Design Patterns (Basic)

Duration:

2-full-days (India: 9AM-4PM IST)

3-half-days (US: 8.30PM-12.30AM IST)

Description: Patterns-based design and code improve the quality of the system without reinventing the wheel. There are scores of patterns published targeting different styles of design. This program aims at discussing patterns relevant for object-oriented systems driven by the domain.

What will you learn

1. To understand SOLID principles
2. To review UML notation
3. To understand and apply GoF Design Patterns

Delivery: 30% theory & demonstration, 70% hands-on

Target Audience: Developers and Programmers

Prerequisites:

1. 2-5 years of programming with Java/Python/etc., (MUST)
2. Experience in coding object oriented programs using Java/Python/C++ and etc., (MUST)
3. Ability to interpret UML Class Diagrams (Desired)
4. Ability to interpret UML Sequence Diagrams (Desired)

Suggested pre-read:

1. https://www.digitalocean.com/community/tutorials/gangs-of-four-gof-design-patterns

Lab Setup:

1. UML tool like StarUML
2. Eclipse IDE with JDK 8 or VS Code with Python 3

Course Schedule:

2-Full-Day Sessions:

DAY-1: Modules 1, 2, 3

Day-2: Modules 4, 5, 6

3-Half-Day Sesions:

DAY-1: Modules 1, 2

DAY-2: Modules 3, 4

DAY-3: Modules 5, 6

Course Outline: (T: Theory, D: Demonstration, H: Hands-on)

- Module 1: OOAD
  - Review of OOAD (T)
  - SOLID Principles (T)
  - Loose Coupling & High Cohesion (T)
  - DRY (T)
  - Design Patterns: What & Why (T)

- Module 2: Review UML (T+D+H)
  - Classes
  - Sequences

- Module 3: Creational Patterns
  - Factory (T+D+H)
  - Abstract Factory (T+D)
  - Builder (T+D+H)
  - Dependency Injection (T+D)
  - Lazy Initialization (T+D)
  - Object Pool (T+D)
  - Multiton (T+D)

- Module 4: Structural Patterns
  - Decorator (T+D+H)
  - Adapter (T+D+H)
  - Composite (T+D)
  - Proxy (T+D+H)
  - Facade (T+D)

- Module 5: Behavioral Patterns
  - CoR (T+D+H)

Fluent Interface (T+D+H)

Observer (T+D+H)

Command (T+D+H)

Mediator (T+D+H)

Module 6: Case Study (H)