**Database Engineering**

**Consider following bank schema and solve following questions using SQL.**

Branch-schema = (branch-name, branch-city, assets)  
Customer-schema = (customer-name, customer-street, customer-city)  
Loan-schema = (loan-number, branch-name, amount)  
Borrower-schema = (customer-name, loan-number)  
Account-schema = (account-number, branch-name, balance)  
Depositor-schema = (customer-name, account-number)

1. Find the names of all branches in the loan relation
2. Find all loan numbers for loans made at the Perryridge branch with loan amounts greater than 1200.
3. Find the loan number of those loans with loan amounts between 9000 and 10000.
4. For all customers who have a loan from the bank, find their names, loan numbers and loan amount.
5. Find the customer names, loan numbers, and loan amounts for all loans at the Perryridge branch.
6. For all customers who have a loan from the bank, find their names, loan numbers, and loan amount.
7. Find the names of all customers whose street address includes the substring ‘Main’.
8. List in alphabetic order all customers who have a loan at the Perryridge branch.
9. List the entire loan relation in descending order of amount.
10. Find all customers having a loan, an account, or both at the bank.
11. Find all customers who have both a loan and an account at the bank.
12. Find all customers who have an account but no loan at the bank.
13. Find the average account balance at the Perryridge branch.
14. Find the average account balance at each branch.
15. Find the number of depositors for each branch.
16. Find those branches where the average account balance is more than 1200.
17. Find the number of tuples in the customer relation.
18. Find the average balance for each customer who lives in Kolhapur and has at least three accounts.
19. Find all loan numbers that appear in the loan relation with null values for amount.
20. Using subquery, find all customers who have both a loan and an account at the bank.
21. Using subquery, find all customers who have an account but no loan at the bank.
22. Using subquery , find all customers who have both an account and a loan at the Perryridge branch.
23. Select the names of customers who have a loan at the bank, and whose names are neither Smith nor Jones.
24. Find the names of all branches that have assets greater than those of at least one branch located in Kolhapur.
25. Find the names of all branches that have an asset value greater than that of each branch in Kolhapur.
26. Find the branch that has the highest average balance.
27. Find all customers who have at most one account at the Perryridge branch.
28. Create view all-customer consisting of branch names and the names of customers who have either an account or a loan at that branch.
29. Using the view all-customer, find all customers of the Perryridge branch.
30. Create view total-loan consisting of sum of the amounts of all the loans at each branch.
31. Find the maximum across all branches of the total balance at each branch.
32. Find all branches where the total account deposit is less than the average of the total account deposits at all branches.
33. Delete all account tuples in the Perryridge branch.
34. Delete all loans with loan amounts between 1300 and 1500.
35. Delete all account tuples at every branch located in Kolhapur.
36. Delete account tuple of ‘Smith’.
37. Delete the records of all accounts with balances below the average at the bank.
38. Update all balances by 5 percent.
39. Update balance by 5percent if it is greater than 30000.
40. Pay 5 percent interest on accounts whose balance is greater than average.
41. Update all accounts with balances over 10,000 by 6 percent interest, whereas all others by 5 percent.
42. Find all customers who have either an account or a loan (but not both) at the bank.

**Consider the following employee database, where the primary keys are underlined. Give an expression in SQL for each of the following queries.**employee (employee-name, street, city)  
works (employee-name, company-name, salary)  
company (company-name, city)

a. Find the names of all employees who work for First Bank Corporation.

b. Find the names and cities of residence of all employees who work for First Bank Corporation.  
c. Find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than 10,000.  
d. Find all employees in the database who live in the same cities as the companies for which they work.  
e. Find all employees in the database who do not work for First Bank Corporation.  
f. Find all employees in the database who earn more than each employee of Small Bank Corporation.  
g. Assume that the companies may be located in several cities. Find all companies located in every city in which Small Bank Corporation is located.  
h. Find all employees who earn more than the average salary of all employees of their company.  
i. Find the company that has the most employees.  
j. Find the company that has the smallest payroll.  
k. Find those companies whose employees earn a higher salary, on average, than the average salary at First Bank Corporation.  
l. Modify the database so that Jones now lives in Newtown.  
m. Give all employees of First Bank Corporation a 10 percent raise.  
n. Give all managers of First Bank Corporation a 10 percent raise.  
o. Delete all tuples in the works relation for employees of Small Bank Corporation.