

# low-level Design (LLD)

⇒ Object Oriented Design & Analysis (OOD)

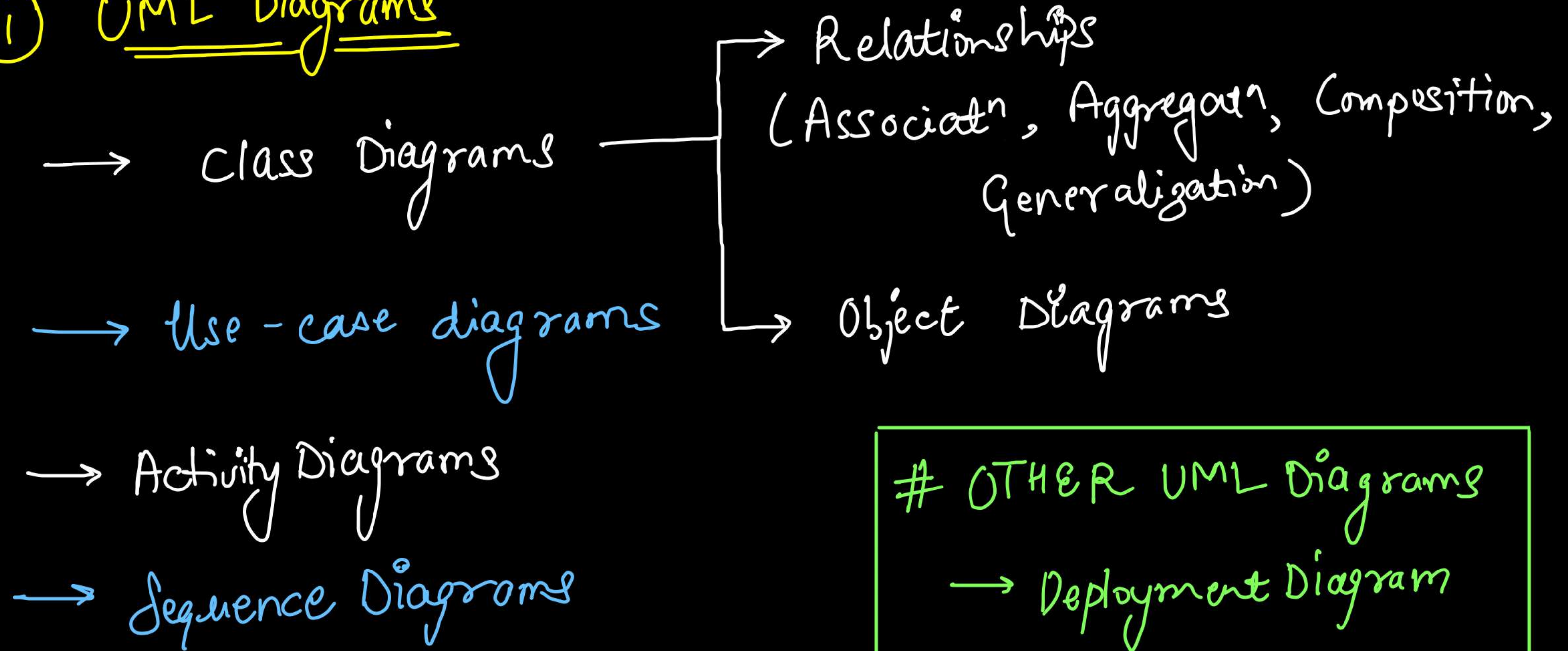
# Pre-requisite

Object Oriented Programming (in Java)

{ 5 Pillars of OOPS → Encapsulation, Data Hiding,  
Inheritance, Polymorphism and Abstraction }

# # Syllabus

## ① UML Diagrams



## # OTHER UML Diagrams

- Deployment Diagram
- Component Diagram
- State Chart Diagram

## ② Design Principles $\rightarrow$ Clean Code $\rightarrow$ WHAT/WHY/HOW

### $\Rightarrow$ Important Design Principles

- DRY (Don't Repeat Yourself)
- KISS (Keep It Simple Stupid)
- YAGNI (You Ain't Gonna Need It)
- CQS (Command - Query Separation)
- Maximum Cohesion & Minimum Coupling
- Composition (hasA) Over Inheritance (isA)



# SOLID Design Principles

- (S) : Single Responsibility Principle
- (O) : Open-Closed Principle
- (L) : Liskov Substitution Principle
- (I) : Interface Segregation Principle
- (D) : Dependency Inversion Principle

## ⇒ Other Design Principles

- Curly's Law
- Boy Scout's Law
- Murphy's Law
- Avoid Premature Optimizat<sup>n</sup>
- Law of Perimeter

### ③ Design Patterns (in Java)

- |              |                    |                             |
|--------------|--------------------|-----------------------------|
| 1. Strategy  | 9. Template Method | 17. Chain of Responsibility |
| 2. Observer  | 10. Iterator       | 18. Flyweight               |
| 3. Decorator | 11. Composite      | 19. Interpreter             |
| 4. Factory   | 12. State          | 20. Mediator                |
| 5. Singleton | 13. Proxy          | 21. Memento                 |
| 6. Command   | 14. Compound       | 22. Prototype               |
| 7. Adapter   | 15. Bridge         | 23. Visitor                 |
| 8. Facade    | 16. Builder        |                             |



## ④ Case Studies (+ Machine Coding Round)

- Design Parking Lot
- Design ATM
- Design Lift System
- Design Chess Game

→ Intermediate

## # More Design Problems

- Design Zomato
- Design LinkedIn
- Design Tiktok
- Design Tinder
- Design Splitwise

- Design Movie Ticket Booking System (BookMyshow)
- Design E-commerce Platform (Amazon)
- Design Social Media Platform (Instagram / Facebook)
- Design Chat Application (Whatsapp)
- Design Video Streaming Application (Youtube / Hotstar)
- Design Ride Sharing Platform (Uber / Ola)

→ Advanced