

SOFTENG 351: Assignment #1

March 21, 2020

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1 Bank Data Model

a. Strong entity types

CUSTOMER, ACCOUNT, LOAN, BANK

b. Weak entity type

There is a weak entity type.

Name: BANK_BRANCH

Partial key: Branch_no

Identifying relationship: BRANCHES

c. Constraints on partial key and identifying relationship

For each BANK, the Branch_no values must be unique. The key for each BANK_BRANCH is a composite of Code and Branch_no. Each BANK must have at least one BANK_BRANCH and each BANK_BRANCH has exactly one BANK.

d. Relationship types

Relationship type	Participant A	Constraint on A	Participant B	Constraint on B
A_C	CUSTOMER	(0,N)	ACCOUNT	(1,N)
L_C	CUSTOMER	(0,N)	LOAN	(1,N)
ACCTS	ACCOUNT	(1, 1)	BANK_BRANCH	(0,N)
LOANS	LOAN	(1,1)	BANK_BRANCH	(0,N)
BRANCHES	BANK	(1,N)	BANK_BRANCH	(1,1)

Relationship type	Entity	Justification
A_C	CUSTOMER	Partial participation for the CUSTOMER and an ACCOUNT can have a max N CUS
A_C	CUSTOMER	Total participation for the ACCOUNT and a CUSTOMER can have a max N ACCO
L_C	CUSTOMER	Partial participation for the CUSTOMER and an ACCOUNT can have a max N CUS
L_C	CUSTOMER	Total participation for the LOAN and a CUSTOMER can have a max N LOAN.
ACCTS	ACCOUNT	Total participation for ACCOUNT and has a max of 1 BANK_BRANCH.
ACCTS	ACCOUNT	Partial participation for BANK_BRANCH and has a max of N ACCOUNT.
LOANS	LOAN	Total participation for LOAN and has a max of 1 BANK_BRANCH.
LOANS	LOAN	Partial participation for BANK_BRANCH and has a max of N LOAN.
BRANCHES	BANK	Total participation for BANK and has a max of N BANK_BRANCH.
BRANCHES	BANK	Total participation for BANK_BRANCH and has a max of 1 BANK.

e. User requirements

Assumptions:

1. Bank accounts and loans belong to exactly one bank branch
2. Customers can have any number of accounts or loans
3. Bank branches can have any number of accounts or loans
4. Each bank must have at least one bank branch
5. Each bank branch belongs to exactly one bank

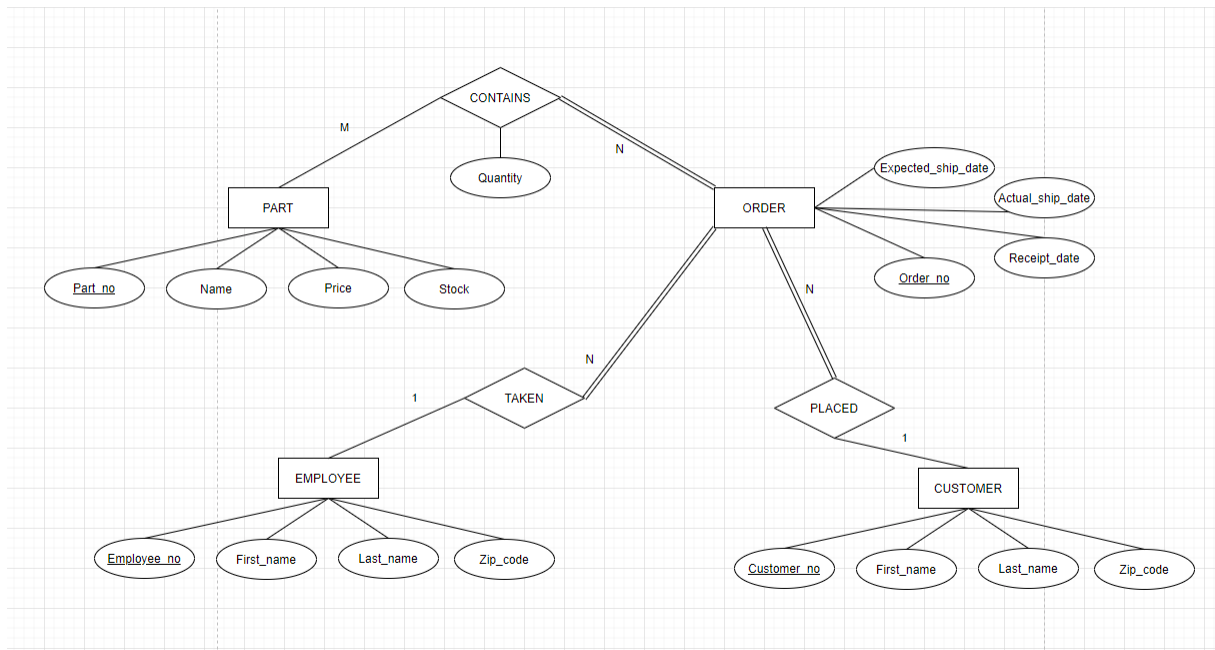
User requirements:

1. A bank has a unique code
2. A bank branch is identified by a bank and has a unique branch number
3. An account has a unique account number
4. A loan has a unique loan number
5. Each customer has a unique SSN used to identify them

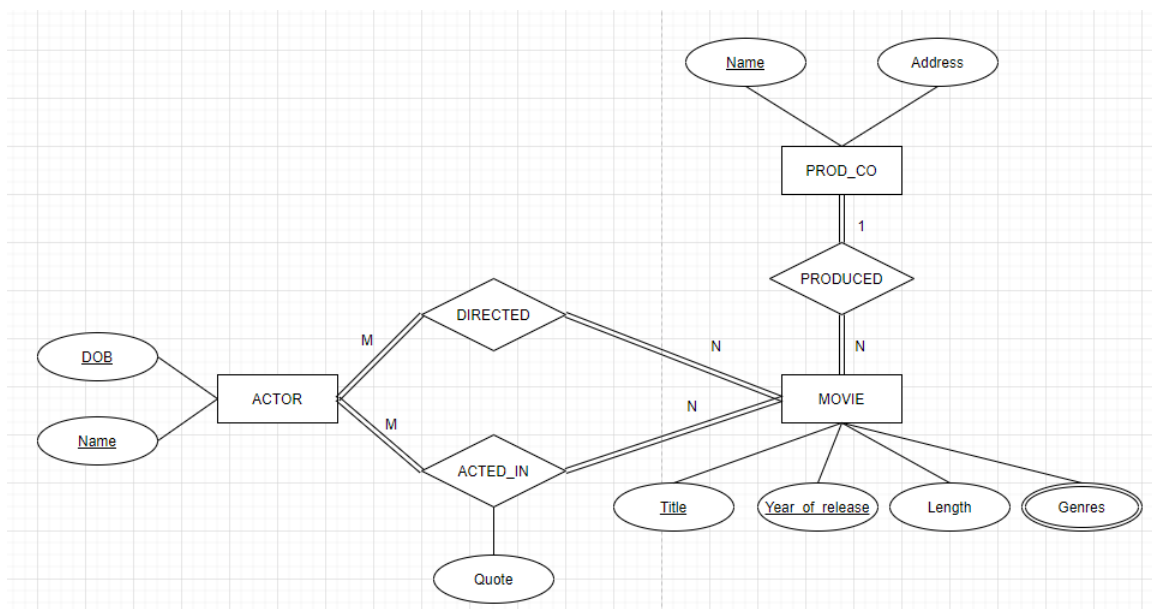
f. Problem

Relationship type	Participant A	Constraint on A	Participant B	Constraint on B
A_C	CUSTOMER	(1,N)	ACCOUNT	(1,N)
L_C	CUSTOMER	(0,2)	LOAN	(1,N)
LOANS	LOAN	(1,1)	BANK_BRANCH	(0,1000)

2 Mail Order Data Model



3 Movie Data Model



4 Conference Review Data Model

