

### Exercise 3

1)  $\Pi_{city, streetaddr} (\sigma_{province = 'PQ'} (Branch))$

2)  $\Pi_{custid} (\sigma_{balance > 500} (\sigma_{atype = 'savings'} (Accounts)))$

3)  $\Pi_{acctid} (Customer \bowtie_{\substack{customer.name = 'Madea Fakename' \\ \wedge customer.custid = Account.custid \\ \wedge Account.atype = 'savings'}} Account)$

4)  $\Pi_{custid} (\sigma_{atype = 'checking' \wedge startdate - '2017-01-01' \geq 0} (Accounts))$

$\cap \Pi_{custid} (\sigma_{atype = 'savings' \wedge startdate - '2017-01-01' \geq 0} (Accounts))$

5)  $\Pi_{acctid} (\sigma_{\substack{transdate = '2016-12-22' \\ \wedge transype = 'deposit'}} (Transactions)) -$

$\Pi_{acctid} (\sigma_{\substack{transdate = '2016-12-22' \\ \wedge transype = 'withdraw'}} (Transactions))$

6)  $\rho(\text{newBranch}(\text{Branch Address}), \text{Branch}(\text{streetAddr}))$

$\rho(T1, \text{Employees} \bowtie_{\text{employees.empid} = \text{newbranch.mgrid}} \text{newBranch})$

$\rho(T2, \text{Customer} \bowtie_{\substack{customer.name = T1.name \\ \wedge customer.streetaddr = T1.streetaddr \\ \wedge customer.city = T1.city \\ \wedge customer.province = T1.province}} T1)$

$\rho(T3, \text{Account} \bowtie_{\substack{Account.custid = T2.custid \\ \wedge Account.atype = 'checking' \\ \wedge Account.branchid = T2.branchid}} T2)$

$\Pi_{name, branchAddress, city, province} (T3)$