employee (*ID*, *person_name, street, city*)
company (*company_name, city*)
works (ID, *company_name, salary*)
manages (ID, manager_id)

Figure 1

Consider the database in Figure 1, where the primary keys are underlined. The *manages* relation describes the manager (manager_id) of a certain employee (ID). Each manager is also an employee himself (herself). Construct the following SQL queries for this relational database.

1. Find the ID, name, and manager of each employee who works for “FirstBank”.

```
select e.ID,e.person_name,m.manager_id
from employee as e,work as w,manages as m
where e.ID = w.ID and w.company_name = “FirstBank” and e.ID = m.ID
```

2. Find the ID of each employee who does not work for “FirstBank”.

```
select e.ID
from employee as e
where e.ID not in( select ID
                   from work
                   where company_name = “FirstBank”)
```

3. Find the ID and name of each employee who lives in the same city as the location of the company for which the employee works.

```
select e.ID,e.person_name
from employee as e,work as w,company as c
where e.ID = w.ID and w.company_name = c.company_name,e.city = c.city
```

4. Find the ID of each employee who earns more than at least one employee of “SmallBank”.

(1) Please use “tuple variable”.

```
select e1.ID
from employee as e1, work works as w1
where e1.ID = w1.ID and w1.salary > any (select salary
                                        from works as w2
                                        where w2.company_name = “SmallBank)”
```

(2) Please use “nested subquery” in the WHERE clause.

```
select e1.ID
from employee as e1,works as w1
where e1.ID = w1.ID and w1.salary >(select min(salary)
                                    from works as w2
                                    where w2.company_name = “SmallBnk)”
```

5. Find the name of each company whose employees earn a higher salary, on average, than the average salary at “FirstBank”.

(1) Please use “having”

```
select w.company_name
form works as w
group by w.company_name
having avg(w.salary) > (select avg(salary)
                        from works
                        where company_name = “FirstBank”)
```

(2) Please use “with”.

```
with SalaryAverages as( select company_name , avg(salary) as avg_salary
                        from works
                        group by company_name)
select s.company_name
from SalaryAverages as s
where s.avh_salary > (select avg_salary
                      from SalaryAverages
                      where company_name = “FirstBank”)
```

6. Delete all tuples in the *works* relation for employees of “SmallBank”.

```
delete from works
where company_name = “SmallBank”
```

7. Add a new employee with the ID as “E01” and the name as “John”, but the address is currently unknown.

```
insert into employee (ID, person_name)
values (‘E01’,’John’)
```

8. Give each employee of “FirstBank” a 10-percent raise of salaries unless the salary becomes greater than $100000; in such cases, give only a 3-percent raise.

```
update works
set salary = case
    when salary * 1.1>100000 then salary * 1.03
    else salary * 1.1
end
where ID in (select ID
               from works
               where company_name = “FirstBank”)
```

Note:

1. Please submit your homework in a single PDF file to Tronclass before 2023/10/25 23:59 (星期三)

2. We do NOT accept late submission for this homework.