**2.12**

a、主码:branch( branch\_name, branch\_city，assets)

customer(ID,customer\_name,customer\_street,customer\_city)

loan(loan\_number,branch\_name,amount)

borrower(ID,loan\_number)

account(account\_number,branch\_name,balance)

depositor(ID,account\_number)

我认为ID和customer\_name都能唯一标识customer，但是为了能与loan、borrower、account、depositor关联，选择ID作为customer的主码；一个ID可能有多个loan\_number和account\_number，但loan\_number和account\_number不能重复，不论在不同的用户间还是银行间，因此选择loan\_number作为loan和borrower的主码，account\_number作为account和depositor的主码

b、外码：borrower/depositor引用customer的外码：ID

borrower引用loan的外码：loan\_number

depositor引用account的外码：account\_number

**2.15**

1. Пloan\_number(σamount>10000(loan))
2. ПID(σdepositor.account\_number=account.account\_number⋀balance>6000(depositor×account))
3. ПID(σdepositor.account\_number=account.account\_number⋀branch\_name=”Uptown”⋀balance>6000(depositor×account))

**3.15**

**a.**

**select** \*

**from** customer as T

**where** not exists(

(**select** branch\_name

**from** branch

**where** branch\_city=’Brooklyn’)except(**select** branch\_name

**from** T,depositor,account

**where** T.ID=depositor.ID and

depositor.account\_number=account.account\_number));

**b.**

**select** sum(amount)

**from** loan

**c.**

**select** branch\_name

**from** branch

**where** assets **> some** (**select** assets

**from** branch

**where** branch\_city=’Brooklyn’);

**3.22**

**where** (**select** **count**(title)

**from** course)=(**select count distinct**(title)

**from** course);

**3.28**

**select** name,instructor.ID

**from** instructor as T

**where** **not exists**(

(**select** course\_id

**from** course

**where** course.dept\_name=T.dept\_name)**except**(**select** course\_id

**from** teaches

**where** T.ID=teaches.ID));

**order** **by** name;