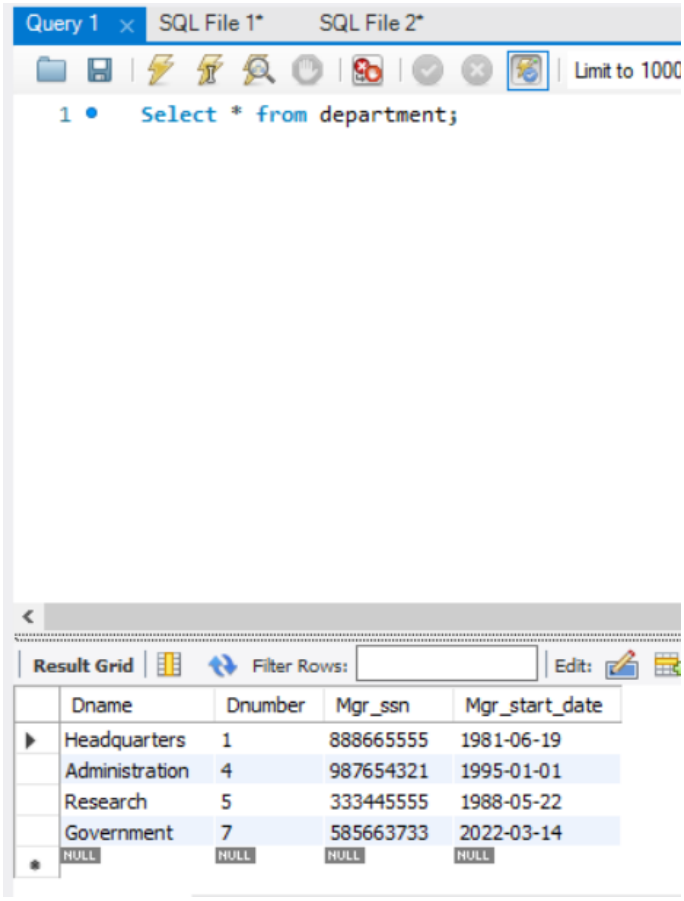
#	Time	Action	Message
54	00:30:16	INSERT INTO DEPARTMENT VALUES ('Government',7,585663733,'2022-03-14')	Error Code: 1452. Cannot add or update a child row: a foreign key constraint fa
55	00:33:26	ALTER TABLE employee MODIFY COLUMN salary int	8 row(s) affected Records: 8 Duplicates: 0 Warnings: 0
56	00:33:47	INSERT INTO EMPLOYEE VALUES ('John','F','Kennedy',333447777,'1917-05-29','246 Houston, Dallas, T...	1 row(s) affected
57	00:34:05	INSERT INTO EMPLOYEE VALUES ('Richard','M','Nixon',321549876,'1913-01-09','369 Houbout, Houston,...	1 row(s) affected
58	00:34:19	INSERT INTO EMPLOYEE VALUES ('William','J','Clinton',585663733,'1946-08-19','4499 Houston, Plano, T...	1 row(s) affected
59	00:34:34	INSERT INTO DEPARTMENT VALUES ('Government',7,585663733,'2022-03-14')	1 row(s) affected





Result Grid | Filter Rows: | Edit: | Export/Import: | 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	333445555	5
Richard	M	Nixon	321549876	1913-01-09	369 Houbout, Houston, CA	M	150000	585663733	7
Franklin	T	Wong	333445555	1965-12-08	638 Voss, Houston, TX	M	40000	888665555	5
John	F	Kennedy	333447777	1917-05-29	246 Houston, Dallas, TX	M	100000	585663733	7
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
William	J	Clinton	585663733	1946-08-19	4499 Houston, Plano, TX	M	250000	888665555	7
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

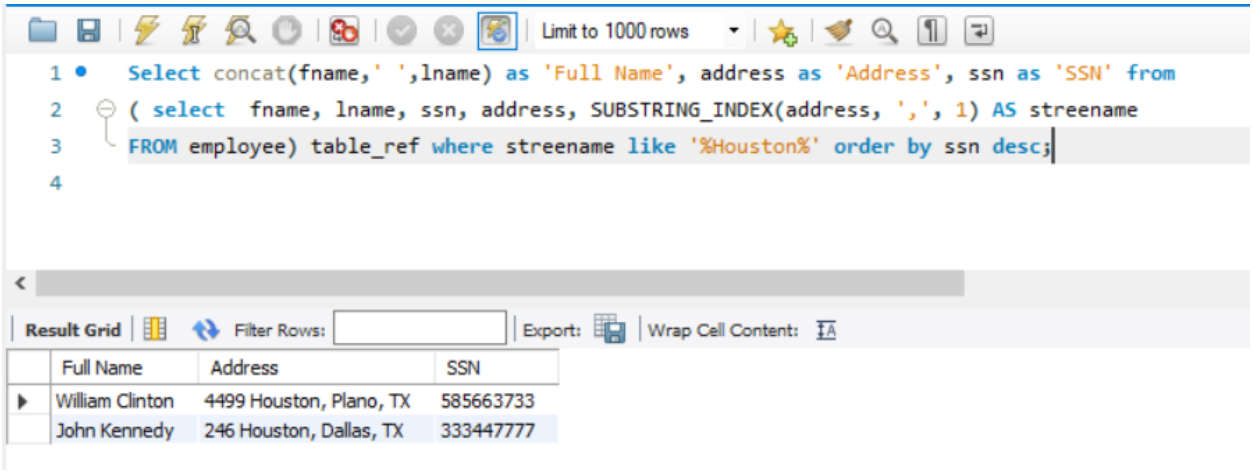


Result Grid | Filter Rows: | Edit:

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Headquarters	1	888665555	1981-06-19
Administration	4	987654321	1995-01-01
Research	5	333445555	1988-05-22
Government	7	585663733	2022-03-14
NULL	NULL	NULL	NULL

Problem 2 (10 points):

Using the data from Problem 1, list all employees who live (home address) on Houston street. The Address format is House # Street, City, State. Display Full Name (Fname, Lname as a single field), Address, SSN. Order by SSN in descending order.



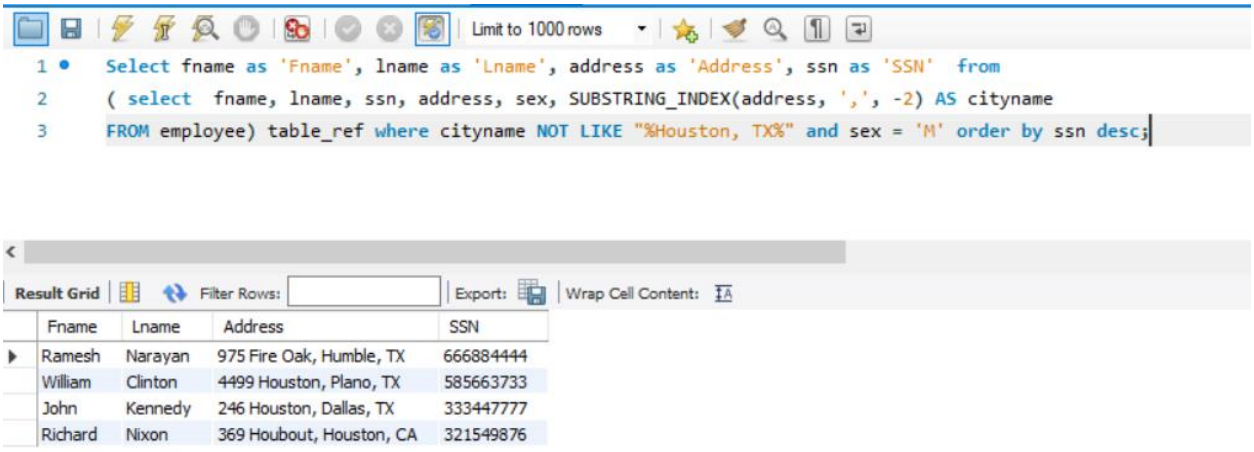
```
Select concat(fname,' ',lname) as 'Full Name', address as 'Address', ssn as 'SSN' from
( select  fname, lname, ssn, address, SUBSTRING_INDEX(address, ',', 1) AS streename
FROM employee) table_ref where streename like '%Houston%' order by ssn desc;
```

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

Full Name	Address	SSN
William Clinton	4499 Houston, Plano, TX	585663733
John Kennedy	246 Houston, Dallas, TX	333447777

Problem 3 (10 points):

Using the data from Problem 1, list all **male** employees who do not live in Houston, TX. Display Fname, Lname, Address, SSN. Order by SSN in descending order



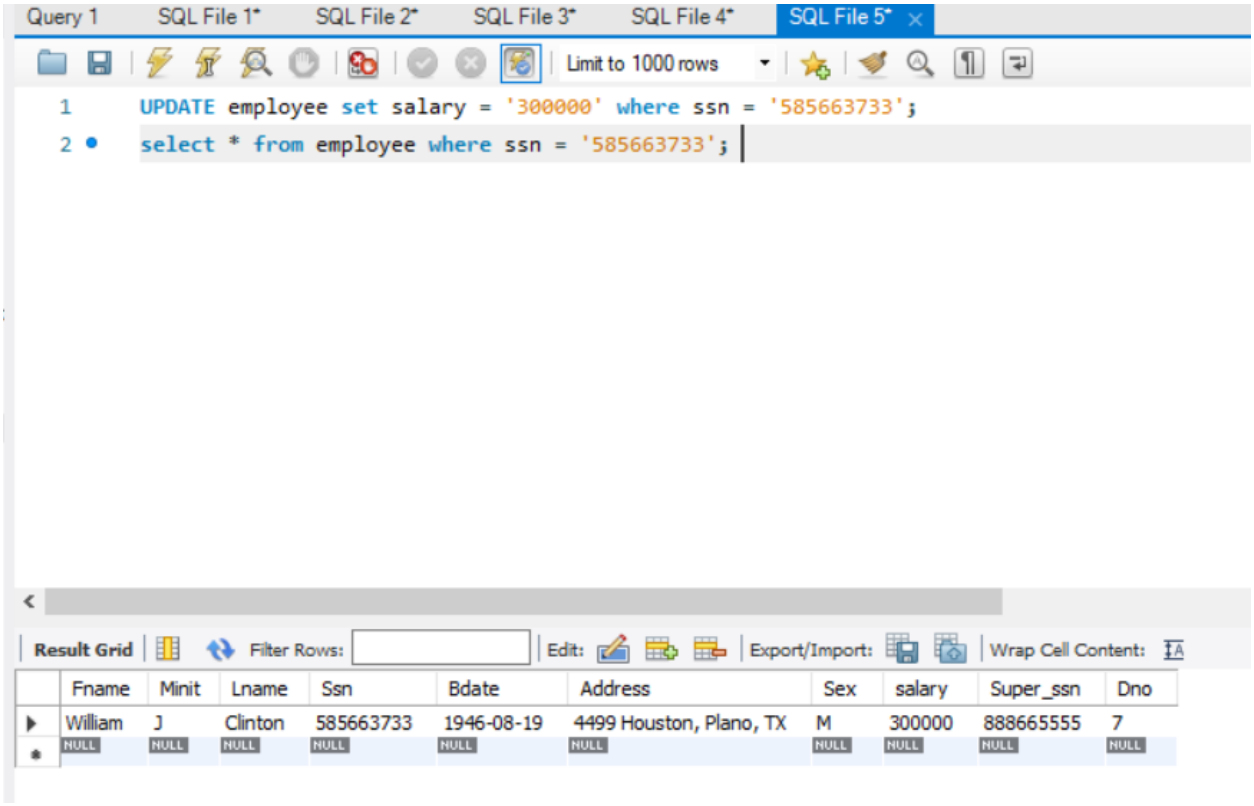
```
Select fname as 'Fname', lname as 'Lname', address as 'Address', ssn as 'SSN'  from
( select  fname, lname, ssn, address, sex, SUBSTRING_INDEX(address, ',', -2) AS cityname
FROM employee) table_ref where cityname NOT LIKE "%Houston, TX%" and sex = 'M' order by ssn desc;
```

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

Fname	Lname	Address	SSN
Ramesh	Narayan	975 Fire Oak, Humble, TX	666884444
William	Clinton	4499 Houston, Plano, TX	585663733
John	Kennedy	246 Houston, Dallas, TX	333447777
Richard	Nixon	369 Houbout, Houston, CA	321549876

Problem 4 (5 points):

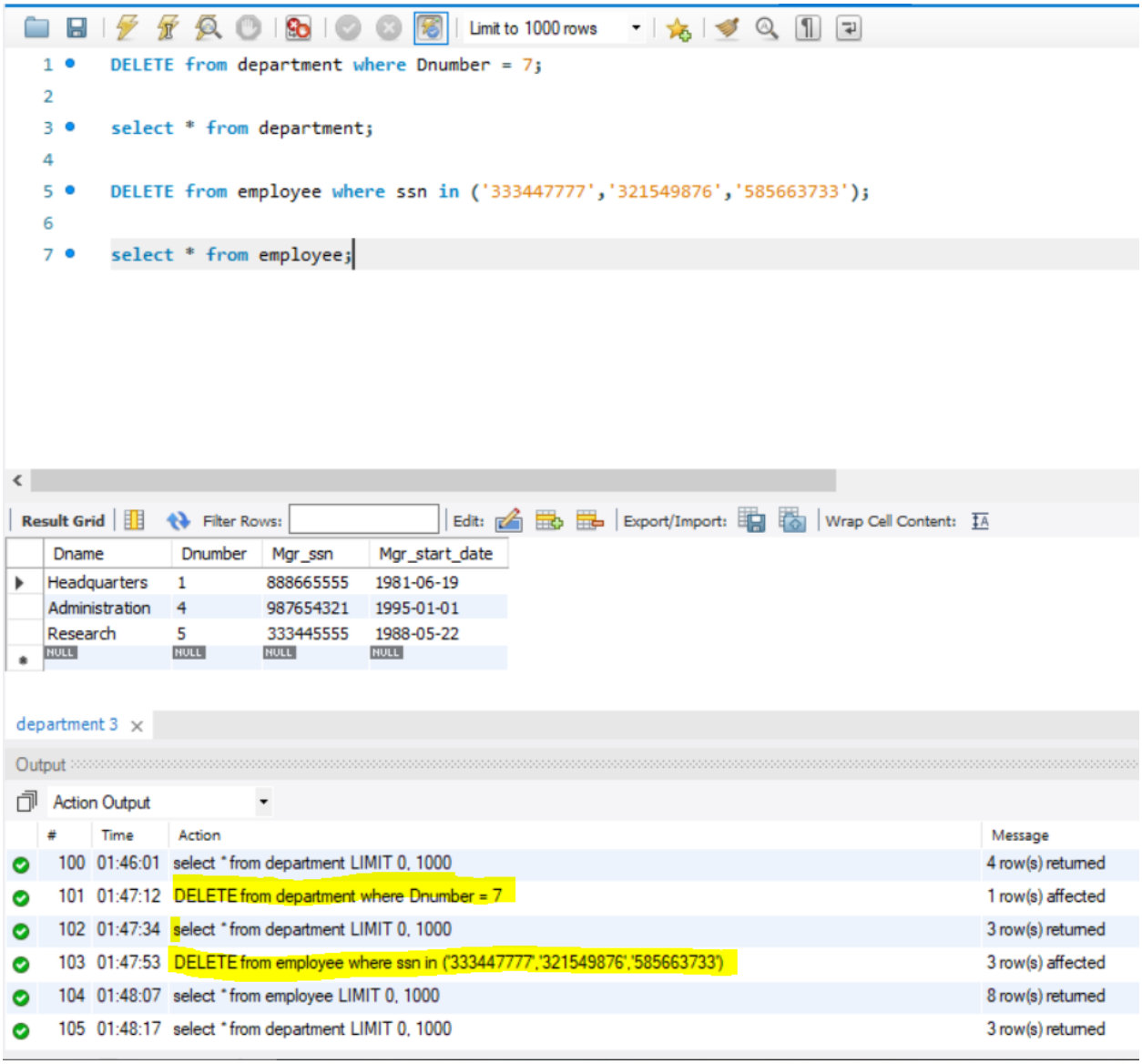
The record added in Problem 1, for Clinton was entered with an error. The salary should have been 300,000. The rest of the information was correct. Correct the record and display just that record. You do not have to rerun problem 2 or 3, but you do need to show the SQL code used to make the correction.

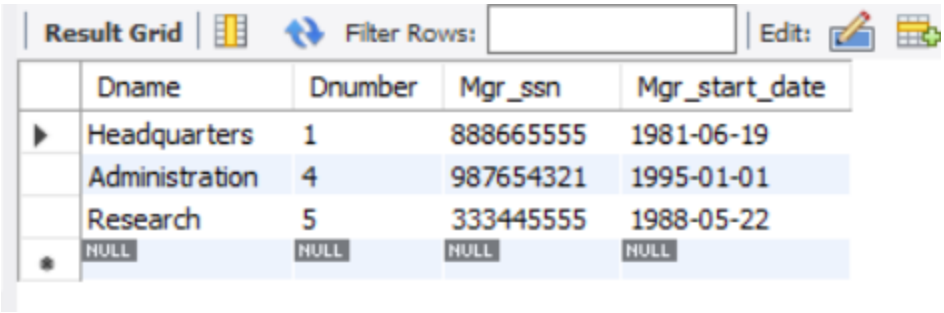


Problem 5 (5 points):

Delete the 4 records that were created.

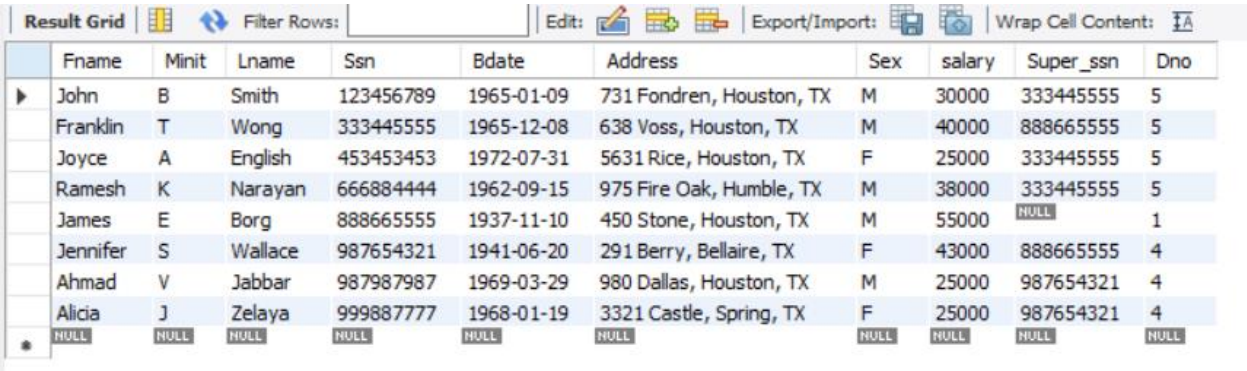
Show the SQL statement that confirms that the record was deleted. Display the Employee and Department tables after the record has been deleted. I need to see some representation from the DBMS that shows the record was deleted.





Result Grid | Filter Rows: | Edit:

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



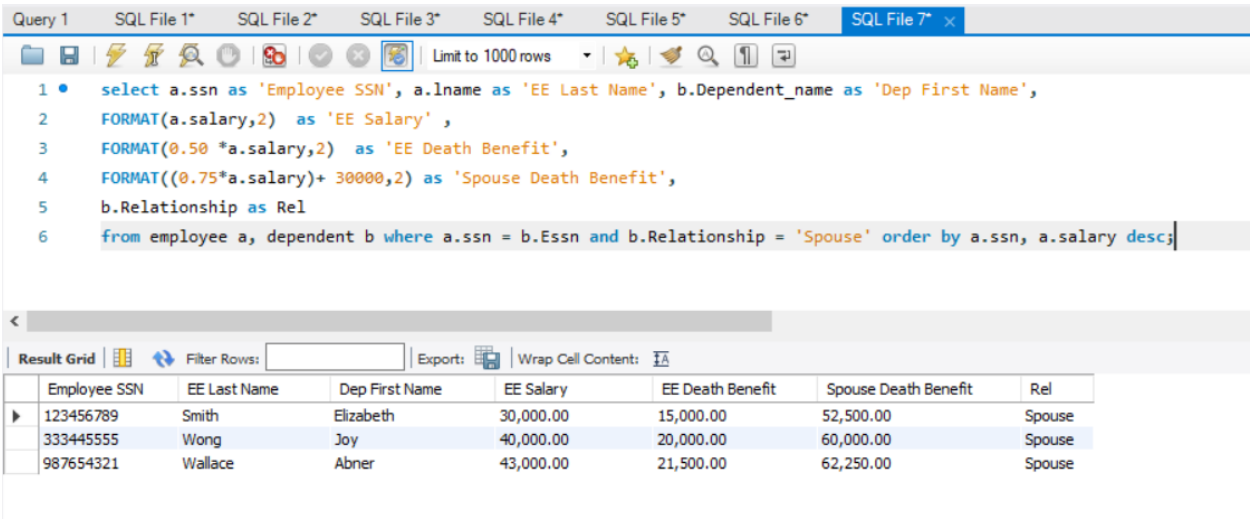
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1965-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Problem 6 (15 points)

Each employee gets an insurance policy with the following death benefits:
If spouse dies, employee gets 50% of his salary (Employee Death Benefit)
If employee dies, spouse gets 75% of his salary plus $30,000 (Spouse Death Benefit)
The attributes to display and the required column headings are shown below. ***Include only those employees with a dependent spouse.*** Your column headings should be exactly as shown in the Display As column. Order output by employee by salary in descending order.
Note: The employee death benefit is the amount the employee gets when his spouse dies and the spouse death benefit is the amount the spouse gets if the employee dies.

Attribute	**Display As**
SSN	Employee SSN
Employee Lname	EE Last Name
Dependent Name	Dep First Name
Employee Salary	EE Salary(include commas and two decimal places, i.e. 35000 should be 35,000.00)
Employee Death Benefit (calculated)	EE Death Benefit (include commas and two decimal places, i.e. 35000 should be 35,000.00)
Spouse Death Benefit (calculated)	Spouse Death Benefit (include commas and two decimal places, i.e. 35000 should be 35,000.00)
Relationship	Rel



Employee SSN	EE Last Name	Dep First Name	EE Salary	EE Death Benefit	Spouse Death Benefit	Rel
123456789	Smith	Elizabeth	30,000.00	15,000.00	52,500.00	Spouse
333445555	Wong	Joy	40,000.00	20,000.00	60,000.00	Spouse
987654321	Wallace	Abner	43,000.00	21,500.00	62,250.00	Spouse

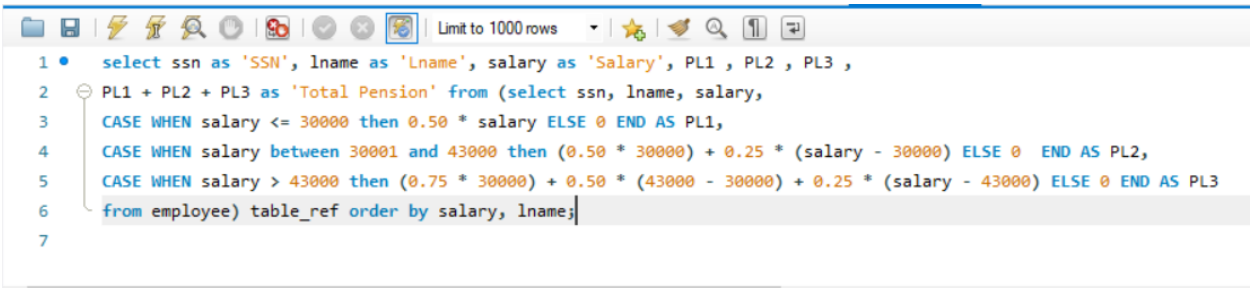
Problem 7 (15 Points)

Compute the pension benefit for each employee based on his salary in the Employee table and these conditions:

Pension Level	Salary	Pension
PL1	=<30,000	50% of salary
PL2	>30,000 and =<43,000	50% of salary up to 30,000 plus 25% of salary portion above 30,000
PL3	>43,000	75% of salary up to 30,000 plus 50% of salary portion greater than 30,000 and less than or equal to 43,000 plus 25% of salary portion above 43,000

So, for someone making 16,000, their pension would be .50*16,000 = 8,000
For someone making 32,000, their benefit would be
.50 * 30,000 + .25* (32,000 – 30,000) = 15,000 + 500 = 25,500
For someone making 60,000 their benefit would be:
.75 * 30,000 + .50*(43,000-30,000) + .25 * (60,000-43,000) = 22,500+6,500+4,250 = 33,250

Display these columns: SSN, Lname, Salary, Pension Level 1 amount(display as PL1), Pension Level 2 amount (display as PL2), Pension Level 3 amount (display as PL3), and Total Pension. Order by salary followed by Lname.



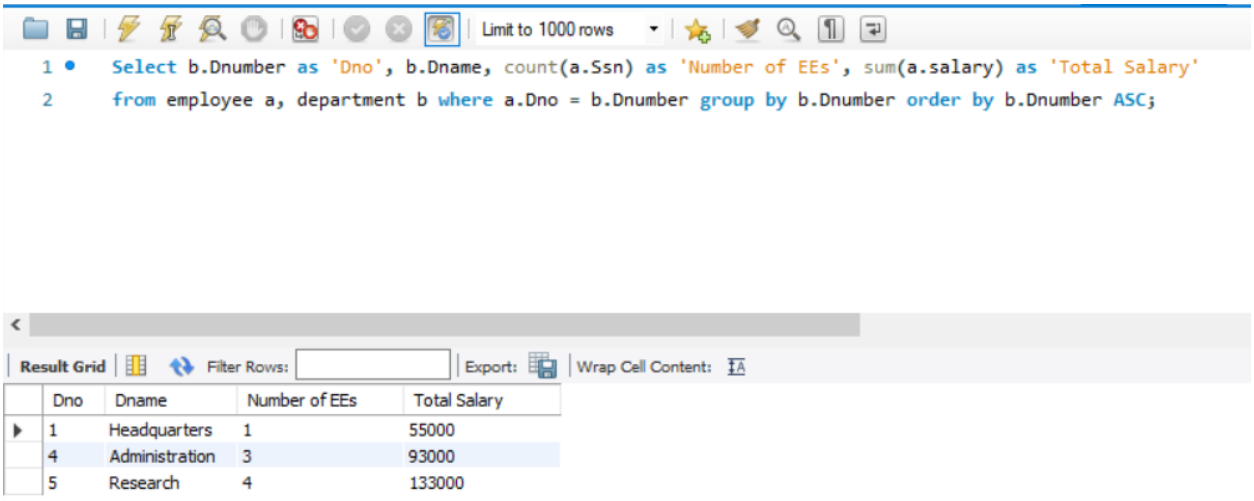
```
1  select ssn as 'SSN', lname as 'Lname', salary as 'Salary', PL1 , PL2 , PL3 ,
2  PL1 + PL2 + PL3 as 'Total Pension' from (select ssn, lname, salary,
3  CASE WHEN salary <= 30000 then 0.50 * salary ELSE 0 END AS PL1,
4  CASE WHEN salary between 30001 and 43000 then (0.50 * 30000) + 0.25 * (salary - 30000) ELSE 0  END AS PL2,
5  CASE WHEN salary > 43000 then (0.75 * 30000) + 0.50 * (43000 - 30000) + 0.25 * (salary - 43000) ELSE 0 END AS PL3
6  from employee) table_ref order by salary, lname;
7
```

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

SSN	Lname	Salary	PL1	PL2	PL3	Total Pension
453453453	English	25000	12500.00	0	0	12500.00
987987987	Jabbar	25000	12500.00	0	0	12500.00
999887777	Zelaya	25000	12500.00	0	0	12500.00
123456789	Smith	30000	15000.00	0	0	15000.00
666884444	Narayan	38000	0	17000.00	0	17000.00
333445555	Wong	40000	0	17500.00	0	17500.00
987654321	Wallace	43000	0	18250.00	0	18250.00
888665555	Borg	55000	0	0	32000.00	32000.00

Problem 8 (15 points)

Compute the number of employees and total salary paid for each department. Display Dno, Dname, Number of EEs, and Total Salary. Order by DNO, ascending.



Dno	Dname	Number of EEs	Total Salary
1	Headquarters	1	55000
4	Administration	3	93000
5	Research	4	133000

Problem 9 (10 points)

For each record in the Works_on table, display ESSN, PNO, Pname, Hours, Dnumber, Dname, lname. Order by lname.

```
1  select a.Essn as 'ESSN', a.Pno as 'PNO', d.Pname, a.Hours, b.Dnumber, b.Dname, c.Lname
2  from works_on a, department b, employee c, project d
3  where c.Dno = b.Dnumber
4  and a.Essn = c.Ssn
5  and a.Pno = d.Pnumber order by Lname;
```

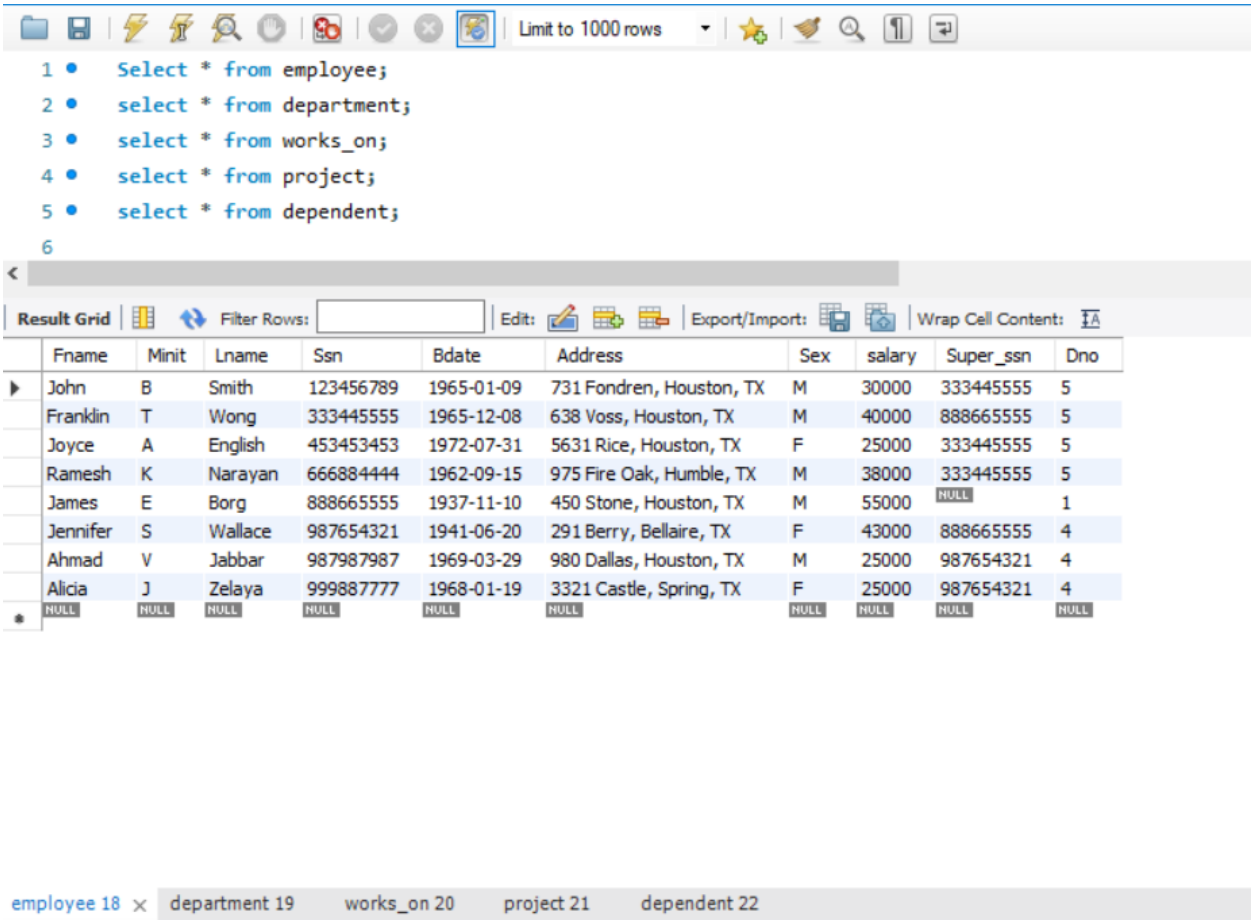
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ESSN	PNO	Pname	Hours	Dnumber	Dname	Lname
888665555	20	Reorganization	NULL	1	Headquarters	Borg
453453453	1	ProductX	20.0	5	Research	English
453453453	2	ProductY	20.0	5	Research	English
987987987	10	Computerization	35.0	4	Administration	Jabbar
987987987	30	Newbenefits	5.0	4	Administration	Jabbar
666884444	3	ProductZ	40.0	5	Research	Narayan
123456789	1	ProductX	32.5	5	Research	Smith
123456789	2	ProductY	7.5	5	Research	Smith
987654321	20	Reorganization	15.0	4	Administration	Wallace
987654321	30	Newbenefits	20.0	4	Administration	Wallace
333445555	2	ProductY	10.0	5	Research	Wong
333445555	3	ProductZ	10.0	5	Research	Wong
333445555	10	Computerization	10.0	5	Research	Wong
333445555	20	Reorganization	10.0	5	Research	Wong
999887777	10	Computerization	10.0	4	Administration	Zelaya
999887777	30	Newbenefits	30.0	4	Administration	Zelaya

Problem 10 (5 points)

Display the following tables. Use the format Select * from *table name.*

Employee
Department
Works_On
Project
Dependent
This is not a trick question.



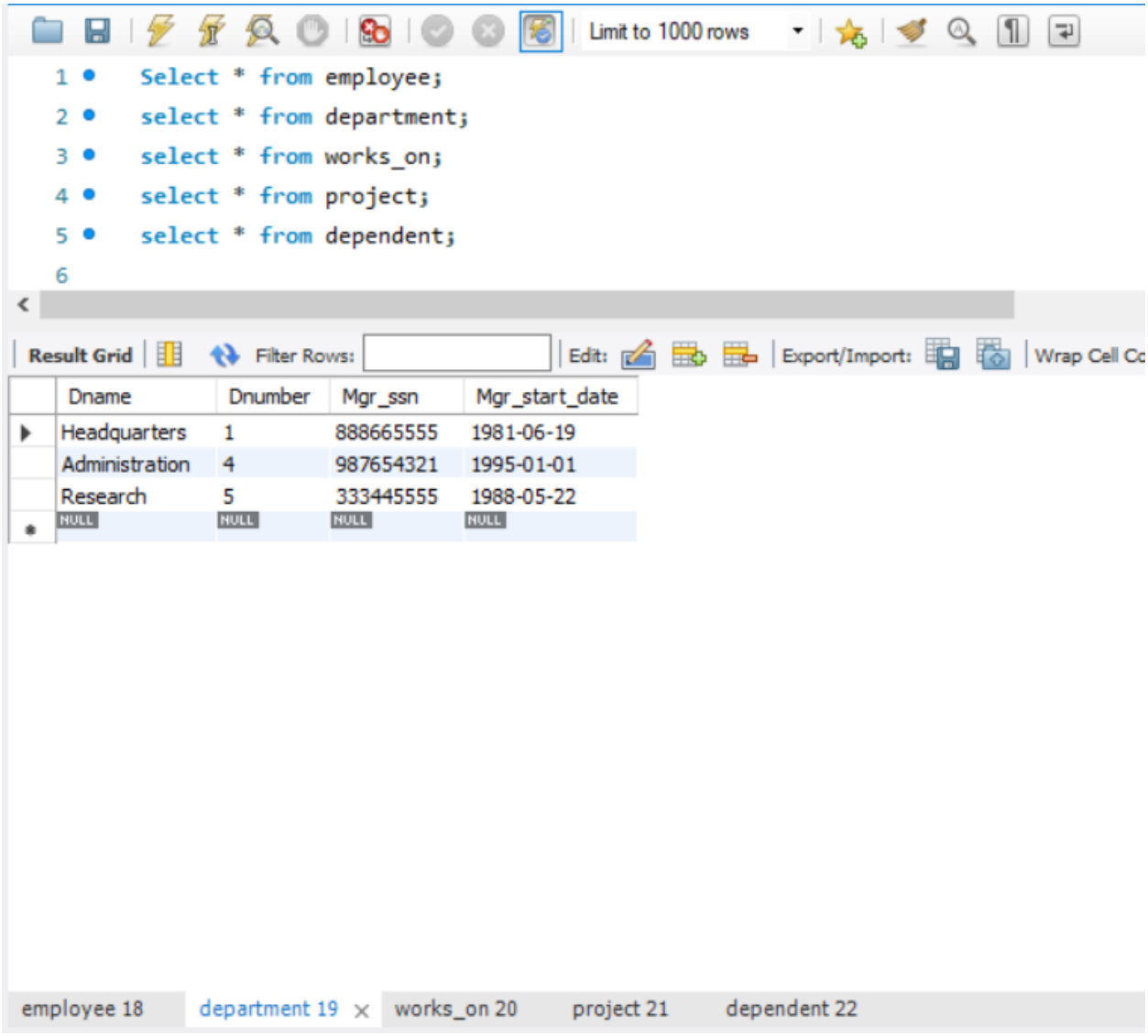
```
1 • Select * from employee;
2 • select * from department;
3 • select * from works_on;
4 • select * from project;
5 • select * from dependent;
6
```

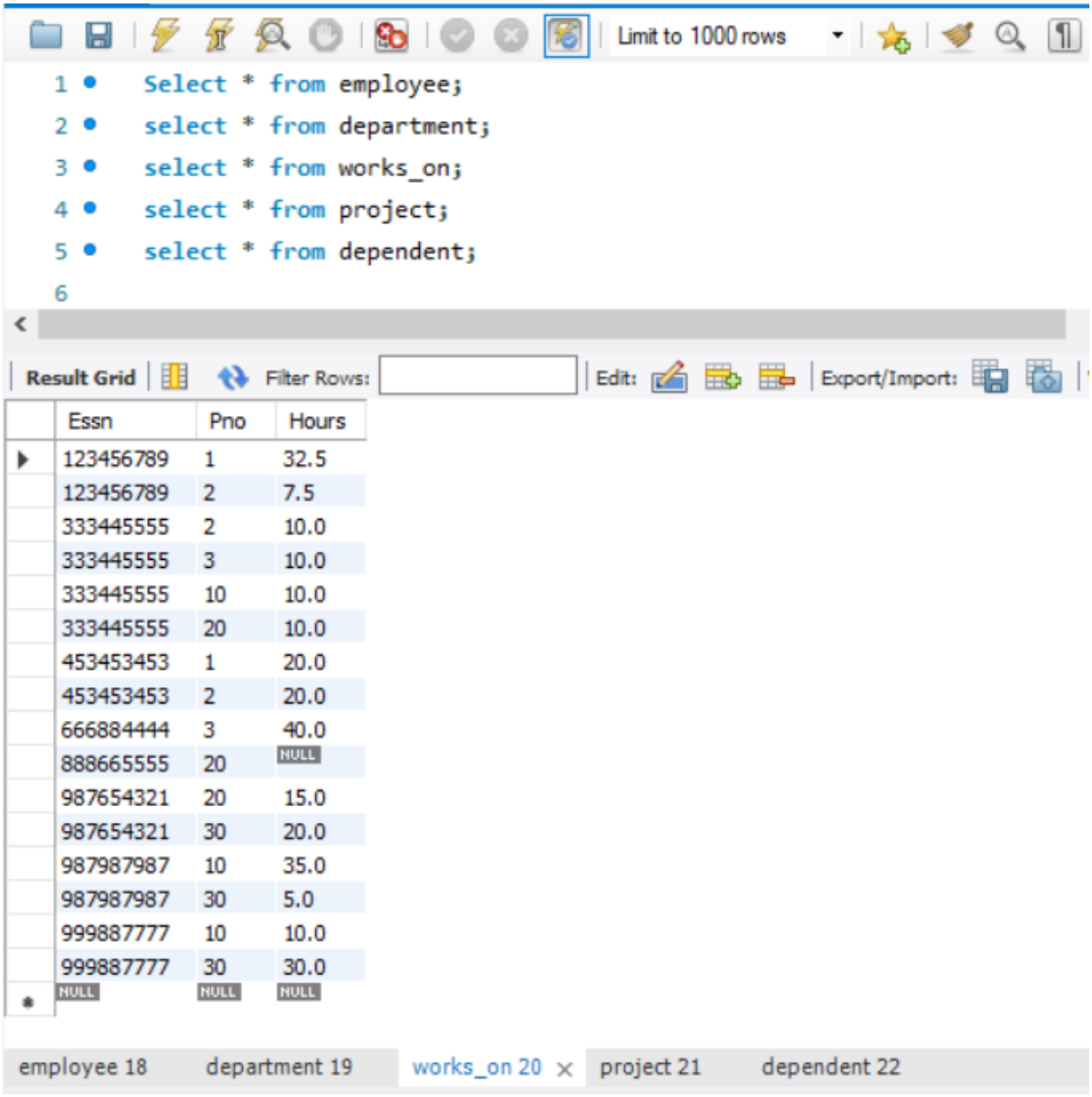
Limit to 1000 rows

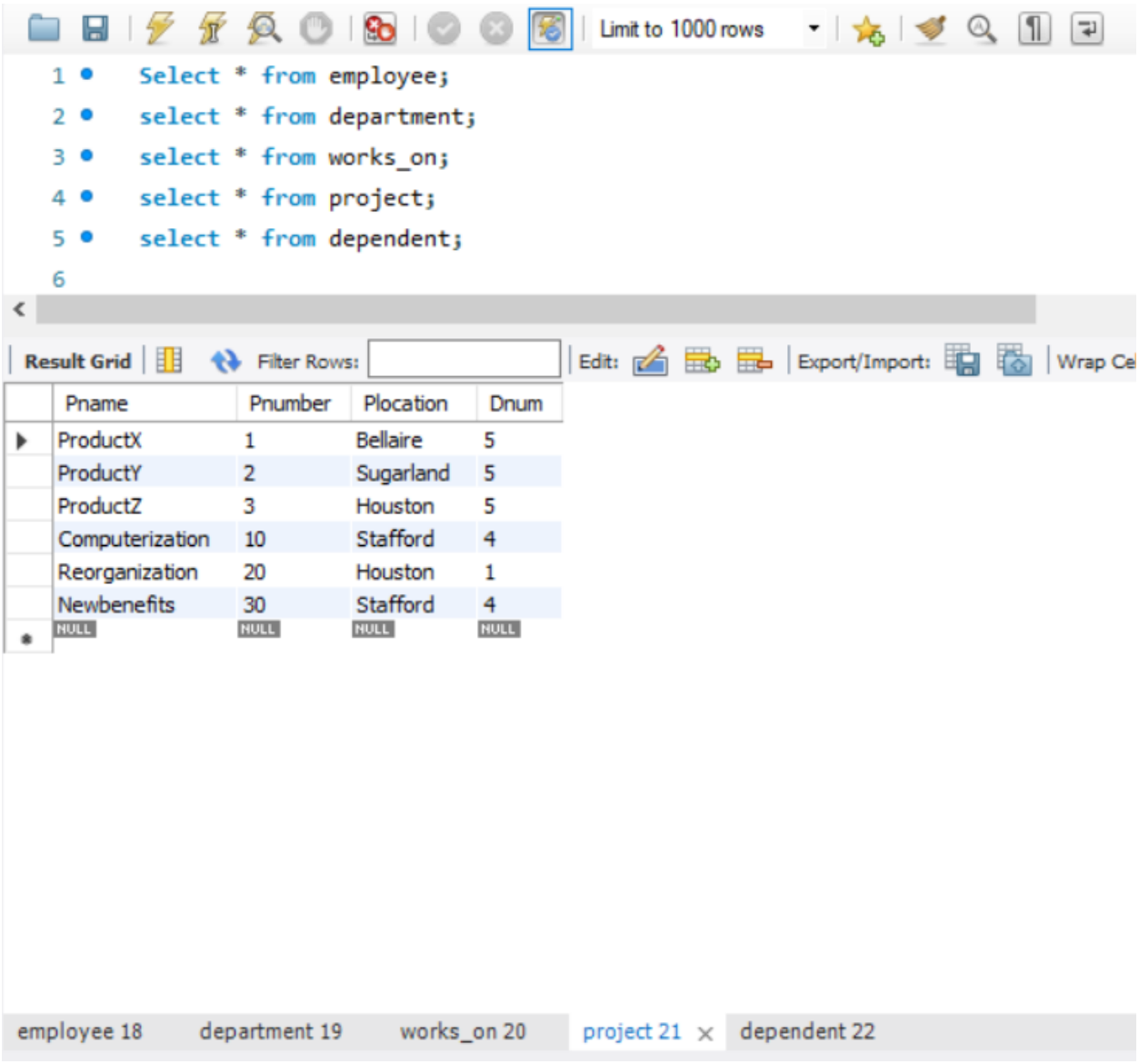
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

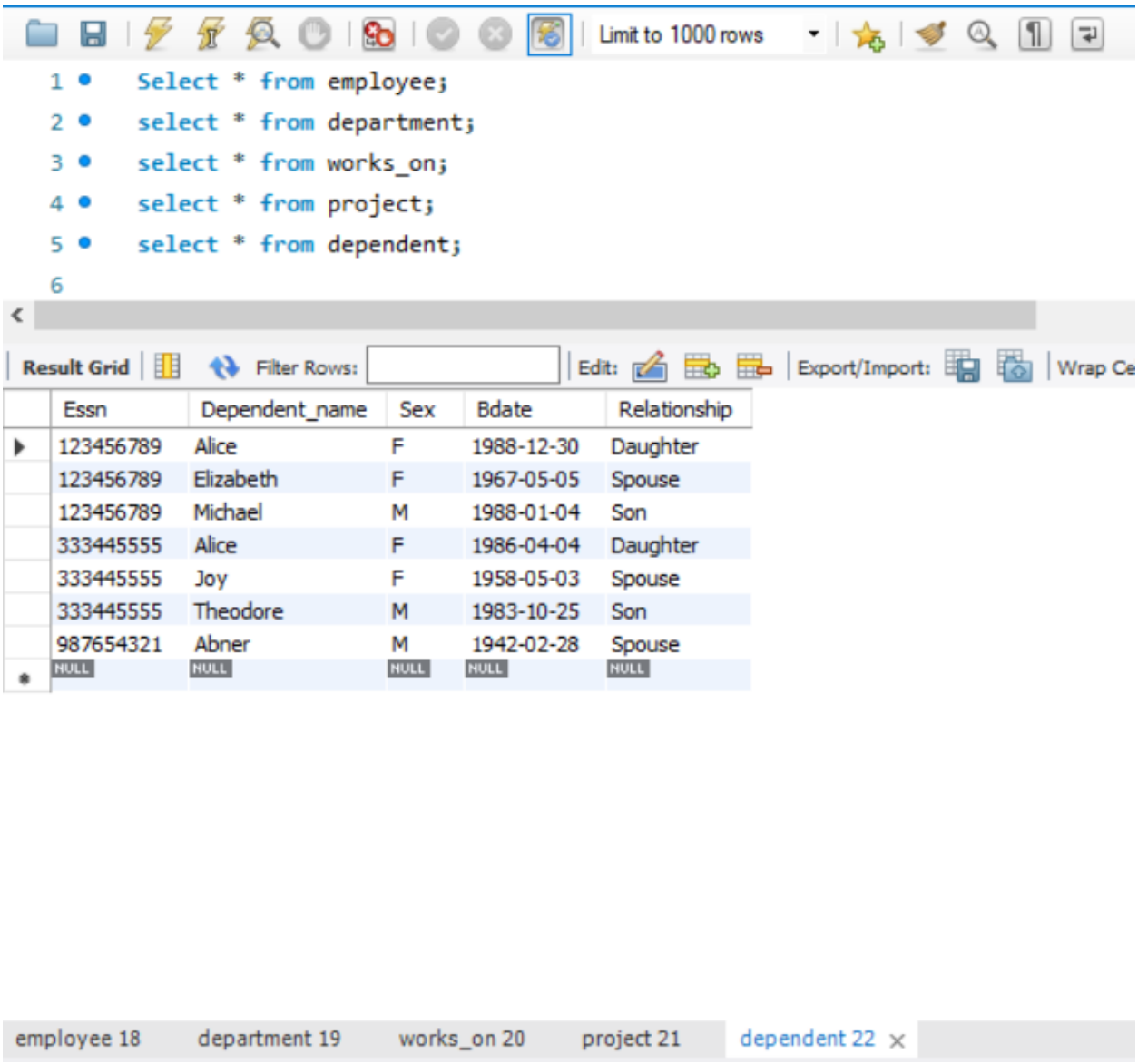
Fname	Minit	Lname	Ssn	Bdate	Address	Sex	salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1965-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

employee 18 × | department 19 | works_on 20 | project 21 | dependent 22


Limit to 1000 rows
1 Select * from employee;
2 select * from department;
3 select * from works_on;
4 select * from project;
5 select * from dependent;
6
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Co
Dname Dnumber Mgr_ssn Mgr_start_date
Headquarters 1 888665555 1981-06-19
Administration 4 987654321 1995-01-01
Research 5 333445555 1988-05-22
NULL NULL NULL NULL
employee 18
department 19
works_on 20
project 21
dependent 22


Limit to 1000 rows
1 Select * from employee;
2 select * from department;
3 select * from works_on;
4 select * from project;
5 select * from dependent;
6
Result Grid
Filter Rows:
Edit:
Export/Import:
Essn Pno Hours
123456789 1 32.5
123456789 2 7.5
333445555 2 10.0
333445555 3 10.0
333445555 10 10.0
333445555 20 10.0
453453453 1 20.0
453453453 2 20.0
666884444 3 40.0
888665555 20 NULL
987654321 20 15.0
987654321 30 20.0
987987987 10 35.0
987987987 30 5.0
999887777 10 10.0
999887777 30 30.0
NULL NULL NULL
employee 18
department 19
works_on 20
project 21
dependent 22


Limit to 1000 rows
1 Select * from employee;
2 select * from department;
3 select * from works_on;
4 select * from project;
5 select * from dependent;
6
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Ce
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
NULL NULL NULL NULL
employee 18
department 19
works_on 20
project 21
dependent 22



```
1  Select * from employee;
2  select * from department;
3  select * from works_on;
4  select * from project;
5  select * from dependent;
6
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Ce

Essn	Dependent_name	Sex	Bdate	Relationship
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse
123456789	Michael	M	1988-01-04	Son
333445555	Alice	F	1986-04-04	Daughter
333445555	Joy	F	1958-05-03	Spouse
333445555	Theodore	M	1983-10-25	Son
987654321	Abner	M	1942-02-28	Spouse
NULL	NULL	NULL	NULL	NULL

employee 18 | department 19 | works_on 20 | project 21 | dependent 22

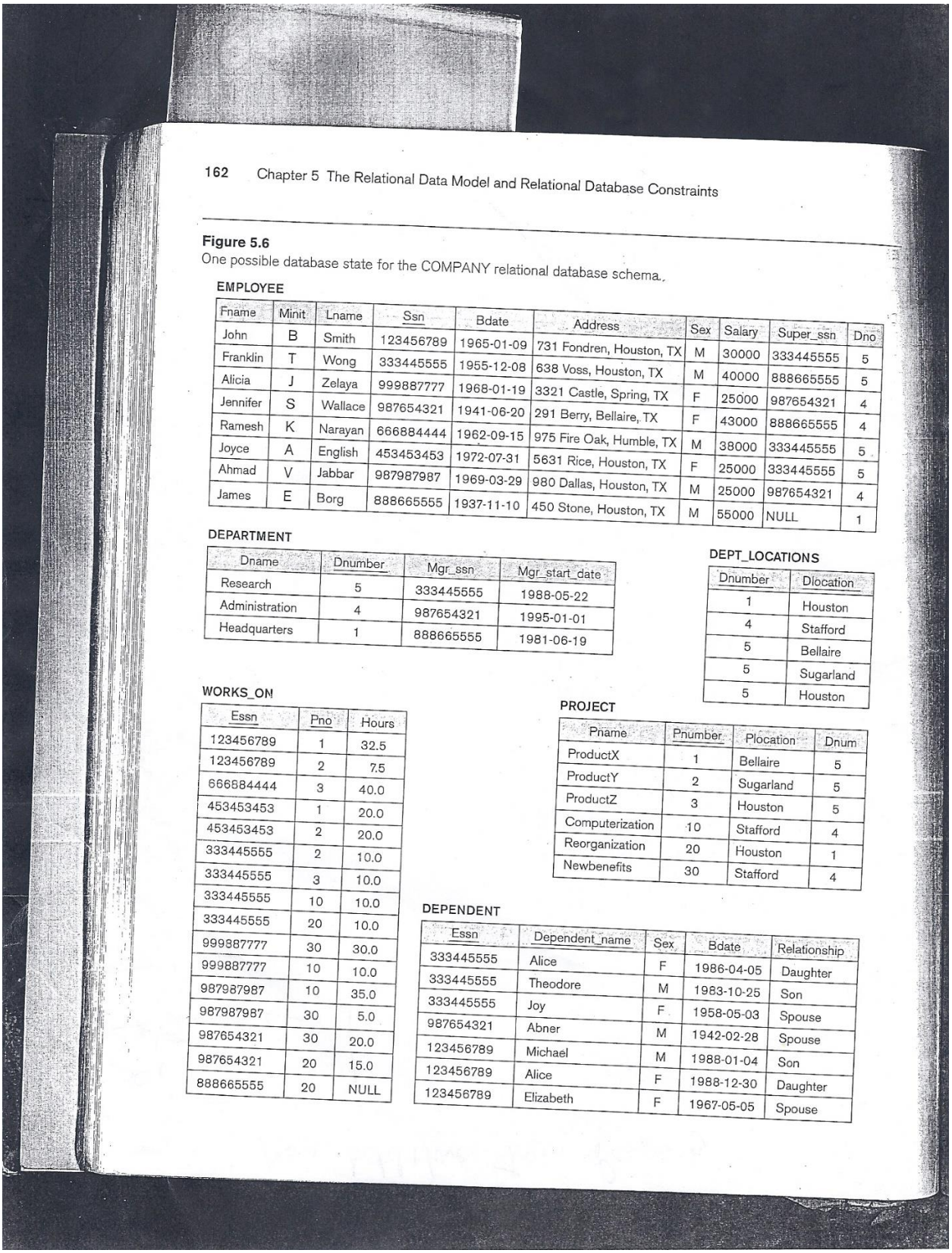


Figure 5.6
One possible database state for the COMPANY relational database schema.

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1955-12-08	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

DEPARTMENT

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

DEPT_LOCATIONS

Dnumber	Dlocation
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

WORKS_ON

Essn	Pno	Hours
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	NULL

PROJECT

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

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship
333445555	Alice	F	1986-04-05	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