Reduction of relationships

# many-to-many relationships

borrower(cust_id, loan_num)
PK: cut_id, loan_num
FK: borrower(cust_id) --> customer(id)
   borrower(loan_num) --> loan(loan_number)

depositor(cid, ano, access_date)
PK: cid, ano
FK: depositor(cid) --> customer(id)
   depositor(ano) --> account(account_number)

# many-to-one relationships

loanBranch(loan_number, branch_name)
PK: loan_number
FK: loanBranch(loan_number) --> loan(loan_number)
   loanBranch(branch_name) --branch(name)

custBanker(cust_id, emp_id, type)
PK: cust_id
FK: custBanker(cust_id) --> customer(id)
   custBanker(emp_id) --> employee(employee_id)

# relationships with roles

worksFor(worker_id, manager_id)
PK: worker_id
FK: worksFor(worker_id) --> employee(employee_id)
   worksFor(manager_id) --> employee(employee_id)

Reductions for entities

customer(id, name, street, city)
PK: id

branch(name, assets, city)
PK: name

loan(loan_number, amount)
PK: loan_number

# entity with derived and multi-valued attributes

employee(employee_id, employee_name, telephone_number, start_date)
PK: employee_id
derived attributes: employment_length

employee-dependent(employee_id, dependent_name)
PK: employee_id, dependent_name
FK: employee-dependent(employee_id) --> employee(employee_id)

# weak entity

payment(payment_date, amount, payment_number, loan_number)
PK: payment_number, loan_number
FK: payment(loan_number) --> loan(loan_number)

ISA relationship reduction - basic options

Option 1:
account(account_number, balance)
PK: account_number

savingsAccount(account_number, interest_rate)
PK: account_number
FK: savingsAccount(account_number) --> account(account_number)

checkingAccount(account_number, overdraft_amount)
PK: account_number
FK: checkingAccount(account_number) --> account(account_number)

Option 2:
savingsAccount(account_number, balance, interest_rate)
PK: account_number

checkingAccount(account_number, balance, overdraft_amount)
PK: account_number

account(account_number)
PK: account_number
FK: savingsAccount(account_number) --> account(account_number)
   checkingAccount(account_number) --> account(account_number)

Option 3:
account(account_number, balance, interest_rate, overdraft_amount, isChecking, isSavings)
PK: account_number