Introduction to UML

Why should we create models

What is a Model ?

- A model is a simplification of reality
- Provides the blue-prints of a system
- Different models describe the same system from different perspectives

Why Engineers Build Models

- It's all about *understanding* complex systems…
  - A model is a reduced version of a system that highlight the essential and obscures the irrelevant ⇒ abstraction
  - Essentially the approach of "divide-and-conquer"
  - Attack a hard problem by dividing it into a series of smaller problems
- To detect errors and oversight in requirements and solutions before committing resources to full-fledged implementation
- To communicate with stakeholders
  - Clients, users, implementers, testers, documenters, etc.
- To guide the implementation
  - For software systems, this has special significance

Characteristics of Useful Models

- Abstract
  - Emphasize important aspects while hiding/removing irrelevant ones
- Understandable
  - Expressed in a form that is readily understood by observers
- Accurate
  - Faithfully represents the modeled system
- Predictive
  - Can be used to derive correct conclusions about the modeled system
- Inexpensive
  - Much cheaper to construct and study than the modeled system

Introduction to UML

UML and its Building Blocks

What is UML ?

- A standard modeling language for
  - Visualizing
  - Specifying
  - Constructing
  - Documenting

  artifacts of a software system

- Has its own vocabulary and rules

- Is a graphical language

Visualizing

- UML helps to graphically rather than textually represent complexities, thereby making them easier to understand

- Graphical models are easier to communicate to others
  - UML follows standards – a graphical model created by one developer can easily be interpreted by another