សាកលវិទ្យាល័យភូមិន្ទភ្នំពេញ

ROYAL UNIVERSITY OF PHNOM PENH

COURSE: DATABASE SYSTEMS II

MR. CHENDA SOVISAL

មេរៀនទី៨៖

Relational Database Model

Agenda

I. និយមន័យ Relational database Model

II. Relational Model Important Terminologies

III. Work flow in a Relational Model

IV. Advantages of using Relational Model

V. Disadvantages of using Relational Model

I. និមយន័យ Relational database Model

Relational Database Model គឺជាការបង្ហាញទ្រង់ទ្រាយរបស់ Database Structure ក្នុងទំរង់ជាតារាង (Table) ឬ relation។ ជួរឈរហៅថា Column ឬ Field ហើយតំលៃរបស់ Column ឬ Field នីមួយៗផ្គុំគ្នាក្នុងមួយជួរដេកហៅថា Record ដែលបញ្ជាក់អំពីព័ត៌មានរបស់មនុស្សម្នាក់ ឬវត្ថុមួយ ឬទីកន្លែងណាមួយ ឬក៏ព្រឹត្តិការណ៍ណាមួយ។

II. Relational Model Important Terminologies

- Attribute: Each column in a Table. Attributes are the properties which define a relation. e.g., Roll_no, NAME,etc.
- Relation: It is the Table. Table Student or Student Relation
- Tuple: It is nothing but a single row of a table, which contains a single record.
- Relation Schema: A relation schema represents the name of the relation with its attributes.
- Degree: The total number of attributes which in the relation is called the degree of the relation.
- Cardinality: Total number of rows present in the Table.
- Column: The column represents the set of values for a specific attribute.
- Relation instance: The set of tuples of a relation at a particular instance of time is called as relation instance.

II. Relational Model Important Terminologies (con.)

Example: តារាងគ្រប់គ្រងstudent

Attributes

ROLL_NO	NAME	ADDRESS	PHONE	AGE
1	Dara	Phnom Penh	012456789	18
2	Lina	Phnom Penh	012589636	18
3	Thida	Battambang	010456321	20
4	Meyly	Phnom Penh	010548796	18

Tuple

column

Relation Schema: tbstudent(Roll_No(PK), Name, Address, Phone, Age)

Degree: 5

Cardinality: 4

III. Work flow of a Relational Database

New Project

Business Scenario

↓

ERD

↓

Relation Schema Phrase

↓

Normalization

↓

Implementation

Old Project:

Draft or Report

↓

(ERD)

↓

Relation Schema Phrase

↓

Normalization

↓

Implementation

III. Work flow of a Relational Database (con.)

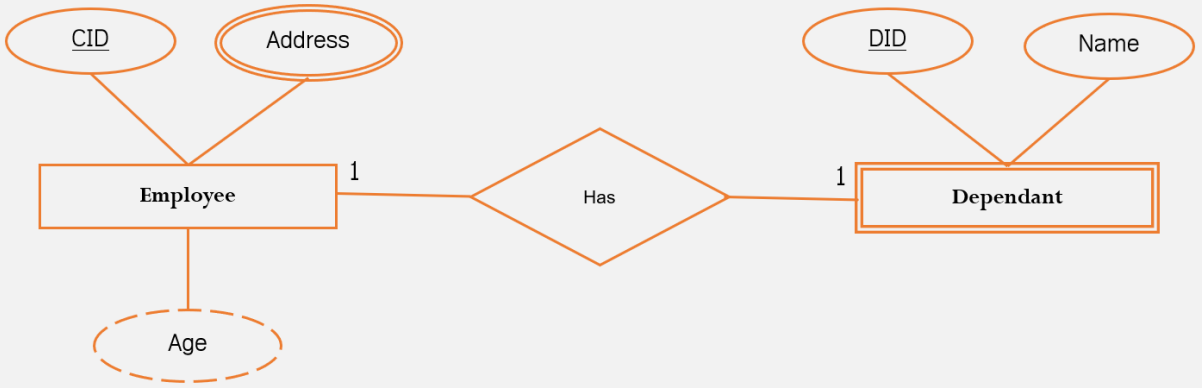
ក្នុងRelational Schema Phrase យើងមានពីរដំណាក់កាលដែលធ្វើ។

1. បង្កើត Relational Schema
2. បង្កើត Data Dictionary
3. បង្កើត Relational Schema Diagram (optional)

Note: Data Dictionary គឺជាការពណ៌នាអំពីតារាង (Table) នីមួយៗដោយប្រាប់នូវឈ្មោះរបស់ Columns ឬ Fields ដែលត្រូវមាននៅក្នុង Table ហើយប្រាប់នូវប្រភេទទិន្នន័យ (Data type) និងលក្ខណៈ (Properties) របស់ Field នីមួយៗទៅតាម DBMS ដែលយើងត្រូវប្រើ។ ព្រមទាំងប្រាប់នូវ Field មួយឬបង្គុំរវាង Fields ជា Primary Key ហើយ Field ណាខ្លះជា Foreign Key។

III. Work flow of a Relational Database (con.)

Example:



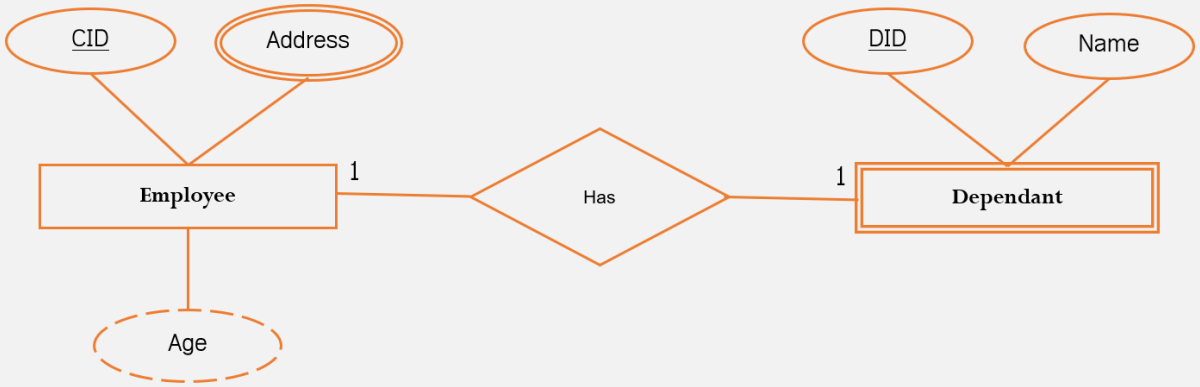
❖Relation Schema

1. tbEmployee(***CID(PK)***, ***DID(FK)***, *Address*, *Age*)

2. tbDependant(***DID(PK)***, *Name*)

III. Work flow of a Relational Database (con.)

Example:



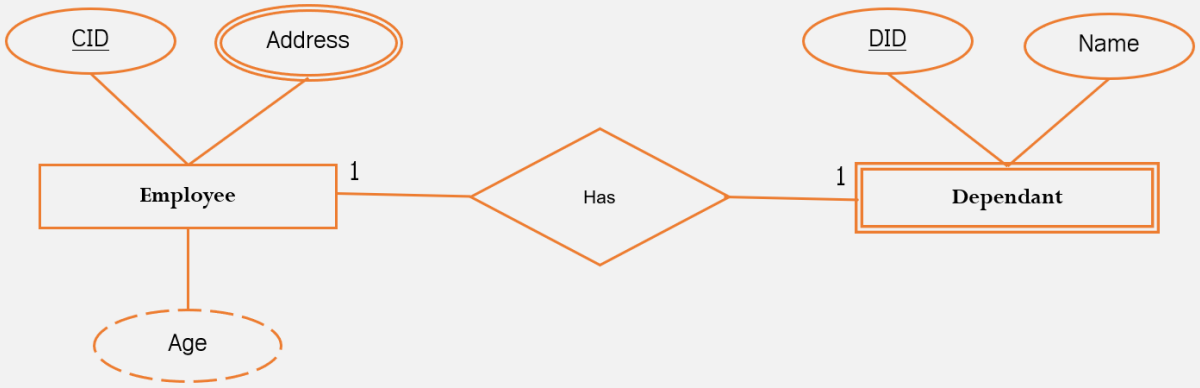
❖Meta Data

1. tbEmployee

Keys	Field Name	Data type	Field Size	Constraint
PK	CID	Int	Number	PK
FK	DID	Int	Number	FK
	Address	Varchar	500	NULL
	Age	Int	Number	NOT NULL

III. Work flow of a Relational Database (con.)

Example:



❖Meta Data

2. tbDependant

Keys	Field Name	Data type	Field Size	Constraint
PK	DID	Int	Number	PK
	Name	Varchar	50	NOT NULL

III. Work flow of a Relational Database (con.)

Example:

❖Relation Schema Diagram

IV. Advantage of Relational Database

- Simplicity: A Relational data model in DBMS is simpler, easy to understand and easy to use.
- Structural Independence: The relational database is only concerned with data and not with a structure. This can improve the performance of the model.
- Query capability: It makes possible for a high-level query language like SQL to avoid complex database navigation.

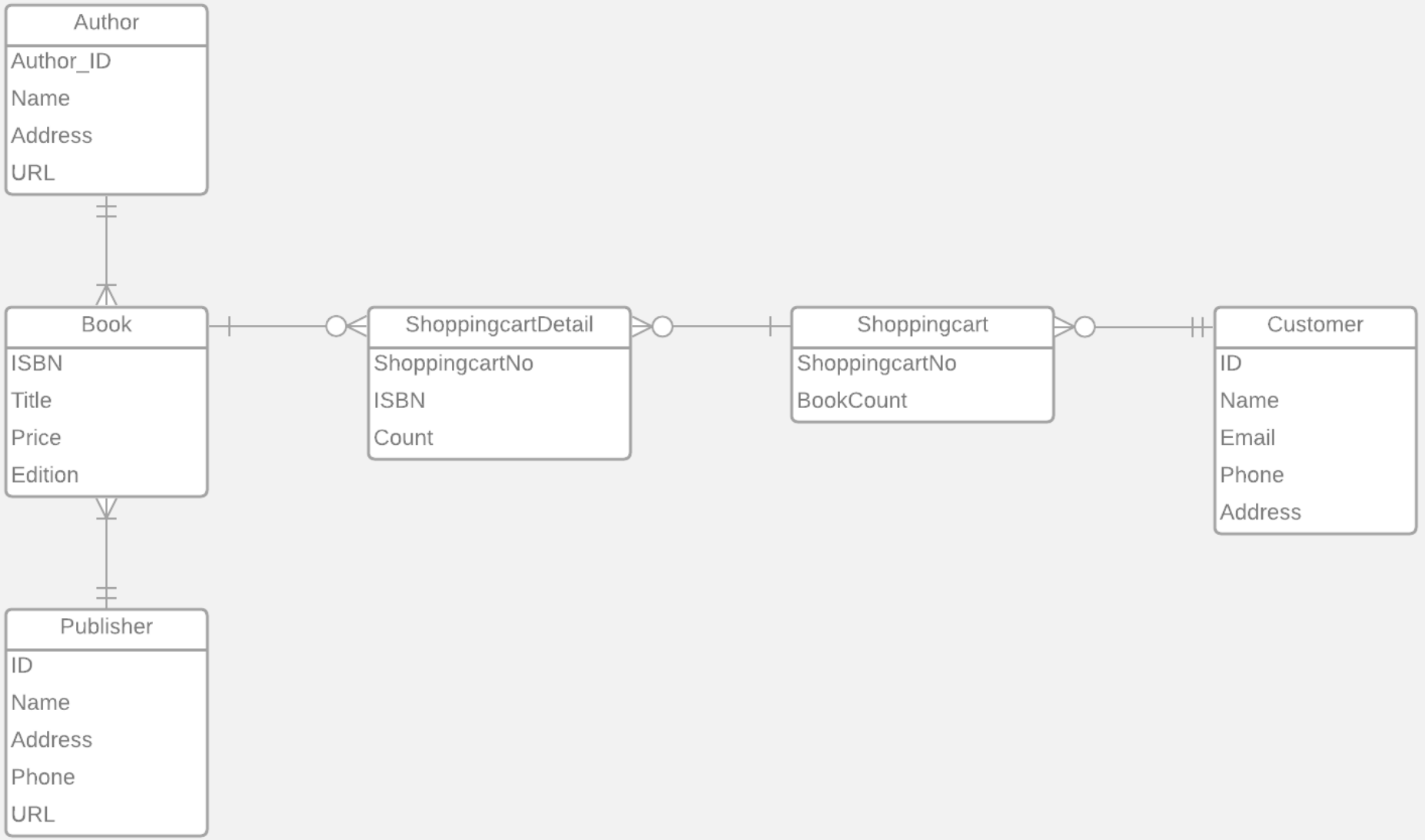
IV. Advantage of Relational Database (con.)

- Data independence: The Structure of Relational database can be changed without having to change any application.

V. Disadvantage of Relational Database

- Few relational databases have limits on field lengths which can't be exceeded.
- Relational databases can sometimes become complex as the amount of data grows, and the relations between pieces of data become more complicated.
- Complex relational database systems may lead to isolated databases where the information cannot be shared from one system to another.

Task


Author
Author_ID
Name
Address
URL
Book
ISBN
Title
Price
Edition
ShoppingcartDetail
ShoppingcartNo
ISBN
Count
Shoppingcart
ShoppingcartNo
BookCount
Customer
ID
Name
Email
Phone
Address
Publisher
ID
Name
Address
Phone
URL

This is the end of that chapter ^^