Applying Design Patterns
Duration: 3 days (9 hours each day with working lunch)

Design Patterns are popular among developers. However, figuring out which pattern to use, and when, often turns out to be a challenge. This course focuses on relating design patterns to design principles that are force behind them. By doing so, it makes it easier for developers to know if certain principles are force behind a problem at hand and then determine if a particular pattern is a good candidate. This course covers both patterns common in object-oriented languages and also in functional style of programming. With most mainstream languages supporting these two styles of programming, the content becomes highly relevant to programmers developing software for the enterprises.

The course has a good balance of interactive lectures and hands-on exercises. The attendees are expected to pair-up and work on the lab exercises. The instructor will assist the attendees as they work on the labs. The objective of the course is for the attendees to gain an in depth practical knowledge of the concepts so they can put them to immediate use on their real projects.

The course content will be customized to meet your teams' specific needs. Please review this detailed outline and suggest changes (additions, deletions, modifications) as you feel fit.

Topics

Essential Design Principles
* Some essential principles
* The importance of these principles
* Relationship between principles and patterns
* Compose Method Pattern
* Exercises

Design Patterns
* Why Patterns?
* Structure of Patterns
* Types of patterns
* Force behind patterns
* When to use patterns?
* How to use patterns?
* Exercises

Proactive vs. Adaptive Patterns
* Patterns that are used deliberately
* Patterns used to adapt the design
* How to select between them
* Exercises

Select Creational Patterns

* Main objective of these patterns
* How to identify applicable patterns
* Letting patterns emerge
* Interplay of patterns
* Patterns from popular libraries
* Exercises

Select Structural Patterns

* The problem they solve
* Popularity and applicability
* Working with multiple patterns
* Exercises

Select Behavioral Patterns

* Key purpose of these patterns
* Identifying proper use
* Mixing patterns
* Examples from popular libraries
* Exercises

Lambda Expressions and Functional Style

* The essence of functional programming
* Lambdas
* Passing lambdas
* Lambdas and lazy evaluations
* Exercises

Functional Design Patterns

* Influence of lambdas on patterns
* Decorator with lambdas
* Lazy object creation
* Lazy evaluations
* Function pipeline pattern
* Cascade Method Pattern
* Execute Around Method Pattern
* Exercises

Designing with Patterns

* How to approach using patterns
* Example problem, design, and patterns
* Exercises

About the Instructor

Dr. Venkat Subramaniam is an award-winning author, founder of Agile Developer, Inc., creator of agilelearner.com, and an instructional professor at the University of Houston.

He has trained and mentored thousands of software developers in the US, Canada, Europe, and Asia, and is a regularly-invited speaker at several international conferences. Venkat helps his clients effectively apply and succeed with sustainable agile practices on their software projects.

Venkat is a (co)author of multiple technical books, including the 2007 Jolt Productivity award winning book Practices of an Agile Developer. You can find a list of his books at agiledeveloper.com. You may read more about Venkat and Agile Developer, Inc. at http://agiledeveloper.com.