Chapter 1 - Data, Databases, and the Software Engineering Process

1.2 - Data

data - facts about something or someone

database - collection of related data
    * related - a common characteristic that ties the data together

1.4 - What is the Software Engineering Process?

software engineering - process of specifying, designing, writing, delivering, maintaining, and retiring software

"players" in software development life cycle:
1. user - uses software
2. analyst - design software

Software (Database) Development Process (Waterfall model):
1. Requirement - find out what user wants/needs (eludicdation)
2. Specification - write what user wants/needs PRECISELY
    * document costs and time
    2a. Feed back the specification to the user - formal review
    2b. Redo the specification as needed and return to 2a
3. Design - software is designed to meet the specification
    * draw up blueprints
    3a. Design is checked against specification
4. Development - software is written; database is created
    4a. During development, check software against design
        * database is created and populated
5. Implementation - software turned over for user to be used in application
    5a. User tests software - accept or reject
6. Maintenance - some parts may fail, requirements change, etc.
    * time-consuming and expensive
7. Retirement - eventually software becomes outdated

When software (databases) are retired, the SE process begins anew.

1.5 - Entity Relationship Diagrams and the SE Life Cycle

NOTE: The text for this course focuses on steps 1 - 3 above

related data - databases stores info about one enterprise, organization,
busines, group of related people or processes

* it's not appropriate to keep unrelated entities in the same database, just keep a database about each separately

Entity Relationship (ER) Diagram - blueprint from which actual data are stored, output of the design phase

Users vs. Analysts:
* users are typically successful at a business, they understand the business model

* user descriptions may be vague and unstructured

* analysts may be ignorant of the business but understands the computer end
of the problem

Review of Early Steps in SE Life Cycle Applied to Database Design:

Phase 1: Get Requirements for the Database
* listen/ask questions about what data the user wants to organize
into a database retrieval system

Phase 2: Specify the Database
* descriptions and diagrams of what analyst thinks user wants
* usually accomplished with an ER diagram as blueprint for to-be-designed database

Phase 3: Design the Database
* once finalized, ER diagram become blueprint for construction of the database