

1.

- Referans bütünlüğü kısıtı (Referential integrity constraint) ihlali (2 Nolu bir department yok, Project tablosuna ekleyemeyiz)
- Anahtar kısıtı (key constraint) ihlali (4 Nolu department var). Bir başka ihlal referans bütünlüğü kısıtı (referential integrity constraint) ihlali (943775543 ssn e sahip bir employee yok)
- Varlık bütünlüğü kısıtlaması (Entity integrity constraint) ihlali (Key NULL olamaz). Bir başka ihlal referans bütünlüğü kısıtı (referential integrity constraint) ihlali (677678989 ssn e sahip employee yok).
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PROJECT

Pname	Pnumber	Plocation	Dnum
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4
ProductA	4	Bellaire	2

WORKS\_ON

Essn	Pno	Hours
123456789	<b>20</b>	32.5
123456789	2	7.5
666884444	3	40
453453453	<b>20</b>	20
453453453	2	20
333445555	2	10
333445555	3	10
333445555	10	10
333445555	20	10
999887777	30	30
999887777	10	10
987987987	10	35
987987987	30	5
987654321	30	20
987654321	20	15
888665555	20	NULL

e.

#### DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Headquarters	1	888665555	1981-06-19

#### 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	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	1
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	1
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1

#### DEPT\_LOCATIONS

Dnumber	Dlocation
1	Houston
5	Bellaire
5	Sugarland
5	Houston

#### PROJECT

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	1
Reorganization	20	Houston	1
Newbenefits	30	Stafford	1

f.

#### DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	<b>2</b>	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

#### 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	<b>2</b>
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	<b>2</b>
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	<b>2</b>
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1

#### PROJECT

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	<b>2</b>
Reorganization	20	Houston	1
Newbenefits	30	Stafford	<b>2</b>

#### DEPT\_LOCATIONS

Dnumber	Dlocation
1	Houston
<b>2</b>	Stafford
5	Bellaire
5	Sugarland
5	Houston

2.

a)

```
select Lname from Employee where salary > 30 000;
```

b)

```
select avg(salary) from employee, works_on, project where essn=ssn and pno=pnumber and Plocation='Stafford';
```

c)

```
select, mgr_ssn, sum(hours) from department, works_on where essn=mgr_ssn group by mgr_ssn;
```

d)

```
select P.pname from Project as P where NOT EXIST (select * from works_on as W where W.pno=P.Pnumber);
```

3.

a.

a1	a2	a3	a4	b1	b2	b3
2	3	4	5	4	12	11
1	8	12	3	4	12	11
5	6	7	4	4	12	11

b.

a1	a2	a3	a4	b1	b2	b3
2	3	4	5	NULL	NULL	NULL
1	8	12	3	2	4	3
5	6	7	4	NULL	NULL	NULL
NULL	NULL	NULL	NULL	4	12	11

c.

a1	a2	a3	a4	b1	b2	b3
2	3	4	5	2	4	3

d.

b1	b2	b3
2	4	3
4	12	11
2	3	4
1	8	12
5	6	7

e.

d1	d2	d3
4	3	23
6	2	11
7	3	22

f.

c1
4

4.

a.

Name
Smith
Brown

b.

Student_number	SUM(Credit_hours)	Count(*)
17	7	2
8	14	4

c.

Name	Course Name	Course Number	Credit_hours	Semester	Year	Grade
Smith	Discrete Mathematics	MATH2410	3	Fall	08	B
Smith	Intro to Computer Science	CS1310	4	Fall	08	C

d. Boş Küme