Introduction to the UML Notation

UML Uses
- Visualization
- Specification
- Constructing
- Documenting

Building Blocks of UML

UML Building Blocks
- Things: The basic entities in the model.
- Relationships: Tie things together.
- Diagram: Is a graph of things and their relationships.

Four Kinds of “things”
- Structural
- Behavioral
- Grouping
- Annotational

Seven Kinds of Structural Things
- Class
- Interface
- Collaboration
- Use case
- Active classes
- Component
- Node
**Structural Thing: Class**

- A common description of a set of objects.

```
Person
Data Members
Function Members
```

**Structural Thing: Interface**

- A collection of operations provided by a class of a component.

```
PersonInterface
```

**Structural Thing: Collaboration**

- A collection of structural elements and behavioral elements.

```
Chain of responsibility
```

**Structural Thing: Use case**

- A sequence of actions. A structure superimposed on top of behavioral things.

```
Place Order
```

**Structural Things: Active Class**

- A class whose objects can initiate a thread or a process.

```
ActivePerson
Data Members
Function Members
```

**Structural Things: Component**

- A physical packaging of classes, interfaces, and collaborations.

```
Viewer.a
```
Structural Things: Node

- A physical element with memory and processing power.

Dynamics of the Model: Behavioral Things

- Interactions: The "verbs" of the model. A set of messages exchanged among a set of objects.

  ![Display Interaction Diagram]

- State Machine: A sequence of states that an object goes through.

Organization of a model: Grouping Things

- Package: A general-purpose mechanism for bundling together structural, behavioral, or other packages.

Explanations: Annotational Things

- Notes: Explain the model, comments, constraints, etc.

Relationships in UML

- Dependency: Change to one thing will affect the other.

  ![1* employer to employee relationship diagram]

- Association: Set of links between objects.

  ![1* employer to employee relationship diagram]

Relationships cont’d


  ![Generalization Diagram]

- Realization: A specification of a contract between two entities.

  ![Realization Diagram]
Diagrams

- Class diagrams
- Object diagrams
- Use case diagrams
- Sequence diagrams
- Collaboration diagrams
- Statechart diagrams
- Activity diagrams
- Component diagrams
- Deployment diagrams