2.12

雷翔 2053932

a. 适当的主码是数据库设计者选择的来作为一个关系(表)中区分不同元组的最小集合。

b.

table	primary key	foreign key
branch	branch_name	
custom	ID	
loan	loan_number	branch_name from branch
borrower	ID, loan_number	loan_number from loan
account	account_number	branch_name from branch
deposit	ID, ~~loan_number~~ account_number	account_number from account

2.15

a. $\Pi_{loan\_number}(\sigma_{amount>10000}(loan))$

b. $\Pi_{ID}(\sigma_{deposit.account\_number = account.account\_number \text{ and } balance > 6000}(account \times depositor))$

c. $\Pi_{ID}(\sigma_{deposit.account\_number = account.account\_number \text{ and } account.branch\_name = 'Uptown' \text{ and } balance > 6000}(account \times depositor))$

3.15

a. With depositor_branches (depositor_id, branch_name)

as (select ID, branch.branch_name

~~from account.account_number = depositor.account_number~~

from branch, account, depositor

where account.account_number = depositor.account_number

and branch.branch_name = account.branch_name

and branch_city = 'Brooklyn')

拿到所有储户的所有帐户的分行信息.

select distinct depositor_id

from depositor_branches as S

where not exists (

→ (select branch_name from branch where branch_city = 'Brooklyn')

位于Brooklyn的所有分行名字 except

(select branch_name from depositor_branches as T

where S.depositor_id = T.depositor_id));

b. select branch_name, sum(amount)

from loan group by branch_name;

c. select branch_name

from branch

where assets >= some (select assets from branch

where branch_city = 'Brooklyn');

3.22

```
where 1 >= (select count(title)
            from course);
```

3.28

```
select distinct instructor.ID, name
from course, instructor, teaches
where course.dept_name = instructor.dept_name
  and instructor.ID = teaches.ID
  and teaches.course_id = course.course_id
order by name;
```