

1. Retrieve the details of all the employee who have a dependent with the same last name and sex as the employee.

Ans:

```
SELECT E.Fname, E.Lname
FROM Employee AS E
WHERE E.Eno IN (SELECT E.Eno
FROM Dependent as D
WHERE E.Fname = D.Dep_name
AND E.Sex = D.Sex);
```

2. For each project on which more than two employees work, retrieve the project number, the project name, and the number of employees who work on the project

Ans:

```
SELECT Pno, Pname, COUNT (*)
FROM Project as P, Works_no as W
WHERE P.Pno = W.Pno GROUP BY Pno, Pname HAVING COUNT (*) > 2
```

3. For each department that has more than 3 employees, retrieve the department number and the number of employees who are making more than Rs50,000

Ans:

```
SELECT Dno, COUNT (*)
FROM Department as D, Employee as E
WHERE D.Dno = E.Dno AND E.Salary> 50000
AND E.Dno IN (SELECT Dno
FROM Employee
GROUP BY Dno
HAVING COUNT (*) > 3)

GROUP BY D.Dno;
```

4. Retrieve details of all the employees and their dependents who has been managers with department more than once and has more than 10 employees.

Ans:

Select * from Employee as E

Where E.Eno in (Select Eno from Dependent as D where Relation = 'Manager' GROUP BY Relation having count(*)>1)

Group by D.Eno having count(*)>10;

5. Retrieve the department details with more than one project, where these projects are located in multiple locations.

Ans :

Select * from Department

Where Dno in (select Dnum FROM Project WHERE Pno in (select Pno from Project GROUP BY Pno where count(*)>1)

GROUP BY dnum where count(*)>1)

Normalization:

1. Convert the table into 1nf, 2nf, 3nf

Ans:

1nf

Assuming all the values in the table are atomic values.

2nf

Check the Functional Dependencies:

1. PropertyID → CountyName, Lot#, Area, Price, TaxRate PropertyID is a (super)key -- OK
2. CountyName, Lot# → PropertyID, Area, Price, TaxRate CountyName, Lot# is a (super)key --- OK
3. CountyName → TaxRate (A) CountyName is not a superkey (B) TaxRate is not part of a key

Violation!!!

CountryName	Plot
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PropertyId	Plot	Area	Price
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3nf

Check the Functional Dependencies:

1. PropertyID \rightarrow CountyName, Lot#, Area, Price, TaxRate PropertyID is a (super)key in R2 --- OK
2. CountyName, Lot# \rightarrow PropertyID, Area, Price, TaxRate CountyName, Lot# is a (super)key in R2 --- OK
3. CountyName \rightarrow TaxRate CountyName is a (super)key in R1 --- OK
4. Area \rightarrow Price Area is a not a (super)key Price is not part of a key Violation !!!

Decomposing :-

CountryName	Plot
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Area	Price
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PropertyId	CountryName	Plot
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