Class Model

Eshcar Hillel
Class

- Describes a set of objects having similar:
  - Attributes (status)
  - Operations (behavior)
  - Relationships with other classes
- Attributes and operations may have their visibility marked:
  - "+" for public
  - "#" for protected
  - "−" for private
  - "~" for package
Classes’ Relationships

- Captures logical connection among classes
- Instance level relationships
  - Association
  - Aggregation
  - Composition
- Class level relationships
  - Generalization
  - Realization
- General relationships
  - Dependency
Instance Level Relationships

- **Association** also known as a ‘has a’ relationship
- **Navigable**: the direction of the association
- **Multiplicity**: the number of objects that participate in the association
  - `0..1` no instance or one instance
  - `2` exactly two instances
  - `0..*` zero or more instances
- An instance of A “knows” many instances of B
  - may send them a message
Instance Level Relationships

- **Aggregation**
  - A variant of association, ‘has-by-reference’
  - ‘Whole-Part of’ relationship
  - Clear diamond shape on the containing class

- **Composition**
  - A variant of aggregation, ‘has-by-value’
  - Strong life cycle dependency
  - Black diamond shape
Class Level Relationships

- **Generalization**
  - Also known as a ‘is a’ relationship
  - B (sub-class) extends and refines A (super-class)

- **Realization**
  - B implements the behavior specified by the interface I
Analysis Classes Elicitation

- Consider main perspectives of the system
- *Interface* between the system and its actors
  - Protocols for information exchange
  - Don’t concentrate on visual aspects
- *Data* the system uses
  - The core of the system, key concepts
- The system *logic*
  - Controls and coordinates the behavior
  - Delegates the work to other classes
  - Decouples interface and data classes