

DATA MODELING

MSiA 413
Week 3 Discussion

Vyas Alwar

Northwestern | MCCORMICK SCHOOL OF
ENGINEERING

Announcements

- Nikos is going to release HW2 tonight
 - It's due two weeks from today
 - It's harder than the last one
- Use Piazza for questions instead of emailing Nikos or me.
 - We want other people to be able to see what we say.

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ANY QUESTIONS ON THE HOMEWORK?

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Data Types

What data types are appropriate for the following situations?

- Quantity of goods stocked in a warehouse
- A Northwestern student ID number
- A student's name
- Energy readings produced by a particle accelerator
- Temperature in Celsius, recorded to the tenth of degree
- A transaction in dollars and cents in a banking application
- A ten-digit phone number
- A plaintext password

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Data Normalization

An office supply store is digitizing its customer database. All of their customer data is currently stored on paper order forms.

- What is the widest schema possible that can be used to represent an order?
- What are some problems with using such a wide schema?
- Normalize the database
- Are there any problems with using a normalized database?

Order Form			
Order number:	1234	Date:	11/04/98
Customer number:	9876		
Customer name:	Billy		
Customer address:	456 HighTower Street		
City-Country:	Hong Kong, China		
ProductNo	Description	Quantity	Unit Price
A123	Pencil	100	\$3.00
B234	Eraser	200	\$1.50
C345	Sharpener	5	\$8.00

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Data Modeling

You're designing a database to manage patient data for a hospital.

- A patient has a name, an age, and a phone number.
- Patients also have a diagnosis, which is a disease.
- Patients can be taking drugs with a dosage to treat their illness.
- Patients can be allergic to some drugs.
- Each patient has a physician that attends to them. Each physician has a name and a specialty.
- Each physician has a head of department that they need to report to, and a list of residents and nurses that report to them. Residents and nurses also have patients.
- Combinations of drugs can produce side-effects in patients, which are also diseases.

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