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 works.ID, person_name, manager_id
   from employee, works, manages
   where works.ID = employee.ID **and** works.ID = manages.ID **and** company_name = 'FirstBank'
2. Find the ID of each employee who does not work for "FirstBank".
   select ID
   from works
   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 ID, person_name
   from employee, works, company
   where works.ID = employee.ID **and** works.ID = company.ID **and** employee.city = company.city
4. Find the ID of each employee who earns more than at least one employee of "SmallBank".
   (1) Please use "tuple variable".
   select T.ID
   from works **as** S, works **as** T
   where S.company_name = 'SmallBank' **and** S.salary < T.salary
   (2) Please use "nested subquery" in the WHERE clause.
   select ID
   from works
   where salary > **some** (**select** salary
   from works
   where company_name = 'SmallBank')

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 company_name
from works
group by company_name
having avg(salary) > (select avg(salary)
                      from works
                      where company_name = ‘FirstBank’)
```

   (2) Please use “with”.

```
with firstbank_avg (value) as
     (select avg(salary)
      from works
      where company_name = ‘FirstBank’)
select company_name
from works, firstbank_avg
group by company_name
where salary > firstbank_avg.value
```

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
    values (‘E01’, ‘John’, null, null)
```

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
```

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.