2.7

a. $\Pi_{branch\_name}(\sigma_{branch\_city="Chicago"}(branch))$

b. $\Pi_{ID}(\sigma_{branch\_name="Downtown"}(loan \bowtie_{loan.loan\_number=borrower.loan\_number} borrower))$

2.12
a.

Relation Name	Primary key
branch	branch_name
customer	ID
loan	loan_number
borrower	{ID, loan_number}
account	account_number
depositor	{ID, account_number}

b.

Relation Name	Foreign key
branch	No Foreign Key
customer	No Foreign Key
loan	branch_name
borrower	**ID** - a foreign key referencing **customer** relation, **loan_number** - a foreign key referencing **loan** relation
account	branch_name
depositor	**ID** - a foreign key referencing **customer** relation, **account_number** - a foreign key referencing **account** relation

2.13
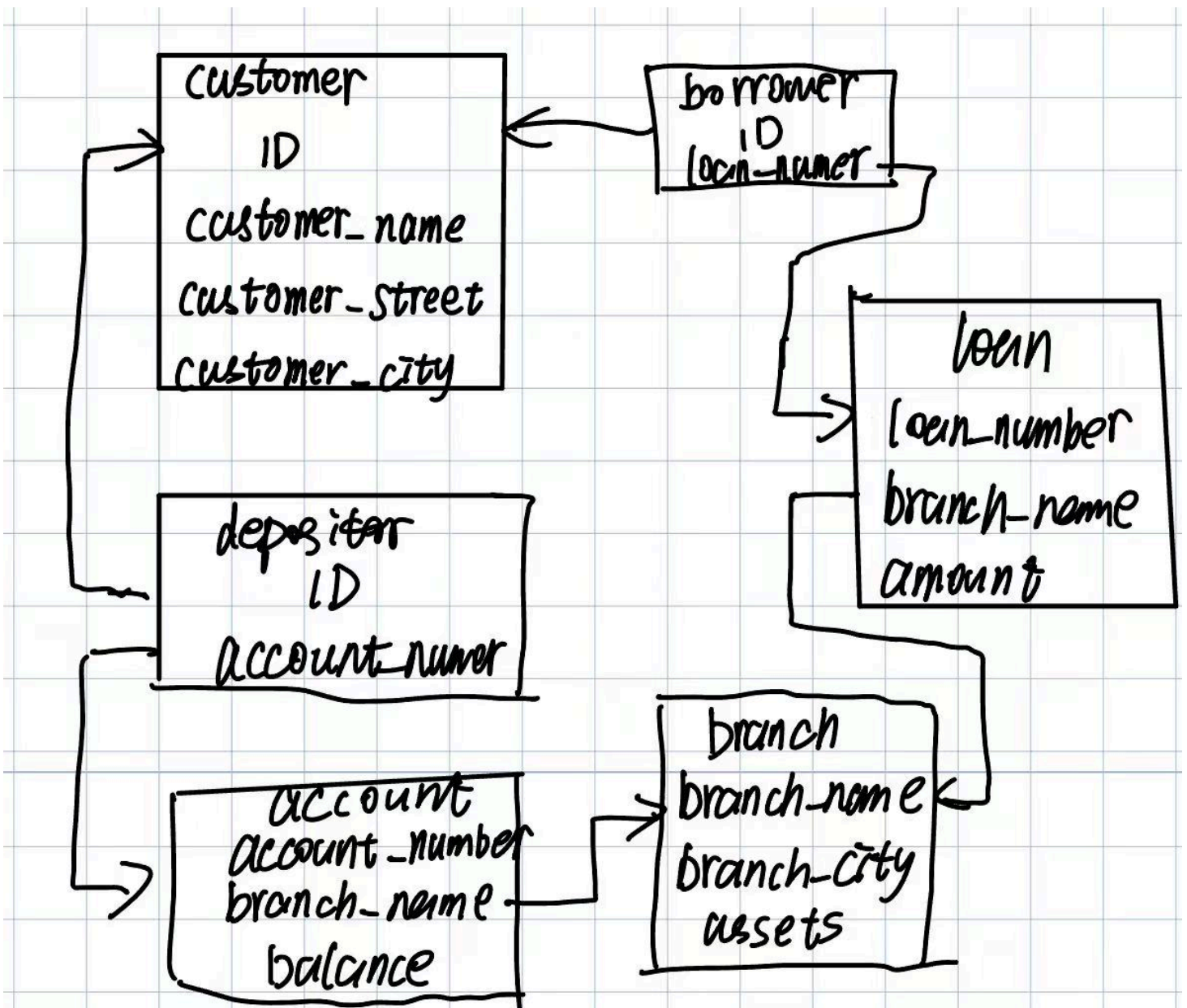
2.15

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

b. $\Pi_{ID}(depositor \bowtie_{depositor.account\_number=account.account\_number} (\sigma_{balance>6000}(account)))$

c. $\Pi_{ID}(depositor \bowtie_{depositor.account\_number=account.account\_number} (\sigma_{balance>6000 \wedge branch\_name="Uptown"}(account)))$