Faculty of Computer Science and Engineering
Ho Chi Minh City University of Technology

Conceptual Database Design Practice with the (E)ER Model

Database Systems (CO2013)

Computer Science Program

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Main references

Text:

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References:

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[3] A. Silberschatz, H. F. Korth, S. Sudarshan, *Database System Concepts – 6th Edition*, McGraw-Hill, 2006.

[4] H. G. Molina, J. D. Ullman, J. Widom, *Database Systems: The Complete Book - 2nd Edition,* Prentice-Hall, 2009.

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[6] M. P. Papazoglou, S. Spaccapietra, Z. Tari, *Advances in Object-Oriented Data Modeling*, MIT Press, 2000.

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2

A city wants to develop an application to utilize its libraries. In this application, a LIBRARY SYSTEM database is needed. The following are its requirements. Design its (E)ER schema. State any constraints and other assumptions related to this LIBRARY SYSTEM database.

A reader can go to any library in the city to read and borrow books. He/ she is called a borrower. Each borrower has a card with a unique number recorded with his/ her name including first name, middle name, and last name, along with his/ her address, phone, and job title. Each card also has a validity from a registration date to a specific date, depending on his/her registration. If a card's validity is expired, its owner needs to make an appropriate extension to the current registration.

The library system of the city includes all the libraries registered with the city management system. Each library is uniquely recognized by an identifier given by the city management system. Each library has a name and several library branches whose names are different from those of the others belonging to the same library. Each library branch has a specific address and a phone.

The city management system also classifies the libraries into private libraries and public libraries. Each private library belongs to an organization which is either a school or a training center. Each public library belongs to the city, recorded with an established year.

A school is recorded with its unique name, location, and type which is either primary, secondary, high-school, or university. A training center is recorded with its unique name, a registration date, a business area, and its distinguishable contact addresses, which include address and phone.

Each library branch has many books each of which has at least two copies. Some new library branches might not register their book details. A book might be available in many library branches. However, some books can be found only in a few specific library branches.

Each book is uniquely recognized via its ISBN. However, the library system provides it with a unique code which is composed of the first 4 digits for its publishing year, the next 4 digits for its library identifier, and the other 4 digits for its encoded number. Each book has a title, a short summary, categories, and several keywords for online search.

Each book was published by a unique publisher with several editions recorded with corresponding published years and edition numbers. Each publisher has a unique name, a contact address, and a contact phone.

Each book is also recorded with its authors. Each author has a full name along with an affiliation uniquely provided in the book.

When borrowing a book, a borrower selects a book from the library system and picks it from the shelf of a particular library branch on any day in a week. By that date, he/ she then records his/ her book loan with that library branch for the book using his/ her card. Time is also checked from that date to a due date which is normally a month from that date. The maximum number of books that a borrower can borrow from a library branch is 5 for any date. In addition, an actual returned date of each book is recorded with his/ her loan. If he/ she returns more than 3 books late, his/ her card becomes invalid till he/ she makes a new extension to reset its validity.

Chào các em,

Cho bài tập về EER modeling này, mỗi em làm bài và nộp bài trên BKEL như sau nhé:

- Nơi nộp bài: **Submission for Extra EER modeling–08.11.2020, 23:55**

- Hạn nộp bài: **Chủ Nhật, 08.11.2020, 23:55**

- Nội dung nộp bài: **lược đồ EER** cho cơ sở dữ liệu LIBRARY SYSTEM kèm với các **ràng buộc**, và các **mô tả giả định đi kèm** với cơ sở dữ liệu này (ví dụ: **domain** cho các thuộc tính).

- Hình thức nộp bài:

. **File pdf**: file này được chuyển từ file power point hoặc tương đương. Đây cũng là file đi kèm với phần trình bày miệng của mỗi em ở file video.

. **File video mp4 hoặc webm**: file này là phần trình bày miệng về sản phẩm của mỗi em. Thời lượng file ít hơn 60 phút. Nếu dung lượng file quá lớn và file video không upload lên BKEL được thì mỗi em sẽ upload file video lên tài khoản Youtube rồi đưa link tương ứng vào file nộp bài. Phần trình bày được thực hiện trên file pdf được nộp ở trên. Trong phần trình bày, các em cần nêu rõ vì sao các em đã thiết kế cơ sở dữ liệu như đã xác định trong file pdf.

Nếu có thắc mắc gì thì các em hỏi lại sớm nhé.

Cheers,

Châu

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