

Unified Modeling Language

UML

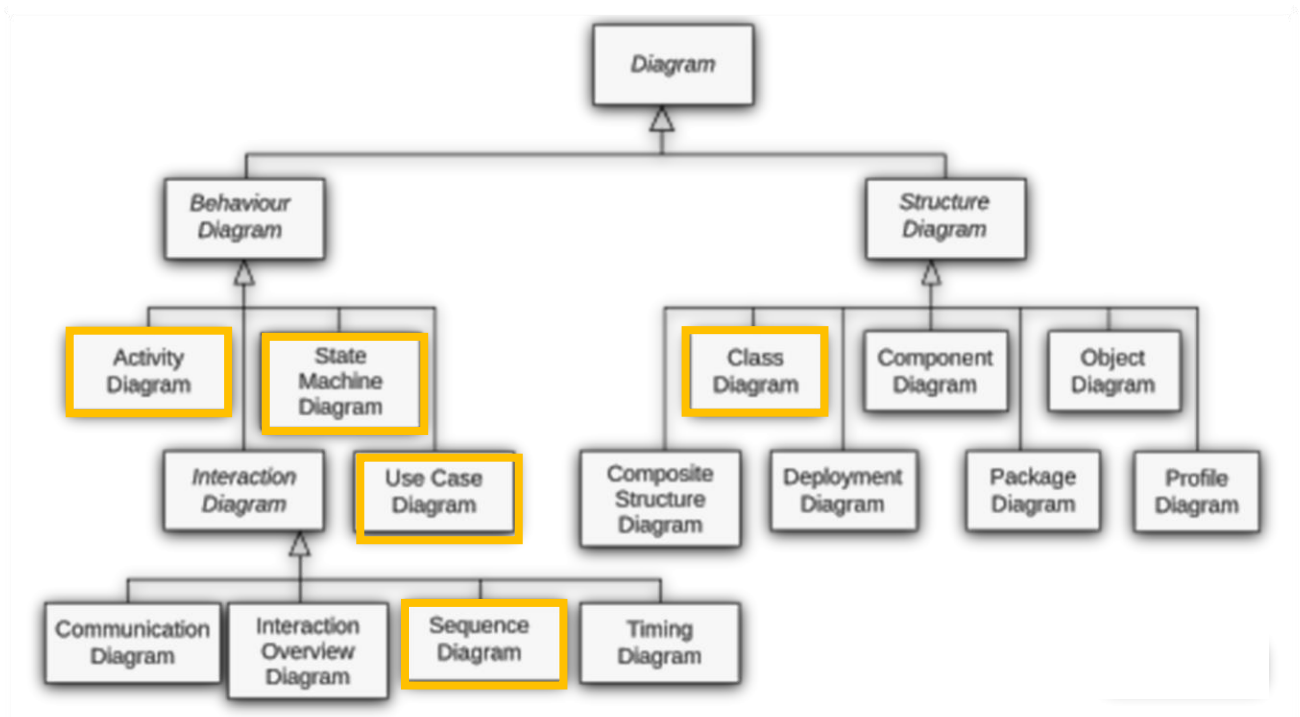
UML is one of the tools used in software engineering to model, visualize, and document software systems. It helps engineers understand and structure the system *before coding*. UML is mainly used during:

- Requirements analysis (Use Case Diagrams)
- System design (Class, Sequence, Activity diagrams)
- Architecture modeling (Component, Deployment diagrams)

UML provides a standardized visual language that everyone can understand (Clients, Analysts, Designers, Developers, Testers). It **bridges communication** between developers, designers, and stakeholders ; turning complex ideas into clear diagrams before coding begins. UML is linked with object-oriented design and analysis

UML diagrams

This is what we will study in the following chapters.



Category	UML Diagram	Purpose (Very Brief)
Structural (Static)	Class Diagram	Shows classes, attributes, methods, relationships.
	Object Diagram	Snapshot of objects at a specific time.
	Component Diagram	Shows software modules/components.
	Deployment Diagram	Shows hardware nodes + where software runs.
	Package Diagram	Groups classes into packages.
	Composite Structure Diagram	Internal structure of a class/component.
Behavioral (Dynamic)	Use Case Diagram	Shows user interactions and system functions.
	Sequence Diagram	Shows message order between objects.
	Activity Diagram	Shows workflows and processes.
	State Machine Diagram	Shows states and transitions of an object.
	Communication Diagram	Object interactions (focus on links).
	Interaction Overview Diagram	High-level interaction flow.
	Timing Diagram	Behavior over time.