

Use a text file to record all SQL commands for Parts 1, 2 and 3 and the results the system generates.

Part 1: Database Creation

Use Oracle SQL DDL language to create the bank-branch-customer database with 4 tables: bank, branch, account and customer. Your DDL statements should contain the following integrity constraints:

1. Bank numbers must be between 000 and 999 and bank numbers are unique
2. Bank and branch cities must be either London, Paris, New York, or Toronto
3. Branch numbers must be between 0000 and 9999 and are not unique as different banks can have the same branch number
4. Account numbers must be between 00000 and 99999 and are not unique
5. Customer numbers must be greater than 00000 and less than 99999 and are unique
6. Customer's status must be greater than 0 and less than 5
7. Account balance must be greater than 0 and less than 100,000

Due to the above constraints, you need to properly define primary keys and foreign keys. You have to use characters for bank numbers, branch numbers, account numbers, and customer numbers.

Part 2: Database Population

Use Oracle SQL DML language to populate the database that satisfies the following conditions. Note that in order to satisfy the conditions, you may have to query the database in order to get proper values into the tables.

1. The database should have 4 banks: New York Bank in New York with bank number B# 001, Bank of England in London with B# 002, Bank of France in Paris with B# 003, Royal Bank in Toronto with B# 004.
2. Each bank should have 3 branches in 3 different cities except its own bank location with branch number (T#) 0001, 0002, 0003.
3. Account number of each branch always starts with 00001 and increase by 1 whenever a new account is created.
4. There are only 6 customers in the database: John in London with status 1 and customer number (C#) 00001, Mary in Paris with status 2 and C# 00002, Tony in New York with status 2 and C# 00003, Joan in Toronto with status 1 and C# 00004, Sean in Ottawa with status 3 and C# 00005, and Ross in Berlin with status 2 and C# 00006
5. John does not have any accounts.
6. Mary has accounts with balance 1000 in every bank branch in her own city.
7. Tony has accounts with balance 1000 in every branch in Toronto.
8. Joan has only one account with balance 1000 in Toronto branch of New York Bank.
9. Sean has accounts with balance 1000 in a branch of every bank. However, he does not have more than one account in the same city.
10. Ross has accounts with balance 1000 in every branch of New York Bank.

Note that a person can only have an account at a branch of a bank not at the bank directly.

Part 3: Queries

Use Oracle SQL Query Language to express the following queries. You should include each question with its number, your SQL query and the query result in your assignment. If you include unnecessary tables or operations, you will lose marks.

1. Get all the cities in which both customers and banks are located.
2. Get all the cities in which customers are located but neither banks nor bank branches are located.
3. Get the customer name and bank name pairs such that the customer has an account in the bank.
4. Get customer names for customers who has accounts in Royal Bank.
5. Get customer names for customers who does not have accounts in Bank of England.
6. Get customer names for customers who does not have any accounts.
7. Get the bank name and branch city of Sean.
8. Get the names of customers who have more than one account.
9. Get the names of customers who has more than one account in a bank.
10. Get the names of customers who have an account in every bank
11. Get the names of banks and the total number of accounts the bank has.
12. Get the names of customers and their total balance. If a customer has no account, then the customer should still be displayed.