# Chapter 1: Introduction to UML

- What is UML?
- Concept of Modeling
- Goal of UML
- UML Extension and Mechanism
- UML Diagram



# What is UML?

- UML stand for:
  - Unified: Unification from **modeling languages**
  - Modeling: Making a semantically – formal specification of the meaning and behavior of something to complete abstraction of a system
  - Language: graphical language
- *UML* is a **visual language** for **modeling** and **communicating** by *specify, visualize, construct, and document* about software systems (especially OO styles) through the use of **diagrams** and its supporting text.
- UML is a standardized general-purpose modeling language in the **field** of **software engineering**. (Wiki)

# What is a Model?

- *Modeling* is the process of producing **model**.
- *Model* is a **simplified representation** of a **reality system** at some particular point in time or space intended to **promote understanding** of the real system. Model is similar but simpler than the system its represent.
- Example: *Model of Accounting System, Model of Hotel System, Model of Inventory Control System*



# Why should to model?

- Models give us a **template** that guides us in **constructing** a system.
- Models help us **visualize** a system at different levels of abstraction; this makes it easier to **manage complexity** and to **understand the system**.
- It is not expensive to **experiment with multiple solutions** when you operate on a high level of abstraction.
- Models help us to find the **extensions** of system to make it efficiency.
- **Manage the risk** of mistakes.
- Models **document** the decisions we have made.
- Models help for **communication** between different stakeholders.

## Some systems do not need to model

- The problem **domain** is **well known**.
- The solution is relatively **easy to construct**.
- Very **few people** need to collaborate to build or use the solution (often only one).
- The solution requires **minimal** ongoing **maintenance**.
- The scope of future needs is unlikely to grow substantially.



## Goal of UML

- Define an easy-to-learn but semantically rich visual modeling language.
- Provide extensibility and specialization mechanisms to extend the core concepts.
- Be independent of particular programming languages and development processes.
- Provide a formal basis for understanding the modeling language.
- Include ideas from other modeling language.
- Encourage the growth of the OO tools market.
- Support higher-level development concepts such as collaborations, frameworks, patterns and components.
- Integrate best practices

# UML Extension Mechanisms

- Stereotype: appears inside of << >> and characterizes a type of element like a class or relationship without specifying its implementation.


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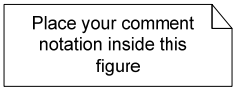
- Comment: use to give comments in the icon below and place it anywhere on any UML diagram.




- Constraint: use throughout the UML diagrams to limit the use of model elements. Constraint place inside the { }.

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# UML Diagram

UML Diagrams categorized into 3 views:

- Functional View
  - Use Case Diagram
  - Activity Diagram
- Static View
  - Class and Object Diagram
  - Component and Deployment Diagram
- Dynamic View
  - Sequence and Collaboration Diagram
  - State-chart Diagram



# UML History

- Modeling languages began to appear between mid-**1970s** and the late 1980s
- Modeling language increase from less than 10 to 50 during 1989 to 1994
- The development of UML began in late 1994 when Grady Booch and James Rumbaugh of Rational Software Corporation
- In the Fall of 1995, Ivar Jacobson joined with Booch and Rumbaugh
- The efforts of Booch, Rumbaugh, and Jacobson resulted in the release of the UML 0.9 and 0.91 documents in June and October of 1996.
- Later on: UML 1.1, UML 1.3, 1.4, 1.5 and UML 2.0