⋈, ⟗, ⟕, ⟖,

ρ, σ, ∏,

∪, ∩, X, –, ←,

2.8

a)

∏branch\_name(σbranch\_city = “Chicago”(branch))

b)

∏customer\_name(σbranch\_name=“Downtown” AND amount > 0(loan⋈borrower)

2.9

a)

branch-branch\_name

customer- customer\_name, customer\_street

loan-loan\_number

borrower-customer\_name, loan\_number

account- account\_number

depositor-customer\_name, account\_number

b)

branch\_name is a foreign key of loan

loan\_number is a foreign key of borrower

customer\_name is a foreign key of borrower

branch\_name is a foreign key of account

account\_number is a foreign key of depositor

customer\_name is a foreign key of depositor

2.12

a)

∏Person\_Name(σcompany\_name = “First Bank Corporation”(works))

b)

∏Person\_Name, City(σcompany\_name = “First Bank Corporation”(works⋈Employee))

c)

∏Person\_Name, City, Street(σcompany\_name = “First Bank Corporation” AND salary > 10,000(works⋈Employee))

2.13

a)

∏loan\_number( σamount > 10000(loan))

b)

∏customer\_name(σbalance > 6000(Account⋈Depositor))

c)

∏customer\_name(σbalance > 6000 AND branch\_name = “Uptown”(Account⋈Depositor))