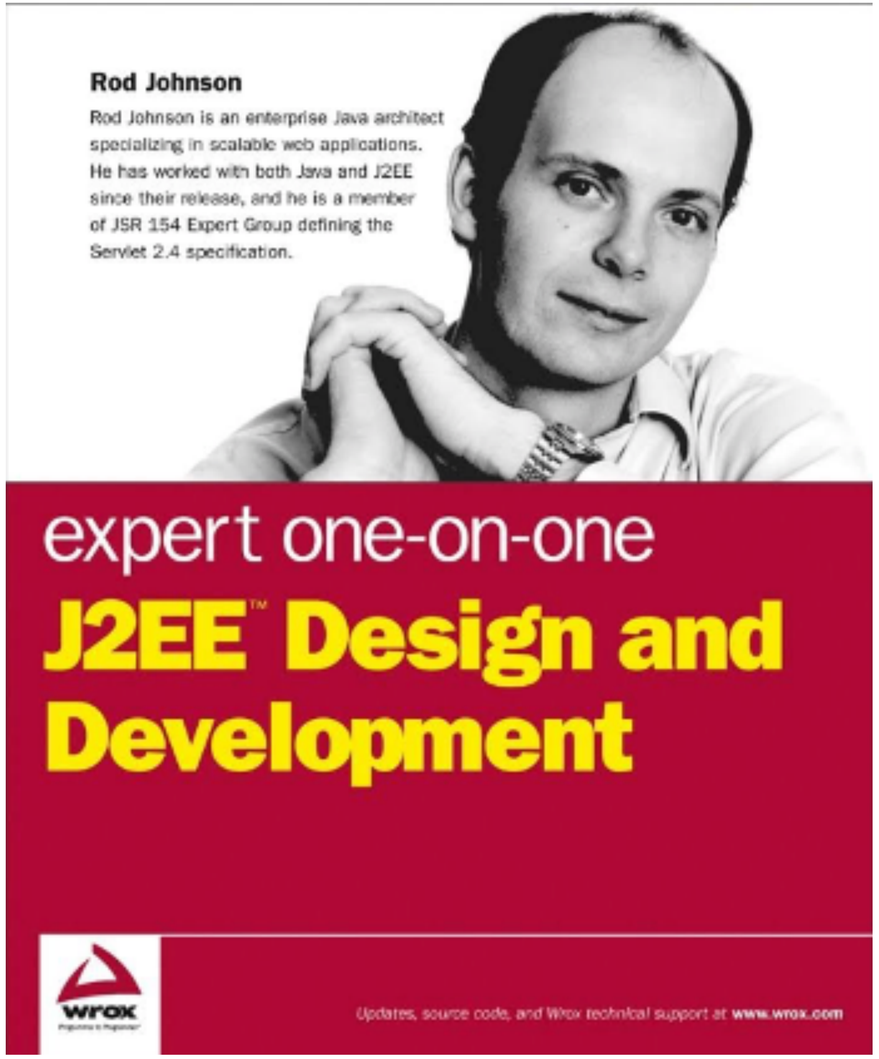
# Introduction to Spring

Spring Framework vs Spring Boot
Features and Benefits

# Spring Framework

- Started out as code in a book by Rod Johnson
- A light weight alternative to Java EE and EJB
- Builds on Dependency Injection
- Spring Framework 1.0 released in 2003



# Spring Framework

- Spring Framework is a Java-based application development framework
- It provides a set of libraries and tools that simplify Java development
- It is modular and can be used to build a wide range of applications
- A core feature is Dependency Injection which manages object dependencies

# Dependency Injection

- The dependency of an object is injected by an external entity
- The dependency is not created directly in the code with the new keyword
- Dependency Injection decouples the object from its dependencies
- This makes it easier to modify, test and maintain the code

# Demo 1 - Dependency Injection

- Creating hard-coded dependencies with the new keyword
- Dependency Injection by getting the dependency injected from the outside

# Spring Framework - Benefits

- Very popular and powerful framework
- Integrates with many popular open source frameworks
- Large number of modules providing different services
- But the configuration can become complex...
- And handling the versions of 3rd party dependencies can become complex...

# Spring Framework - Challenges

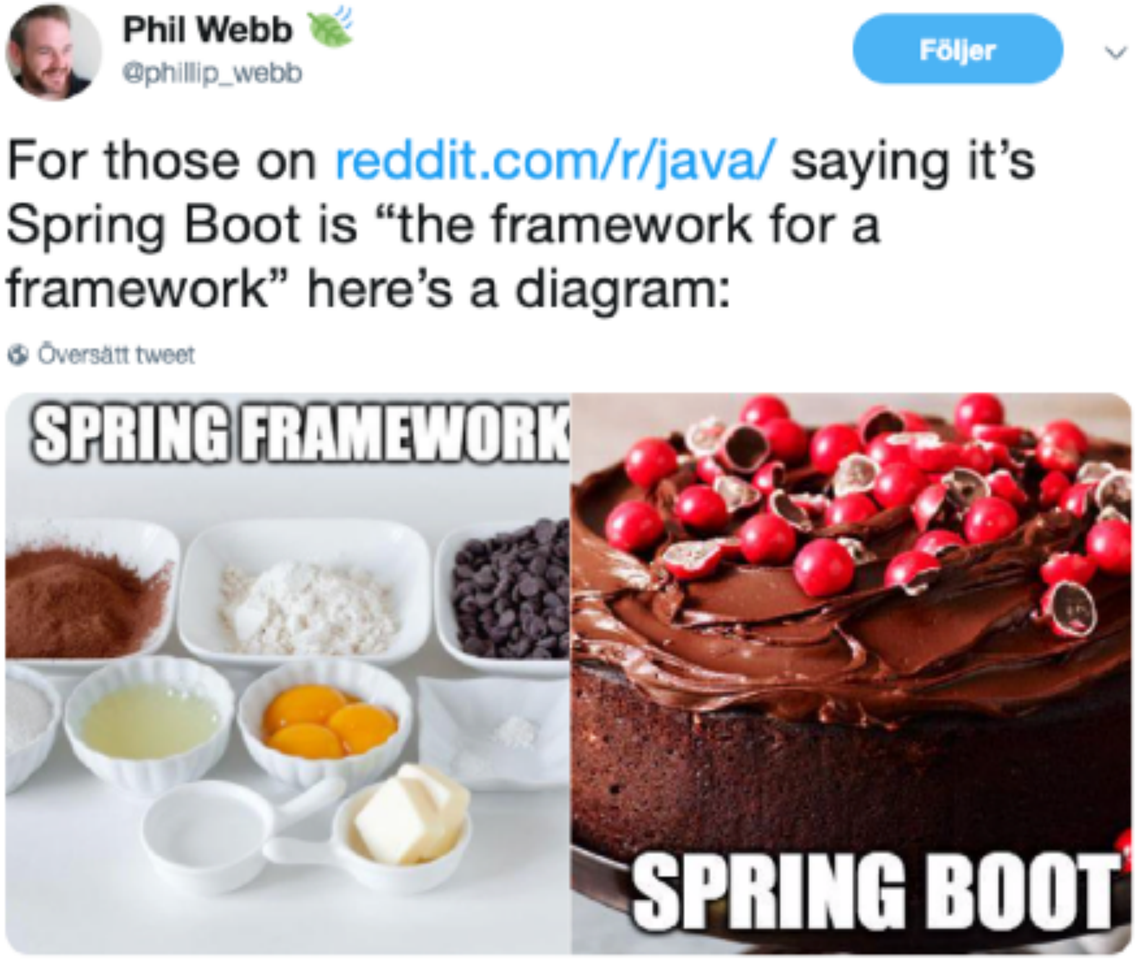
- The configuration can become complex
- Handling the versions of 3rd party dependencies can become complex

# Spring Boot - Benefits

- Spring Boot solves the problems with configuration and 3rd party libraries
- Spring Boot is an opinionated view of a Spring application
- Just tell Spring Boot what functionality you want (starter-dependencies)
- Enables Java developers to quickly start new projects
- The default configuration can easily be overridden by developers
- Production ready!

# Spring Boot vs Spring Framework

- Conventions
- Look at the ingredients



# The Magic of Spring Boot

- 1. Automatic configuration
- 2. Starter dependencies

# 1. Automatic configuration

- Convention over configuration
- Look at the dependencies

# 2. Starter dependencies

- Pre-defined collections of dependencies
- The versions are tested and work together

# Spring Framework modules

- Spring Core
- Spring MVC
- Spring Data
- Spring Security
- Spring Boot
- And there are many more…

# Spring Core - Features

- The foundation of the Spring Framework
- Manages the lifecycle of Java objects (called Spring Beans)
- Provides the Dependency Injection
- Includes the Spring Expression Language (SpEL)

# Spring MVC - Features

- MVC stands for Model View Controller
- Provides a web framework for building web applications
- Features like Request mapping, Form handling and Validation
- Supports View technologies like JSP, Thymeleaf and Velocity

# Spring Data - Features

- A unified way of working with databases, both relational (SQL) and NoSQL
- Modules like Spring Data JPA, Spring Data MongoDB and Spring Data Redis

# Spring Security - Features

- A powerful and flexible security framework for Spring applications
- Features like Authentication, Authorization and Secure communication

# Spring Boot - Features

- Auto configuration
- Starter dependencies
- Embedded web server
- Spring Actuator
- Testing features