Nepal College Of Information Technology
DBMS
Assignment-2 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 2015.
b. Find the number of accidents in which the cars belonging to "John Smith" were involved.
c. Delete the **Range Rover** belonging to "John Smith".
d. Update the damage amount for the car with license number "AABB2000" in the accident with report number "AR2197" to $3000.

Answers:

a. Find the total number of people who owned cars that were involved in accidents in 2015.

```
select count (distinct name)
from accident, participated, person
where accident.report-number = participated.report-number
and participated.driver-id = person.driver-id
and date between date '2015-01-01' and date '2015-12-31'
```

b. Find the number of accidents in which the cars belonging to "John Smith" were involved.

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

c. Delete the "Ranje Rover" belonging to "John Smith".

```
delete 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)
```

d. Update the damage amount for the car with license number "AABB2000" in the accident with report number "AR2197" to $3000.

```
update participated
set damage-amount = 3000
```

where *report-number* = "AR2197" **and** *driver-id* **in**
(**select** *driver-id*
from *owns*
where *license* = "AABB2000")

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*

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

select *employee-name*
from *works*
where *company-name* $\neq$ '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*)

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 *works*
where *company-name* = 'Small Bank Corporation'