DBMS Tutorial 17/10/19

1. Find the loan number, branch, amount of loans of greater than or equal to 10000 amount.
2. Find the loan number for each loan of an amount greater or equal to 10000
3. Find the names of all customers who have a loan and an account at the bank.
4. Find the names of all customers having a loan at the “ABC” branch.
5. Find the last names and hire dates of employees who make more than $100000.
6. For each project for which department E21 is responsible, find the name of the employee in charge of that project.

   Domain Relational Calculus:

7. Find the loan number, branch, amount of loans of greater than or equal to 100 amount.
8. Find the loan number for each loan of an amount greater or equal to 150.
9. Find the names of all customers having a loan at the “Main” branch and find the loan amount .

DBMS Tutorial 1710/19 Solutions:

1. {t| t ∈ loan ∧ t[amount]>=10000}
2. {t| ∃ s ∈ loan(t[loan number] = s[loan number]
   ∧ s[amount]>=10000)}
3. {t | ∃ s ∈ borrower(t[customer-name] = s[customer-name])
   ∧ ∃ u ∈ depositor(t[customer-name] = u[customer-name])}
4. {t | ∃ s ∈ borrower(t[customer-name] = s[customer-name]
   ∧ ∃ u ∈ loan(u[branch-name] = "ABC" ∧ u[loan-number] = s[loan-number]))}
5. DRC:

   {(N, D) | ∃ S(Employeeh_, _, _, N, _, D, S) ∧ S > 100000)}

   or

   {(N, D) | ∃ E,F, M.W , S(Employeeh(E,F, M, N,W, D, S) ^S > 100000)}

   TRC:
   {W | ∃ E(E ∈ Employee ^ W [lastname} = E[lastname]
   ^ W [hiredate] = E[hiredate]
   ^ E[salary] > 100000)}
   or

   {W | ∃ E ∈ Employee(W [lastname] = E[lastname]
   ^W[hiredate] = E[hiredate]
   ^E[salary] > 100000)}

6. DRC:

   {(P, N) | ∃ E(Projecth(P, 'E210' , E, _)
   ^Employee(E, _, _, N, _, _, _))}

   Domain Relational Calculus:

7. {<l, b, a> | <l, b, a> ∈ loan ∧ (a ≥ 100)}
8. {<l> | ∃ b, a (<l, b, a> ∈ loan ∧ (a ≥ 150)}
9. {<c, a> | ∃ l (<c, l> ∈ borrower ∧ ∃ b (<l, b, a> ∈ loan ∧ (b = "Main")))}