Nepal College Of Information Technology
DBMS
Assignment-3 Solution

1. Consider the insurance database of Figure1 below, where the primary keys are underlined. Construct the following SQL queries for this relational database.

person (*driver-id*, *name*, *address*)
car (*license*, *model*, *year*)
accident (*report-number*, *date*, *location*)
owns (*driver-id*, *license*)
participated (*driver-id*, *car*, *report-number*, *damage-amount*)

fig1: Insurance database

a. Find the total number of people who owned cars that were involved in accidents in 2020.
b. Find the number of accidents in which the cars belonging to “Black Smith” were involved.
c. Delete the **Range Rover** belonging to “Black Smith”.
d. Update the damage amount for the car with license number “AABB2001” in the accident with report number “BR2197” to $4000.

Answers:

a. Find the total number of people who owned cars that were involved in accidents in 2020.

```
select count (distinct driver-id)
from accident, participated,
where accident.report-number = participated.report-number
and date between   ’2020-01-01’ and  ’2020-12-31’.
                 OR
 SELECT COUNT(driver-id)
FROM  accident NATURAL JOIN  participated
 WHERE date between “2020-1-1” AND  “2020-12-30”;
```

b. Find the number of accidents in which the cars belonging to “Black Smith” were involved.

```
select count (distinct *)
from accident
where exists
(select *
from participated, person
where participated.driver-id = person.driver-id
and person.name = ’Black  Smith’
and accident.report-number = participated.report-number)
```

c. Delete the “Ranje Rover” belonging to “Black Smith”.

```
delete from car
where model = ’Ranje Rover’ and license in
          (select license
          from person p, owns o
          where p.name = ’John Smith’ and p.driver-id = o.driver-id)
                 OR
DELETE FROM person NATURAL JOIN car NATURAL JOIN owns
WHERE name=”Black Smith” AND model=”Range Rover”;
```

d. Update the damage amount for the car with license number “AABB2001” in the accident with report number “BR2197” to $4000.

```
update participated
set damage-amount = 4000
where report-number = “BR2197” and driver-id in
(select driver-id
from owns
where license = “AABB2001”)
```

2. Consider the employee database of Figure 2, where the primary keys are underlined. Give an expression in SQL for each of the following queries.

employee (*employee-name*, *street*, *city*)
works (*employee-name*, *company-name*, *salary*)
company (*company-name*, *city*)
manages (*employee-name*, *manager-name*)

Figure 2. Employee database.

a. Find the names of all employees who work for First Bank Corporation.
b. Find the names and cities of residence of all employees who work for First Bank Corporation.
c. Find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000.
d. Find all employees in the database who live in the same cities as the companies for which they work.
e. Find all employees in the database who live in the same cities and on the same streets as do their managers.
f. Find all employees in the database who do not work for First Bank Corporation.
g. Find all employees in the database who earn more than each employee of Small Bank Corporation.
h. Find the company that has the smallest payroll.
i. Find those companies whose employees earn a higher salary, on average, than the average salary at First Bank Corporation.
j. Modify the database so that Jones now lives in Newtown.
k. Give all employees of First Bank Corporation a 10 percent raise.
l. Give all managers of First Bank Corporation a 10 percent raise.
m. Delete all tuples in the *works* relation for employees of Small Bank Corporation.

Answers:

a. Find the names of all employees who work for First Bank Corporation.

```
select employee-name
from works
where company-name = ’First Bank Corporation’
```

b. Find the names and cities of residence of all employees who work for First Bank Corporation.

```
select e.employee-name, city
from employee e, works w
where w.company-name = ’First Bank Corporation’ and
w.employee-name = e.employee-name
```

c. Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000.

```
select *
from employee
```

```
where employee-name in
(select employee-name
from works
where company-name = ’First Bank Corporation’ and salary > 10000)
```

d. Find all employees in the database who live in the same cities as the companies for which they work.

```
select e.employee-name
from employee e, works w, company c
where e.employee-name = w.employee-name and e.city = c.city and
w.company -name = c.company -name
```

e. Find all employees in the database who live in the same cities and on the same streets as do their managers.

```
select P.employee-name
from employee P, employee R, manages M
where P.employee-name = M.employee-name and
M.manager-name = R.employee-name and
P.street = R.street and P.city = R.city
        OR
.CREATE VIEW managerInfo AS  (SELECT employee-name ,street,city FROM  employee,manages
                                  WHERE employee.employee-name=manages.managername);
Now join managerinfo with employee
Select e.employee-name
From employee e, managerinfo m
Where e.employee-name=m.employee-name and e.city=m.city and e.street=m.street
```

f. Find all employees in the database who do not work for First Bank Corporation.

```
select employee-name
from works
where company-name   <>’First Bank Corporation’
```

g. Find all employees in the database who earn more than every employee of Small Bank Corporation.

```
select employee-name
from works
where salary > all
(select salary
from works
where company-name = ’Small Bank Corporation’)
```

h. Find the company that has the smallest payroll.

```
select company-name
from works
group by company-name
having sum (salary) <= all (select sum (salary)
                             from works
                              group by company-name)

        OR
```

```
SELECT company-name,sum(salary) as payroll
FROM works GROUP BY company-name ORDER BY payroll  LIMIT 1;
```

i. Find those companies whose employees earn a higher salary, on average,than the average salary at First Bank Corporation.

```
select company-name
from works
group by company-name
having avg (salary) > (select avg (salary)
                       from works
                        where company-name = ’First Bank Corporation’)
```

j. Modify the database so that Jones now lives in Newtown.

```
update employee
set city = ’Newton’
where person-name = ’Jones’
```

k. Give all employees of First Bank Corporation a 10-percent raise.

```
update works
set salary = salary * 1.1
where company-name = ’First Bank Corporation’
```

l. Give all managers of First Bank Corporation a 10-percent raise.

```
update works
set salary = salary * 1.1
where employee-name in (select manager-name  from manages)
and company-name = ’First Bank Corporation’.
```

m. Delete all tuples in the *works* relation for employees of Small Bank Corporation.

```
delete from works
where company-name = ’Small Bank Corporation’
```