國立東華大學試題: 資料庫管理

Example: Banking Database

1. branch 分公司

branch-name	branch-city	assets
Brighton	Brooklyn	7100000
Downtown	Brooklyn	9000000
Mianus	Horseneck	400000
North Town	Rye	3700000
Perryridge	Horseneck	1700000
Pownal	Bennington	300000
Redwood	Palo Alto	2100000
Round Hill	Horseneck	8000000

2. customer 客戶(存款戶,貸款戶)

customer-name	customer-street	customer-city
Adams	Spring	Pittsfield
Brooks	Senator	Brooklyn
Curry	North	Rye
Glenn	Sand Hill	Woodside
Green	Walnut	Stamford
Hayes	Main	Harrison
Johnson	Alma	Palo Alto
Jones	Main	Harrison
Lindsay	Park	Pittsfield
Smith	North	Rye
Turner	Putnam	Stamford
Williams	Nassau	Princeton

3. depositor 存款戶

customer-name	account-number
Hayes	A-102
Johnson	A-101
Johnson	A-201
Jones	A-217
Lindsay	A-222
Smith	A-215
Turner	A-305

4. borrower 貸款戶

customer-name	loan-number
Adams	L-16
Curry	L-93
Hayes	L-15
Jackson	L-14
Jones	L-17
Smith	L-11
Smith	L-23
Williams	L-17

5. account 存款帳

account-number	branch-name	balance
A-101	Downtown	500
A-102	Perryridge	400
A-201	Brighton	900
A-215	Mianus	700
A-217	Brighton	750
A-222	Redwood	700
A-305	Round Hill	350

6. loan 貸款帳

loan-number	branch-name	amount
L-11	Round Hill	900
L-14	Downtown	1500
L-15	Perryridge	1500
L-16	Perryridge	1300
L-17	Downtown	1000
L-23	Redwood	2000
L-93	Mianus	500

Question 1: Write SQL and Output the Results (25%)

- Using the Example -- Banking Database, answering the queries:

a) Find the loan number for each loan of an amount greater than $1200

b) Find the names of all branches in the loan relations, and remove duplicates

c) How many tuples of the following statement?

> **select** *
> from ***borrower, loan***

e) How many tuples of the following statement? And what is the output?

> select distinct ***customer-name***
> from   ***borrower, loan***
> where ***borrower loan-number = loan.loan-number*** and
>   ***branch-name* = 'Perryridge'**

Question 2: Join Operations   (20%)

- Assume we have two relations: employee and ft-works as follows:

employee E

employee-name	street	city
Coyote	Toon	Hollywood
Rabbit	Tunnel	Carrotville
Smith	Revolver	Death Valley
Williams	Seaview	Seattle

ft-works F

employee-name	branch-name	salary
Coyote	Mesa	1500
Rabbit	Mesa	1300
Gates	Redmond	5300
Williams	Redmond	1500

a) Draw the result of natural join: employee ⋈ ft-works
E.employee-name = F.employee-name

b) Draw the result of right outer join: employee ⋈⊏ ft-works
E.employee-name = F.employee-name

c) Draw the result of full outer join: employee ⊐⋈⊏ ft-works
E.employee-name = F.employee-name

d) Write a SQL statement to do a) above.

Question 3: View

- Assume we have two queries: Q1 and Q2 as follows:

  - Q1.   create view big-customer as
           (select account-number, branch-name
           from account
           where balance > 500

  - Q2   select *
           from big-customer

a) Draw the result of Q2

b) If we want to add a new tuple to big-customer

   insert into big-customer values ('A-999', 'Hualien')

   Where the insertion values will be placed? Draw a table to show your answer.

c) What are the advantages of the View?

1. Query Processor
2. Storage Manager
3. Database administrator
4. Application programmers
5. DDL interpreter
6. Compiler and Linker
7. Buffer manager
8. Data dictionary
9. Index
10. Data
11. Naïve users
12. Application programs

low-level data stored