UML and Class Diagrams

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What is UML?

- **UML (Unified Modeling Language) 2.0**
  - **An standard for modeling object-oriented software.**
  - **Resulted from the convergence of notations from three leading object-oriented methods:**
    - **OMT (James Rumbaugh)**
    - **OOSE (Ivar Jacobson)**
    - **Booch (Grady Booch)**
- **For more information on the OMG, see http://www.omg.org**
- ***UML Distilled* Third Edition, Martin Fowler**

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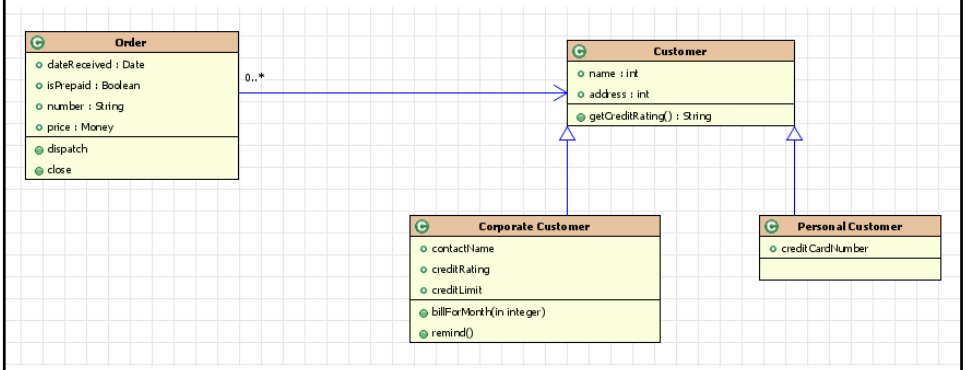
Class Diagram



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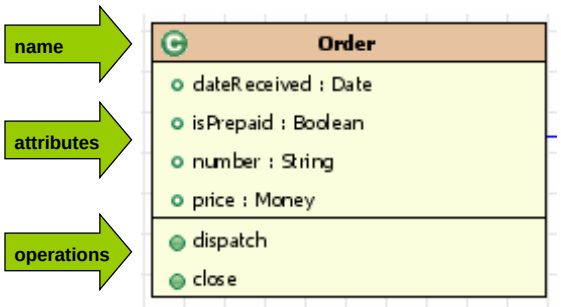
Class



- **A class encapsulates state** *(attribute)* **and behavior** *(operations).*
- **Each attribute has a** *type***.**
- **Each operation has a** *signature***.**
- **The class name is the only mandatory information.**

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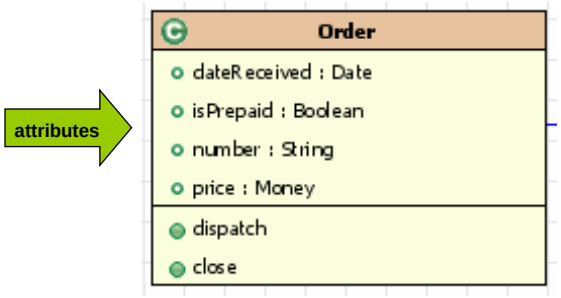
Attributes



Visibility name: type multiplicity = default {property string}

- name: String [1] = "Untitled" {readOnly}

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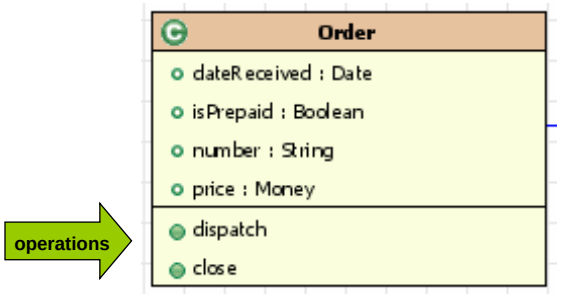
Operations



- visibility name (parameter list) : return type {property string}
  - Parameter list: direction name: type = default value
  - in date:Date
- + balanceOn (date: Date) : Money

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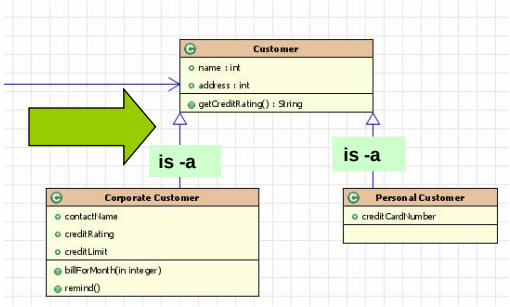
Generalization



- Generalization relationships denote inheritance between classes.
- The children classes inherit the attributes and operations of the parent class.

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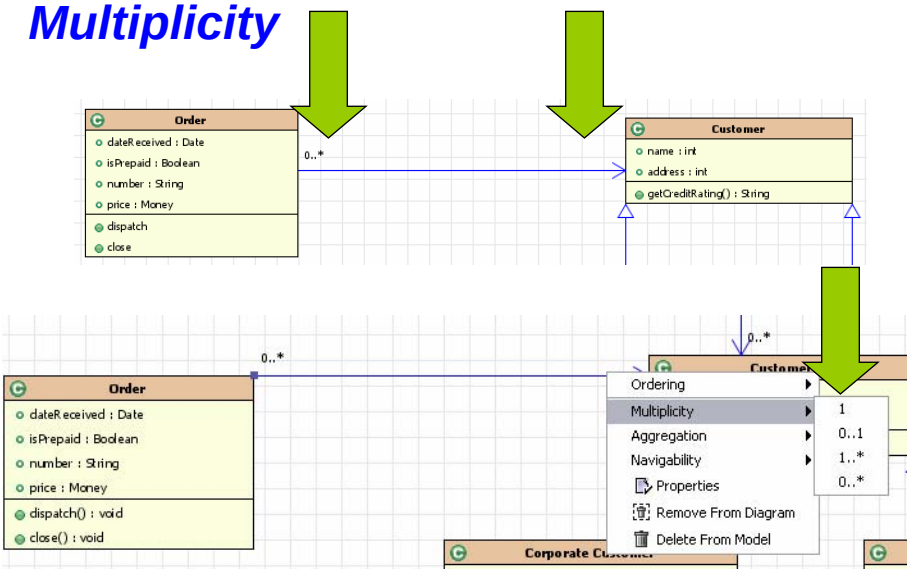
Multiplicity



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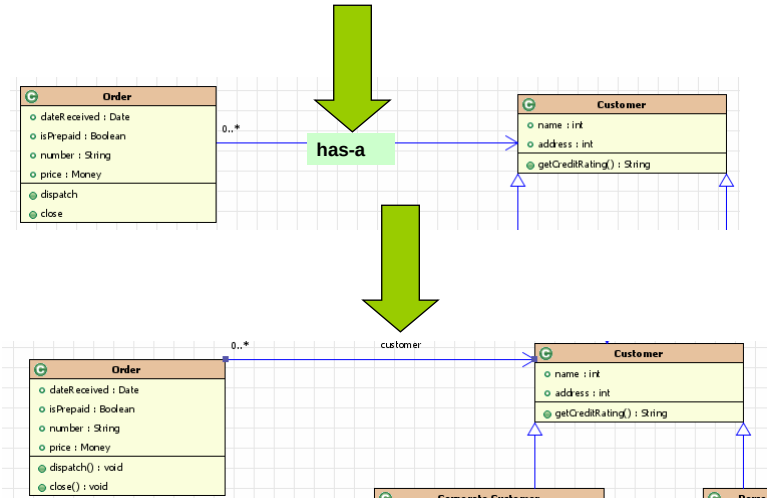
Association



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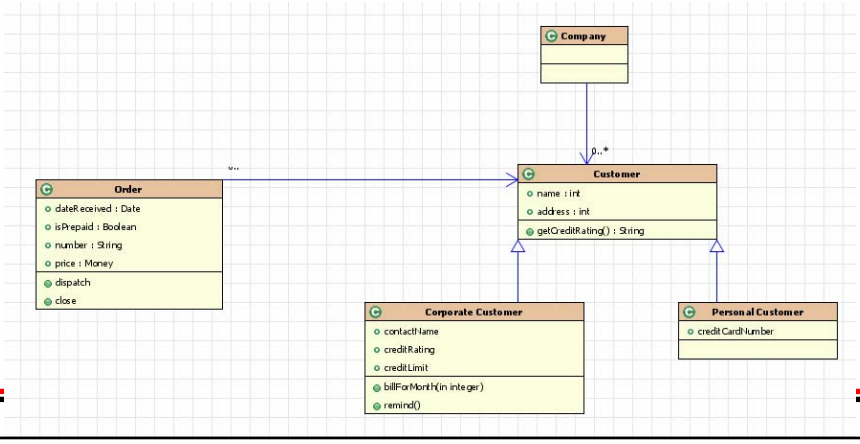
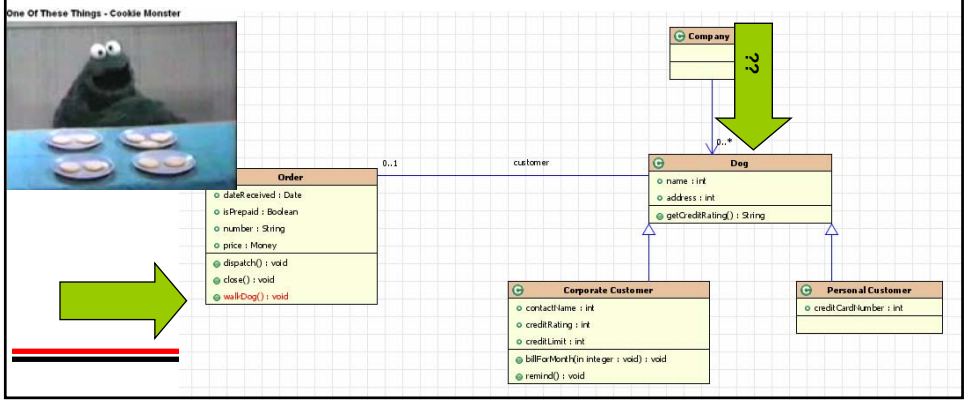
Candidate classes: Noun extraction

Company XYZ has two types of customers, corporate customers and personal customers. All customers can place orders. Every order is placed by a customer.



Evaluating a Class/Class Diagram

1. **Intention-revealing naming: Does the name of the object convey its abstractions? Does the abstraction have a natural meaning and use in the domain?**
2. **Single Responsibility: Do the name, main responsibility statement data and functions align?**