HW2

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2.7

a.

$\Pi_{branch-name}(\delta_{branch-city ='chicago'}(branch)) $

b.

$$\Pi_{ID}(\delta_{branch-name='Downtown'}(borrower \bowtie_{borrower.loan-number=loan.loan-number} loan))$$

2.12

a.

$$\begin{gathered} branch(\boldsymbol{branch-name}, branch-city, assets) \\ customer(\boldsymbol{ID}, customer-name, customer-street, customer-city) \\ loan(\boldsymbol{loan-number}, branch-name, amount) \\ borrower(\boldsymbol{ID}, loan-number) \\ account(\boldsymbol{account-number}, branch-name, balance) \\ depositor(\boldsymbol{ID, account-number}) \end{gathered} \tag{1}$$

b.

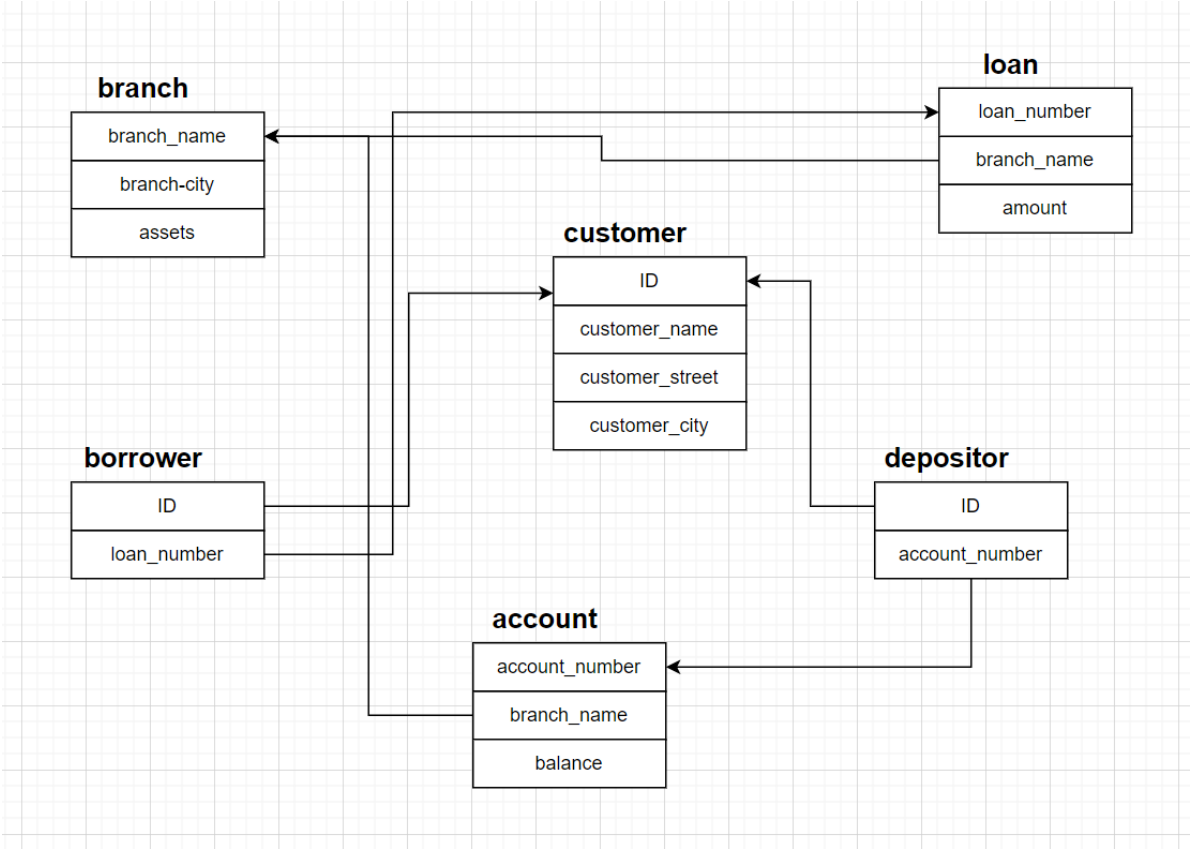
For account, branch name referencing branch.

For loan, branch name referencing branch.

For borrower,ID referencing customer and loan_number refercencing loan.

For depositer,ID refercencing customer and account_number refercencing account.

2.13



2.15

a.

$\Pi_{loan-number}(\delta_{amount>10000}(loan)) $

b.

$$\Pi_{ID}(\delta_{balance>6000}(depositer \bowtie account))$$

c.

$$\Pi_{ID}(\delta_{balance>6000 \wedge branch-name='Updown'}(depositer \bowtie account))$$

2.18

a.

$$\Pi_{ID,name}(\delta_{department='Physics'}(instructor))$$

b.

$$\Pi_{ID,name}(\delta_{buliding='Watson'}(instructor))$$

c.

$$\Pi_{ID,name}(\delta_{course-number>=1 \wedge course-department='Comp.sci'}(student \bowtie course))$$

d.

$$\Pi_{ID,name}(\delta_{course-number>=1 \wedge course-time-year='2018'}(student \bowtie course))$$

e.

$$\Pi_{ID,name}(\delta_{course-number=0 \wedge course-department='2018'}(student \bowtie course))$$