

Conceptual Model



- **High-level representation**
 - Of real-world things
 - Not of software components!
 - We'll get to that later
- **Illustrates domain concepts**
- **Identifying classes/objects**
 - Also known as “classification”

Conceptual Model Components

- **Concepts**
 - Application domain entities
 - Not “accidents” of SW implementation
- **Associations**
 - Between concepts
- **Attributes**
 - Of concepts

Conceptual Model Benefits

- **Decompose problem space**
 - Into comprehensible concepts
- **Clarify domain vocabulary**
 - Adopt standard terminology
 - Avoid ambiguity
- **Promote communication**
 - Development team, client

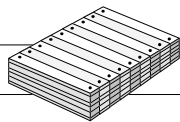
Identifying Concepts



- **Concept category list**
 - Physical/tangible objects
 - Specifications, descriptions
 - Places
 - Etc. (text, pp. 92-93)

- **Noun phrase identification**
 - Search use case descriptions

Report Objects



- **Application domain “thing”**
 - E.g., report of professor workload
- **Is this a “concept”?**
 - Does it have its own existence?
 - Or is it derived from other concepts?
 - Should it be included in conceptual model?

Conceptual Modeling Guidelines

- **List candidate concepts**
- **Draw concepts in model**
- **Add associations**
 - Record “memory” relationships
- **Add attributes**
 - Needed to meet info requirements

More detail later

Mapmaker Strategy



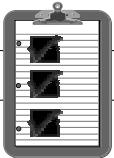
- **Use existing names**
 - As understood by client(s)
- **Exclude irrelevant features**
 - Relevance is relative, time-varying
- **Don't add things that aren't there**
 - In problem domain being considered

Concepts versus Attributes

- **Concept**
 - A “thing”
- **Attribute**
 - A characteristic of a “thing”
- **Danger**
 - Concept misidentified as attribute
 - E.g., flight and destination/airport

Attributes usually simple (“number” or “text”).
When in doubt, make it a concept.

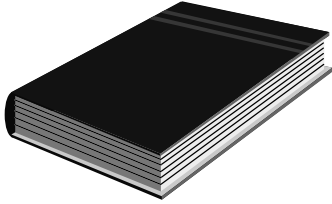
Specification Concepts



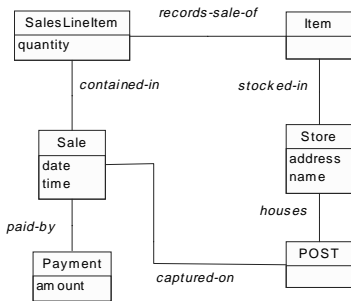
- **Concept has attributes**
 - E.g., course section has number, title
- **But cardinality may be zero**
 - Course not offered in quarter
- **Solution: specification**
 - Specification describes course info
 - Factors out redundant information

UML Terminology

- Class
- Attribute
- Operation
- Method
- Type
- Interface



Partial UML Model



Exercise

- Faculty schedule application
- Identify concepts
 - Concept categories
 - Noun phrases
 - Specification concepts?
- Select candidate concepts
