

Course Title : Design Patterns

Duration : 4 days

Design patterns is an area of system design that addresses common, recurring design problems in object-oriented design, and provides proven solutions to them. This four day program introduces the participants to the area of design patterns for object-oriented design.

This training program covers the 23 GoF design patterns and a few other related patterns. The methodology adopted in the program is practical-oriented, driven by examples, exercises and presentations by the participants.

Program Objectives

At the end of the training program, the participants would have the following skills:

- understand the principles behind design patterns
- understand the applicability of various patterns in practical situations
- understand the trade-offs involved in various design alternatives based on design patterns

Audience

This program is aimed at architects, designers and developers, involved in object-oriented system design.

Prerequisites

The participants should have programming or design experience in at least one object-oriented programming language (e.g., Java, VB.NET, C++), in at least one real-world software project. Some familiarity with the Unified Modeling Language (UML) would be helpful, though not essential.

Set-up Requirements

Large whiteboards, lots of writing pads. No computers required.

Day-wise Break-up

| Day | Module | Topic |
|-------|----------|--|
| Day 1 | Module 1 | Introduction |
| | Module 2 | Creational Patterns (Factory Method up to Prototype) |
| Day 2 | Module 2 | Creational Patterns (Builder and Singleton) |
| | Module 3 | Structural Patterns (Adapter up to Composite) |
| Day 3 | Module 3 | Structural Patterns (Proxy and Flyweight) |
| | Module 4 | Behavioral Patterns (Chain of Responsibility up to Iterator) |
| Day 4 | Module 4 | Behavioral Patterns (Visitor up to Template Method) |

Course Outline

Module 1: Introduction

- Brief overview of UML: class diagrams and sequence diagrams
- Introduction to Design Patterns
- Classification of Design Patterns

Module 2: Creational Patterns

- Factory Method
- Abstract Factory
- Prototype
- Builder
- Singleton (also MonoState and Object Pool)

Module 3: Structural Patterns

- Adapter
- Bridge
- Façade
- Decorator (also Extension Objects)
- Composite
- Proxy
- Flyweight

Module 4: Behavioral Patterns

- Chain of Responsibility
- Command
- Memento
- Iterator
- Visitor
- Mediator
- Observer
- State
- Strategy
- Interpreter
- Template Method