

PRG900 : Scala Programming

Code : PRG900 **Duration :** 3 days

Category : Programming

Audience :

This course is intended for Java, C# and other developers who want to learn programming in Scala or who want to explore the possibilities of Scala.

Prerequisites :

To participate in this course knowledge and experience with an object oriented programming language such as Java or C# is required.

Realization :

The theory is discussed on the basis of presentation slides. Demos are used to clarify the concepts. The theory is interspersed with exercises. The course material is in English and a modern IDE is used.



Scala Programming



Contents :

In the course Scala Programming the syntax and capabilities of the Scala programming language are discussed. Scala combines the power of object oriented and functional programming and makes it possible to deliver similar functionality with substantially less source code as Java or C#. Attention is paid to the data types, variables, control structures and packages of Scala, the opportunities to expand Scala and the usage of Scala Frameworks such as the Lift Web Framework. Other typical elements of the Scala language such as closures and deferred execution are discussed as well. Further the object oriented aspects of Scala such as inheritance, constructors and composition are treated and the support of duck typing is highlighted. The concept of Scala Traits is explained in detail and also types like lists, maps and tuples are put in the spotlights. Special attention is then given to the functional aspects of Scala such as first-class functions, higher order functions, side effects and the different ways of parameter passing in Scala. Finally attention is paid to concurrency in Scala, the use of Actors and Mail Boxes as well as asynchronous communication.

Module 1 : Introduction Scala

- What is Scala?
- Object Oriented Programming
- Functional Programming
- Scala characteristics
- Conciseness
- Extensibility
- Domain Specific Languages
- Static mixin Composition
- Dynamic mixin Composition
- Scala tools
- Scala command prompt
- Scala IDEs
- Scala Frameworks
- Lift Web Framework

Module 2 : Basic Syntax

- Type definitions
- Variables
- Methods
- if then else constructions
- for and while loops
- varargs
- Expressions
- Packages
- Imports
- Deferred execution
- Closures

Module 3 : Classes and Objects

- Classes and Constructors
- Primary constructors
- Inheritance
- Abstract methods and fields
- Inheritance versus composition
- Collections
- List and maps
- Generics
- Tuples
- Exceptions
- Case classes
- Option Types

Module 4 : Traits

- Rich interface
- Stackable modifications
- Trait interceptors
- Multiple views
- Multiple facets
- Dependency declaration
- Self-type annotation
- Duck typing
- Structural typing
- Composition

Module 5 : Functional Programming

- Annotations
- Object class
- Companion object
- apply functions
- First class functions
- Pattern matching
- Higher order functions
- Side effects
- Default parameters
- Named Parameters
- Call by value
- Call by name
- Implicit rules
- Marking rule
- Scope rule

Module 6 : Scala Concurrency

- Actor Model
- Objects as Actors
- Actor and Mail Boxes
- Asynchronous Communication
- No Shared State
- No Deadlock