Conceptual Data Modeling

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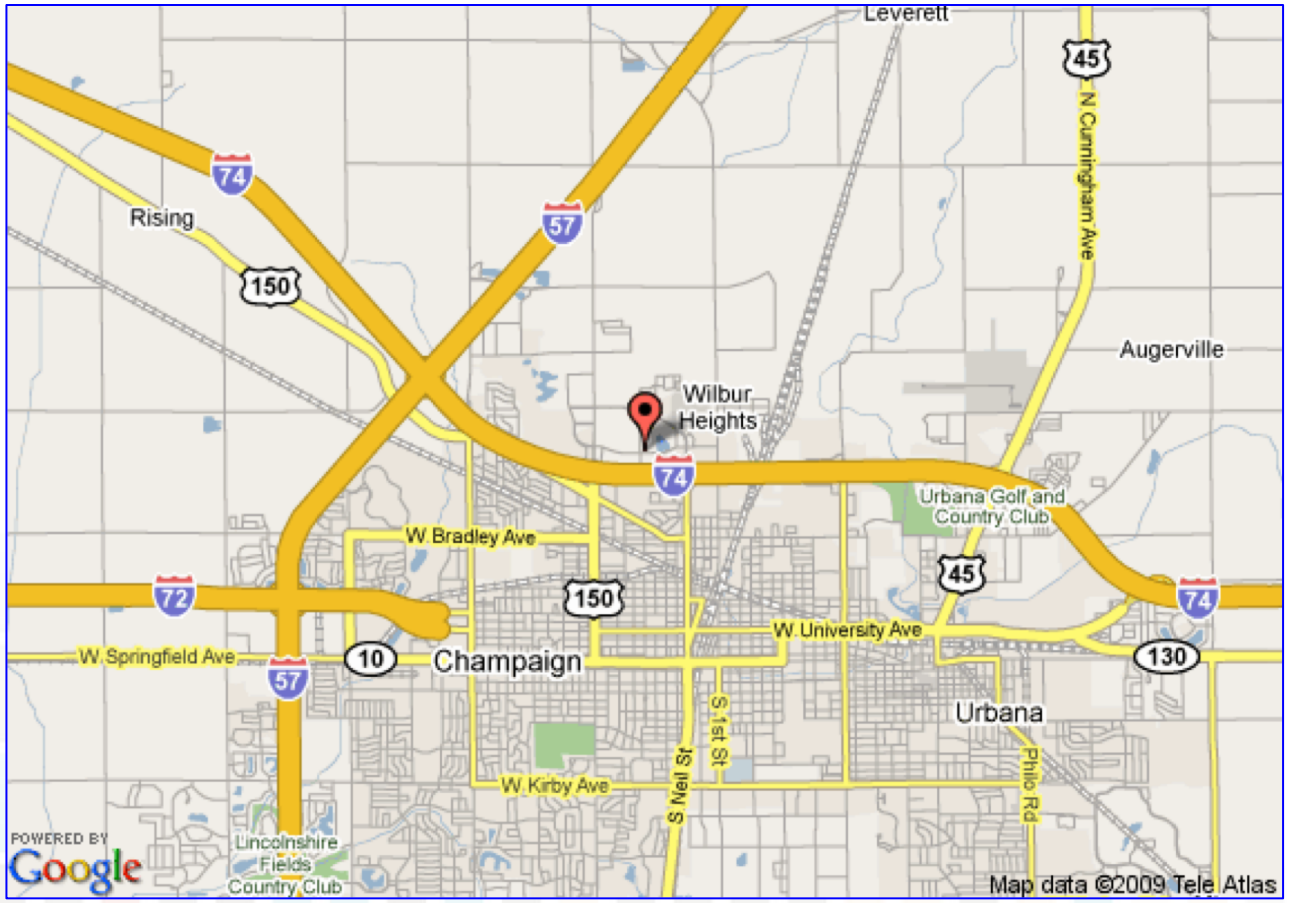
Learning Objectives

By the end of this video, you will be able to:

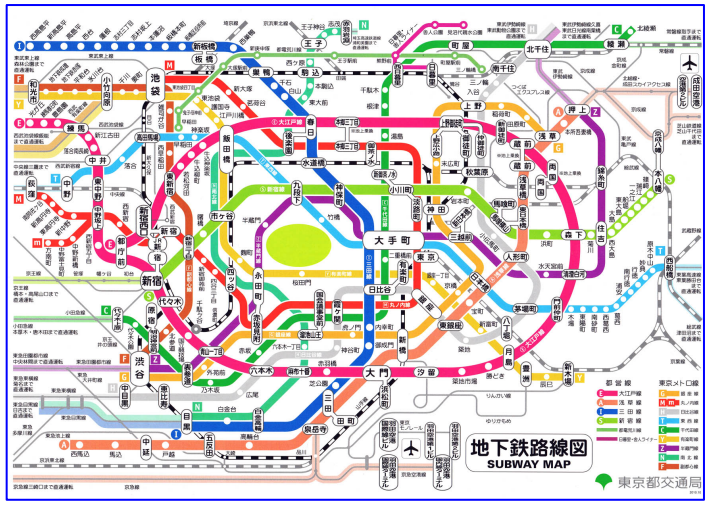
- Explain why building database applications starts with modeling data.
- Distinguish conceptual from physical data modeling.
- Name the general steps in creating a database.

Why Modeling Data?

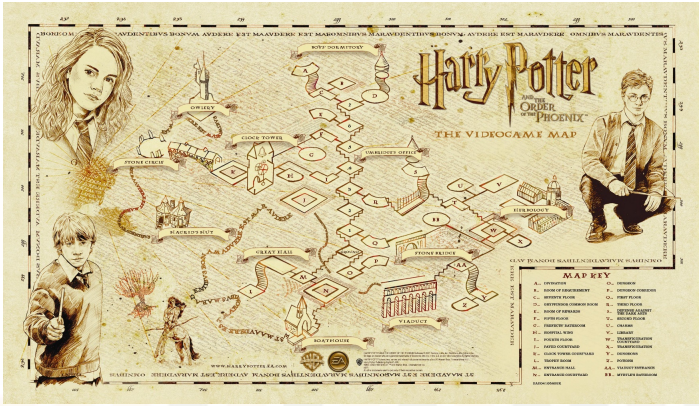
- How do you think about the real world?



Champaign-Urbana on Google Map (Google Maps, 2009)



Map of Tokyo subway (Printable Maps, 2012)



A Map of the interior of Hogwarts Castle (Nerdovore, 2013)

Why Modeling Data?

- **What part of the world** should we capture, for our applications?
- **How do we represent it**, to bring data to computation?
- There are many different ways.

From Idea to Database Application

Steps in Building a Database Application:

- Step 0: Plan application. Understand domain/users.
- Step 1: Conceptual data modeling.
- Step 2: Physical data modeling.
- Step 3: Create database. Develop application.

Why Conceptual Modeling First?

Since we start with knowing the application and the real world, conceptual modeling allows us:

- Focus on high-level description.
  - Think in terms of the main concepts– things and how they are related.
  - Close to how we think of the real world (and not the computer).
- Use natural expression.
  - Sketch diagrams (and not writing in computer languages).
- Bridge to physical modeling.
  - Easy translation/mapping to various physical data models.

References

- Google Maps, 2009. *Map of Champaign-Urbana.*
- Printable Maps, 2012. *Map of Tokyo Subway* [Online image]. Retrieved from http://printable-maps.blogspot.com/2012_02_01_archive.html.
- Nerdovore, 2013. *Fantasy world maps: Harry Potter* [Online image]. Retrieved from http://www.nerdovore.com/2013/01/fantasy-world-maps-harry-potter.html.