

Conceptual Model (Ch. 11)

- ❖ Adding Attributes to a Conceptual Model
- ❖ Interest is in attributes of real-world entities
 - not of instance variables or data members
- ❖ Attributes are logical data values inherent to an object
- ❖ In Conceptual Models, only use attributes to record info that must be remembered

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UML Attribute Notation

- ❖ Attributes reside in the 2nd compartment of a concept box
- ❖ Format is `name : type`
- ❖ Attributes should be pure data values

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Attribute vs. Association

Worse

Better

3

Attribute vs. Association

Worse

Better

Relate concepts with associations, not attributes

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Non-primitive Attribute Types

- ❖ Attributes may not be value objects if ...
 - It is composed of separate sections
 - ◆ International phone number
 - Operations are tied to it (like parsing)
 - ◆ Social Security Numbers
 - It has other attributes
 - ◆ promotional price - could have start and end date
 - It is a quantity with a unit (!)
 - ◆ like currency

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Attribute or Association?

OK

OK

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Attribute Quantities & Units

- ❖ Values with units are not just numbers
 - ex: currency, velocity, temperature, etc.
- ❖ Units may need to be converted
 - \$'s to £'s or ¥, mph to kps, °F to °C
- ❖ The solution is to represent Quantity as a distinct concept, with associated units
 - A bank account has \$100 or £60 or 1,750¥, its just a mater of viewpoint

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Modeling Quantities

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POST Attributes

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Derived Attributes (/)

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