Class Association and Aggregation

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- We discuss how create complex classes from simpler ones
- Distribute responsibilities/functionality among classes (and families of classes)
- Coupling (loose, tight) between classes
- (no inheritance for the moment)

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Aggregation

- Aka Whole-Part pattern
- We model an object as consisting of other objects
- Common technique for assembling objects into bigger ones
- There can be a fixed number or a variable number of parts in the Whole

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Examples (1/2)

- A line segment consists of two points; a polyline consists of zero or more points
- A house consists of rooms
- An area consists of machines
- An auto consists of wheels etc.

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Examples (2/2)

- A portfolio is a collection of assets (bonds, stock)
- An interest floor is a series of put options
- An instrument contains a collection of properties (see discussion in MC book)
- A structured product is made up of a portfolio of securities and derivatives
- A portfolio consists of portfolios

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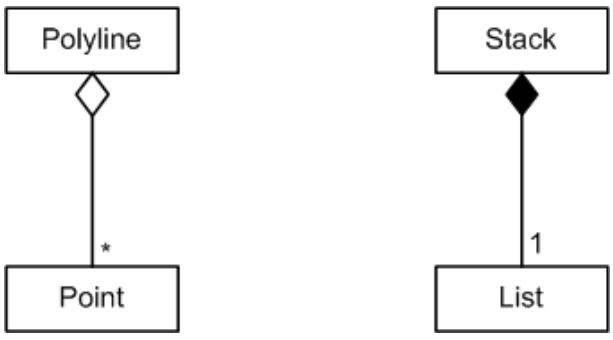
Notation



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Association

- ‘Loose’ relationship between two classes
- Neither class is ‘owner’ (in contrast to Aggregation)
- The two classes form a new class, in essence
- Multiplicity issues

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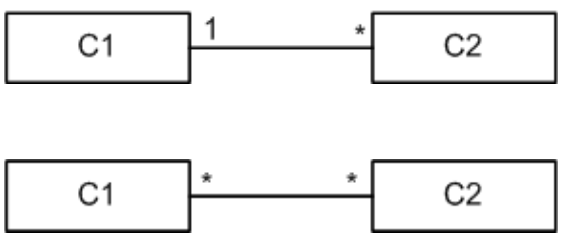
Notation



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Example

- A person works for a company
- An option is based on one or more assets
- An asset has an asset model
- An option has a pricing model

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Combining Models

- It is possible to use inheritance and aggregation to form flexible software systems
- Separation of concerns and Single Responsibility Principle (SRP)
- Delegation principle

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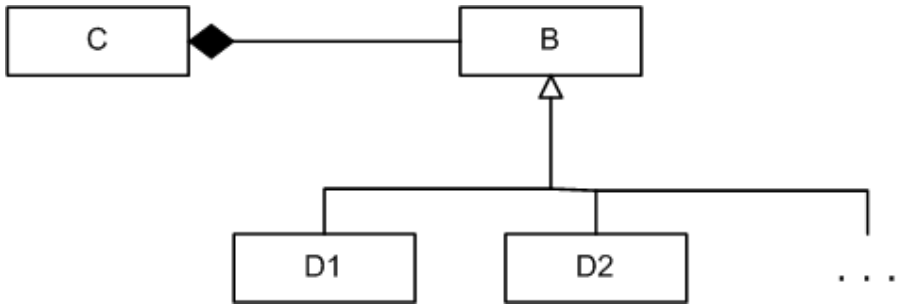
Example



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