



Invest in Your Java Katalogue

Managing Java Versions Changes on the Rapid Release Train

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Donald Raab

Instructional Coach and Open Source Advocate in Application Platforms and Services



Primary Programming Languages

- Clipper '89 – '95, Smalltalk '94 – '00, Java '00 – Present

Active in Java Community

- Member of Java Specification Request (JSR) 335 (Lambdas for Java) Expert Group since 2011
- Previously a member of Java Community Process (JCP) Executive Committee (EC)
- Conference speaker: 4x JavaOne, JVM Language Summit, Devnexus, Devvix US, EclipseCon, Great Indian Developer Summit (GIDS)

Active in Open Source

- Creator of **Eclipse Collections**—open source Java Collections Framework
 - <https://github.com/eclipse/eclipse-collections>
- Creator of BNY Mellon Code Katas
 - <https://github.com/BNYMellon/CodeKatas>

Aditi Mantri

Principal Developer, Global Fund Accounting



- More than 15 years experience developing complex Java-based applications
- Member of BNY Mellon's Global Fund Accounting Team
 - Responsible for driving projects that leverage agile methodologies
 - Vaadin, Activiti, Drools, Spring Boot and Hazelcast
- Bachelor's degree in Computer Science and a Master's degree in Computer Applications from the University of Pune, India
- Senior Technical Lead at Bank of America prior to joining BNY Mellon

Code Katas



What is a Kata?

A set of exercises for an individual in martial arts



What is a Code Kata?

A hands-on programming exercise which helps hone your skills through practice

Code Katas are usually set up as a series of unit tests which fail. Your task is to make them pass.

The original Code Katas from Dave Thomas

- One of the [Pragmatic Programmers](#)
- <http://codekata.com/>

Code Kata Styles



Refactor the code

Tests pass, but the code can be simplified using a new language or library feature



Fix the test

Tests fail, and all of the code is written in the test

Replace the missing code with appropriate API calls



Fix the code

Tests fail, but should not be touched

Coding is done in the domain classes (TDD)

Write the missing code in the method that is called in the test



Sandbox

Project set up for you to experiment with features

Free Form—You try what you want

The Best Way to Learn is to Teach



We learn best by doing

Katas are hands-on exercises where you code



If you have to teach someone something, you spend more time learning it

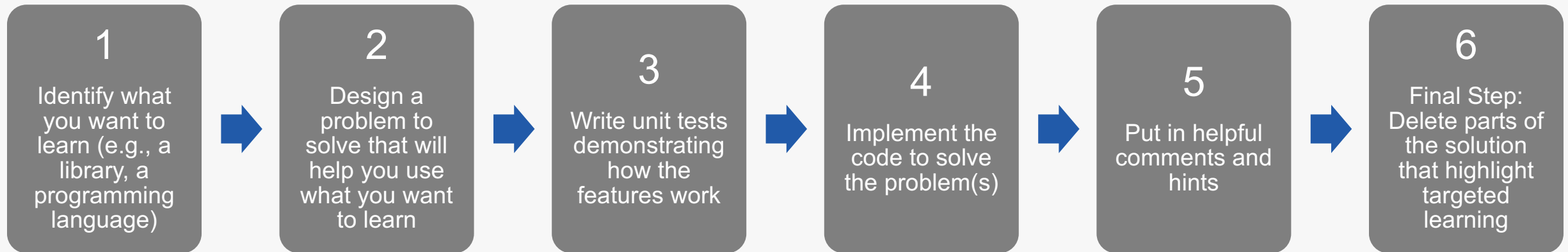
Teaching results in deeper learning



Teach yourself first

Then teach others by sharing katas you develop

How to Build a Kata



Now you have built a kata!

Solve it—refactor and improve until you are happy!

BNY Mellon Java Katalogue on GitHub

Java Lambda Kata—Practice and learn Java lambdas with simple exercises

Deck of Cards Kata—Practice using Java 8 Streams, Eclipse Collections, Guava, Apache Commons and/or Vavr on a simple domain

Donut Kata—Practice and learn advanced Eclipse Collections APIs using Java 8, Java 10 or Kotlin

Calendar Kata—Practice and learn the APIs in the Java 8 Date/Time and ThreeTen-Extra libraries

CodePoint Kata—Read a secret message from a file into memory, translate it and then write out the revealed message to a file

JMH Kata—Experiment with the Java Microbenchmark Harness by running and writing microbenchmark performance comparisons

<https://github.com/BNYMellon/CodeKatas>

Java Lambda Kata

Kata Style: Refactor the code

Live Code: `FunctionalInterfaceTest`

Java Lambda Kata—Lessons

Java 8

- Functional Interfaces (SAM types)
- Lambdas / Method References
- `IntStream.rangeClosed`
- `Collectors.toList`
- `Stream.of`

Java 9

- Static factory methods for collections (`List.of`, `Set.of`, `Map.of`)

Java 10

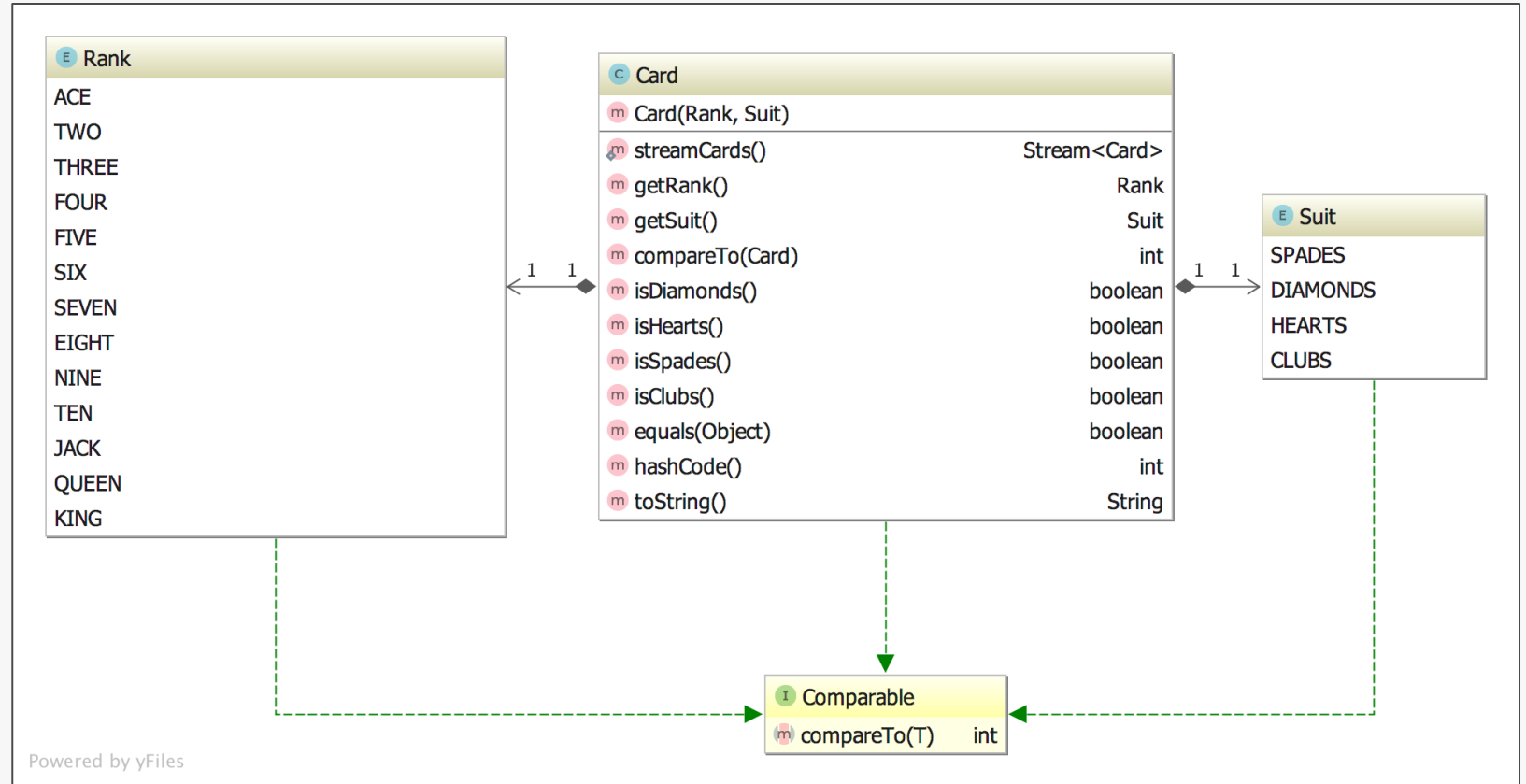
- `var` does not work with lambda expressions (without casting)
- `var` moves the type information from the left to the right
- Discipline required for defining your variable names with `var`
 - Read Stuart Mark's Style Guide for LVTI - <http://openjdk.java.net/projects/amber/LVTIstyle.html>

Deck of Cards Kata

Kata Style: Fix the code

Live Code: Java Streams

Live Code: Eclipse Collections



Deck of Cards Kata—Java Stream Lessons

Java 8

- Stream methods (sorted, collect, flatMap, map)
- Collectors (groupingBy, counting)

Java 10

- var
- Map.copyOf()
- Collectors.toUnmodifiableList()

Deck of Cards Kata—Eclipse Collections Lessons

Sets

- cartesianProduct

LazyIterable

- toSortedList

MutableList

- toImmutable

ImmutableList

- groupBy, countBy

Donut Kata—Lessons Learned

MutableList

- flatCollect, countBy

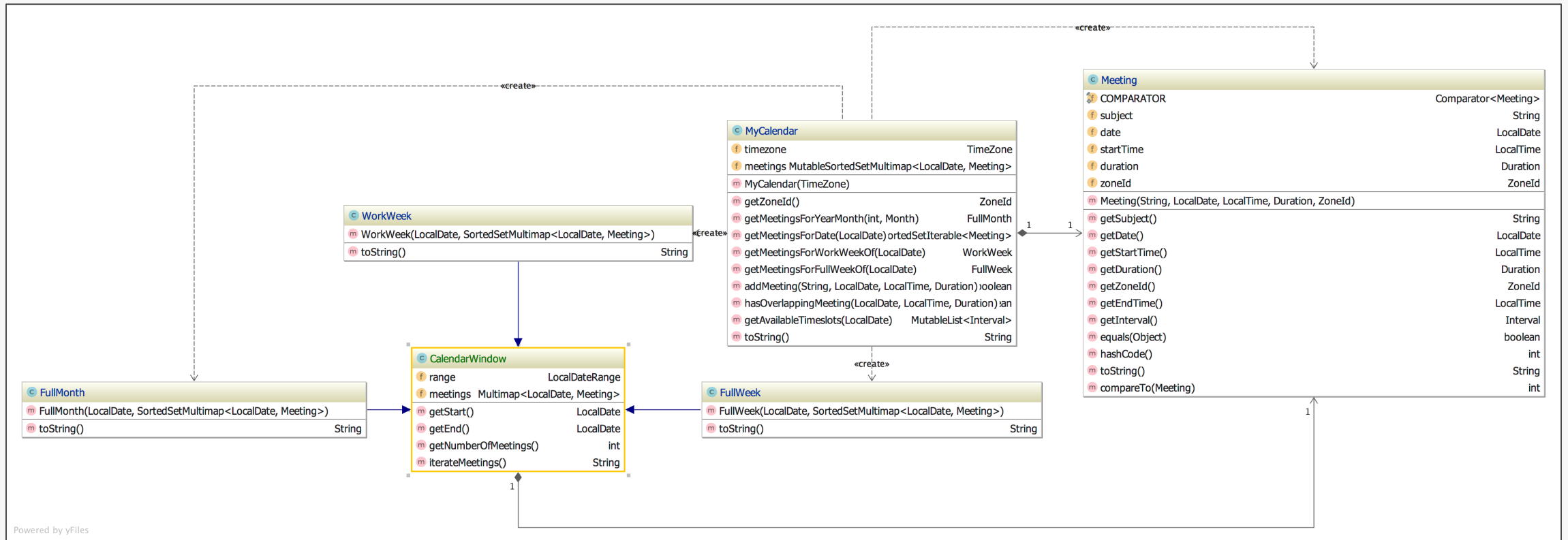
MutableBag

- topOccurrences

Calendar Kata

Kata Style: Fix the code

Live Code: hasOverlappingMeeting



Calendar Kata – Lessons Learned

Three-ten Extra

- Interval.of
- LocalDateRange.of

Java.Time

- LocalDateTime
 - of, toInstant
- LocalDate
 - with, plusDays
- TemporalAdjusters.previousOrSame

Eclipse Collections

- SortedSetIterable.anySatisfyWith

Summary



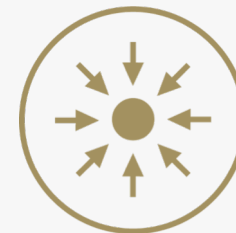
Code Katas are a great way to learn library and language features



We discussed how to go about building your own katas



The best way to learn is to teach—
“docendo discimus”



We demonstrated several different Code Katas from the BNY Mellon GitHub repository



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