# Object Oriented Design & Design Patterns

## Course Overview

This course will help you to discover creating modular, flexible, and reusable software, by applying object-oriented design principles and guidelines. It covers all the important object-oriented Design Principles and Design Patterns.

## **Why you should learn Object-Oriented Design & Design Patterns?**

The object-oriented design has always been a critical part of the software engineering interview process. These Object-Oriented design (Low-level Design) questions (like **Design a Movie Ticket Booking System, Design a Chess Game**etc.) are about demonstrating that you understand how to create elegant, maintainable object-oriented code. Most of the engineers struggle with these questions, because of

1. Their lack of experience in laying down the design of a complex system.
2. The unstructured and open-ended nature of these types of problems that don't have a standard answer.

This course is a complete guide to master Object-oriented design interviews. It not only has a set of carefully handpicked case studies, which have been repeatedly asked at the top tech companies but covers all the important object-oriented Design Principles and Design Patterns.

## **How this course will help you to crack Interviews?**

* Each concept is explained focusing the Interviews of tech giants like Google, Amazon, Microsoft, Uber, etc.
* Mock Interview session (taken by the course mentor) will help you to feel the heat of actual interviews and you will be given the proper feedback after the interview.
* This course is designed and reviewed by the developers/Architects of Microsoft, Amazon, and Adobe

It will be an online live (Live Stream) class, so you can attend this class from any geographical location. It will be an interactive live session, where you can ask your doubts to the instructor (similar to offline classroom program).

Online Live sessions are scheduled on every

* Monday - 8:30 PM - 11:00 PM (IST)
* Thursday - 8:30 PM - 11:00 PM (IST)

# What You Will Learn

* Object Oriented Design & Design Patterns
* Handling Object-Oriented design (Low-level Design) questions like Design a Movie Ticket Booking System, Design Chess Game etc.
* Creating modular, flexible, and reusable Software

# Course Content

### Week 1

* OOPs Concepts: Inheritance, Polymorphism, Abstraction, Encapsulation, Association, Aggregation, Composition
* Basics of UML Diagrams
* Core design principles: SOLID, GRASP, DRY, KISS etc.
  + SOLID :
    - Single Responsibility Principle
    - Open/Closed Principle
    - Liskov Substitution Principle
    - Interface Segregation Principle
    - Dependency Inversion
* GRASP: General Responsibility Assignment Software Patterns
* DRY (Don't Repeat Yourself)
* KISS (Keep it Simple, Stupid)

### Week 2

* Introduction to Design Patterns
* Strategy Pattern
* Observer Pattern
* Decorator Pattern
* Factory Pattern
* Abstract Factory Pattern
* Singleton Pattern
* Command Pattern

### Week 3

* Adapter Pattern
* Facade Pattern
* Proxy Pattern
* Bridge Pattern
* Template method Pattern
* Composite Pattern
* Iterator Pattern

### Week 4

* State Pattern
* Null Object Pattern
* Commonly Asked Interview Questions
  + Design a parking lot
  + Design an ATM
  + Design a Movie Ticket Booking System
  + Design a Hotel Management System
  + Design a Chess Game

### Week 5

* Commonly Asked Interview Questions (Conti...)
  + Design Facebook - a social network
  + Design Amazon - Online Shopping System
  + Design Blackjack and a Deck of Cards
  + Design a Library Management System
  + Design Cricinfo/CricBuzz
  + Design a Car Rental System