

## Clean Code, TDD, BDD Crash Course (Java)

 Duration: 2 Days

 Available Languages: English German

### Audience

Software Crafters: Software Developers, Architects.

### Precondition

Good knowledge of Java.

### Goals

Learn how to develop software better using Clean Code, TDD, and BDD.

### Contents

- Clean Code Introduction
  - Clean Code and Scrum/XP
  - The Two Values of Software
  - The 5 Design Smells
- Clean Code Basics
  - Form and Names
  - Functions and Function Structure
  - Programming Paradigms Revisited
- Clean Architecture: Principles of Object-Oriented Class Design
  - Coupling and Cohesion
  - SOLID Principles
  - Package Principles
  - The 4 Rules of Simple Design
- Refactoring
  - Goals
  - Techniques (rename, move, extract, convert, etc)
  - Protect against regression
  - Legacy code: Characterization testing, seams, sprouts, etc
- Test Basics
  - Testing and Scrum/XP
  - The Test Automation Pyramid
  - Test Automation, Testing, and CI/CD

- Test-Driven Design
  - Anatomy of xUnit Frameworks; JUnit, TestNG
  - Definition of Testable
  - The Three Laws of TDD
  - The Red-Green-Refactor Cycle
  - The Red-Green-Refactor-Commit Cycle
  - The Test-Commit-Revert Cycle (TCR)
  - Principles of TDD
- Advanced TDD
  - The Transformation Priority Premise, Test Sequence
  - Test-Doubles, Mocking
  - Stateism vs Mockism
  - How TDD drives an emergent design
- Behavior-Driven Development
  - The Gherkin Language, Feature Files
  - Integrating and Mapping BDD in Scrum/XP - Acceptance Test-Driven Development
- Cucumber
  - Step Definitions in Java 7
  - Step Definitions in Java 8
  - Assertions with JUnit
  - Assertions with Hamcrest Matchers
  - Reusing Feature Files on different levels of the test pyramid
  - Managing Cucumber in large projects

In open classroom training, we use a specific set of tools listed below. In brackets are alternatives to which we can tailor the training in case of in-house training.

## Language

Java (also available in C#, C++, Golang, JavaScript, Kotlin, and Scala)

## IDE

IntelliJ IDEA (Eclipse, Goland, NetBeans, Atom, Visual Studio Code)

## Unit Test Framework

JUnit 5 (TestNG, JUnit 4, JUnit 3, ScalaTest, NUnit, Visual Studio Testing Framework, Mocha)

## BDD Framework

Cucumber (Fit, FitNesse, JBehave, JDave, Concordion, SpecFlow)

## Booking

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