Lecture 6: Relational Modeling Practice

BADM/ACCY 352

Spring 2017

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Review

- Implement relationship (ERD concept) in relational database.

Data modeling

It's an iterative process.

1. ER Model: Identify basic entities(such as Student, Team, etc), and their attributes. Identify relationships between tables.

2. Relational Model: Implement ER Model (Define PK, FK).

3. Identify more entities and attributes, identify more relationships.

Relational Database Applications

- **Banking**: For customer information, accounts, loans, and banking transactions.

- **Airlines**: For reservation and schedule information

- **Universities**: For student information, course registrations and grades.

- **Sales**: For customer, product, and purchase

- **Telecommunication**: For records of calls, generating monthly bills

Relational Database Applications

- Manufacturing: For management of supply chain and for tracking production of items, inventories in warehouses, and orders

- Finance: For storing information about stocks and bonds

- Social Media: For new postings, comments, likes.

- Sharing economy: ride-sharing, house-sharing, etc

i-clicker question

In the 1:M relationship, M table's primary key is used as 1 table's foreign key.

A) True

B) False

i-clicker question

In an M:N relationship, a junction table is used to break the M:N relationship down into two 1:M relationships. And the junction table does not have foreign key(s).

A) True

B) False

Local grocery database

- If you are the manager of a local grocery store, how would you design a relational database to manage the store operational data?

Walmart ⚡

Save money. Live better.

```
ST# 0107 OP# 00001781 TE# 04 TR# 08094
BANANA EC       000000004011KF
  2.40 lb  @  1 lb /0.64           1.54 R
HAIRCOLOR     007124925306         7.94 X
JACKASS  NUM 003242905063          4.00 X
DONUTS        007874298474 F       3.50 T
                    SUBTOTAL      16.98
          TAX 1   9.750 %          1.51
          TAX 2   8.250 %          0.13
                       TOTAL      18.62
                  DEBIT TEND      18.62
                  CHANGE DUE       0.00


EFT DEBIT          PAY FROM PRIMARY
ACCOUNT :                  6972
   18.62  TOTAL PURCHASE
REF # 829400493483
NETWORK ID. 0055 APPR CODE 130346
        10/20/08     13:05:27
```

ITEMS SOLD 4

```
TC# 3322 4664 0847 8049 3482
```

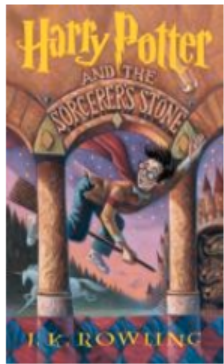# Spreadsheet vs. Relational Database

- handle less data
- not allowing multi-user editing
- less secure
- lacks of enforcement to minimize data redundancy and ensure consistency
- cannot define relationships among tables

A library book management database

- Let's say you are building a book management database for Champaign Public Library. Some basic functionalities of the database include: search book info by authors, by categories, membership, check the status of a book, check the location of a book.

Harry Potter and the sorcerer's stone /
by J.K. Rowling ; illustrations by Mary GrandPré.

Author:	Rowling, J. K.
Other Names:	GrandPré, Mary,
Published:	New York : A.A. Levine Books, [1998]
Edition:	1st American edition.
Topics:	Granger, Hermione (Fictitious character) – Juvenile fiction. | Weasley, Ron (Fictitious character) – Juvenile fiction. | Hogwarts School of Witchcraft and Wizardry (Imaginary organization) – Juvenile fiction. | Wizards – Juvenile fiction. | Magic – Juvenile fiction. | Schools – Juvenile fiction. | Wizards – Fiction. | Magic – Fiction. | Schools – Fiction. | Harry Potter Series. | Accelerated Reader. | Fantasy fiction. | Witches – Fiction. | Wizards – Fiction. | School stories. | Potter, Harry (Fictitious character) – Juvenile fiction.
Regions:	England – Juvenile fiction. | England – Fiction. | Engla... Fiction.
Genres:	Fantasy fiction. | Fantasy fiction. | Fiction. | Juvenile w... fiction. | Fantasy fiction.
Tags:	No Tags, Be the first to tag this record!

More Details	Location & Availability	Table of Contents	User Reviews	Published Reviews	Request Item

University of Illinois at Urbana–Champaign

Location: Center for Childrens Books [non–circulating]
Call Number: S. R797h
Text me this call number
Copy: 3
Status: Available

Location: Residence Halls Florida Avenue SciFi/Fantasy
Call Number: 823 R797hps 1998
Text me this call number
Copy: 3
Status: Available

Location: Residence Halls Ikenberry Commons Sci Fi/Fantasy
Call Number: 823 R797hps 1998
Text me this call number
Copy: 2
Status: Available

Location: Residence Halls Illinois Street SciFi/Fantasy
Call Number: 823 R797hps 1998
Text me this call number
Copy: 4
Status: Available

Basic Functionalities?

- search book info by authors, by categories
- check the status of a book
- check the location of a book.

A library book management database

- Let's say Urbana Free Library wants to join the book management database, how will you change your previous design?

Social network

- Let's design the data model for Instagram.