

Business Data Management (Fall 2017)

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SQL Practice Test

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For the following relation schema:

- *Employee* (*employee-name*, *street*, *city*)
- *Works* (*employee-name*, *company-name*, *salary*)
- *Company* (*company-name*, *city*)
- *Manages* (*employee-name*, *manager-name*)

Give an expression in SQL for each of the following queries: **(10 points)**

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

Solution:

```
SELECT EM.employee-name, EM.street, EM.city
FROM Employee EM, Works W, Company C
WHERE EM.employee-name = W.employee-name
AND C.company-name = 'First Bank Corporation' AND W.salary > 10000
```

- b) Find the names of all employees in the database who live in the same cities as the companies for which they work.

Solution:

```
SELECT EM.employee-name
FROM Employee EM, Company C, Works W
WHERE EM.employee-name = W.employee-name AND W.company-name =
C.company-name AND EM.city = C.city
```

- c) Find the names of all employees in the database who live in the same cities and on the same streets as do their managers.

Solution:

```
SELECT EM.employee-name
FROM Employee EM, Employee Y, Manages M
WHERE EM.employee-name = M.employee-name AND M.manager-name =
Y.employee-name AND EM.street = Y.street AND EM.city = Y.city
```

- d) Find the names of all employees in the database who do not work for 'First Bank Corporation'. Assume that all people work for exactly one company.

Solution:

```
SELECT W.employee-name
FROM Works W
WHERE W.company-name <> 'First Bank Corporation'
```

- e) Find the names of all employees in the database who earn more than every employee of 'Small Bank Corporation'. Assume that all people work for at most one company.

Solution:

```
SELECT W.employee-name
FROM Works W
WHERE W.salary > all (SELECT W.salary
                      FROM Works W
                      WHERE W.company-name = 'Small Bank Corporation')
```

- f) Assume that the companies may be located in several cities. Find all companies located in every city in which 'Small Bank Corporation' is located.

Solution:

```
SELECT C.company-name
FROM Company C WHERE C.city IN
(SELECT C.city from Company C WHERE C.company-name = 'Small Bank
Corporation')
```

- g) Find the names of all employees who earn more than the average salary of all employees of their company. Assume that all people work for at most one company.

Solution:

```
SELECT W.employee-name
FROM Works W
WHERE W.salary > (SELECT avg(W.salary)
                  FROM Works X where W.company-name = X.company-name)
```

h) Find the name of the company that has the smallest payroll.

Solution:

```
SELECT W.company-name
FROM Works W
GROUP BY W.company-name
WHERE sum(W.salary) <= all (SELECT sum(W.salary)
FROM Works W
GROUP BY W.company-name)
```