BMEG3120: Exercise List 3

Assume that we have these tables:

- **CUST**: schema (cid, name), where *cid* and *name* are a customer’s id and name, respectively. The table has a candidate key {cid}.

- **BRANCH**: schema (bid, city), where each tuple represents a branch of HSBC. Specifically, *bid* is the branch’s id, and *city* is the city where the branch is located. The table has a candidate key {bid}.

- **ACCOUNT**: schema (cid, bid, balance), where each tuple represents an account. Specifically, *cid* is the customer id of the account’s owner, *bid* is the id of the branch where the account was opened, and the meaning of *balance* is obvious. The table has a candidate key {cid, bid}.

Write SQL queries to solve the following problems.

**Problem 1.** Find the balances of all the accounts owned by the customer(s) named John.

**Answer.**
select balance
from CUST, ACCOUNT, BRANCH
where CUST.cid = ACCOUNT.cid and ACCOUNT.bid = BRANCH.bid and name = 'John'

**Problem 2.** Find the cids of the customers that have accounts only in HK.

**Answer.**
(select cid
from ACCOUNT, BRANCH
where ACCOUNT.bid = BRANCH.bid and city = 'HK')
minus
(select cid
from ACCOUNT, BRANCH
where ACCOUNT.bid = BRANCH.bid and city <> 'HK')

**Problem 3.** Find the cids of the customers that have accounts in both NY and HK, but not in any other city.

**Answer.**
((select cid
from ACCOUNT, BRANCH
where ACCOUNT.bid = BRANCH.bid and city = 'HK')
intersect
(select cid
from ACCOUNT, BRANCH
where ACCOUNT.bid = BRANCH.bid and city = 'NY'))
minus
(select cid
from ACCOUNT, BRANCH
where ACCOUNT.bid = BRANCH.bid and city <> 'HK' and city <> 'NY')


Problem 4*. Find the cids of the customers that have accounts in all the cities where HSBC has a branch.

Answer.
(select cid from ACCOUNT)
minus
(select cid from
((select * from (select cid from ACCOUNT), (select city from BRANCH))
minus
(select cid, city from ACCOUNT, BRANCH where ACCOUNT.bid = BRANCH.bid))