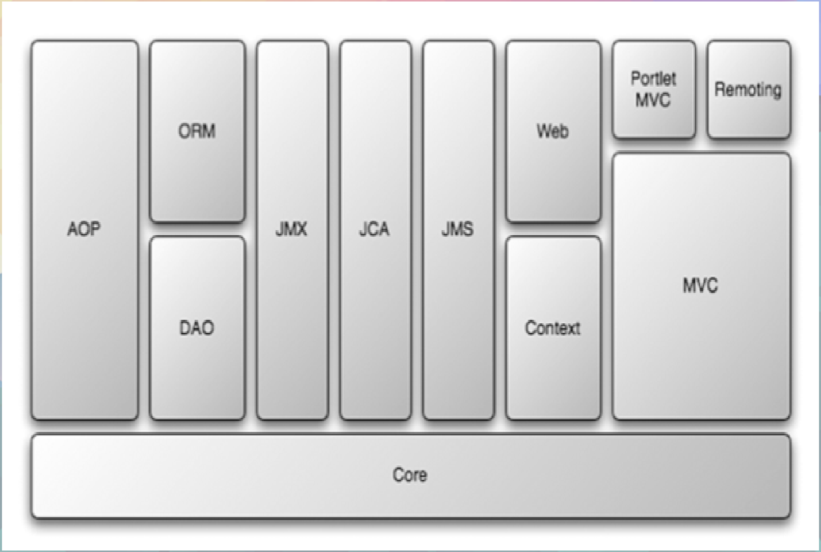
Spring in Action

Bernardo Cuteri
Slides provided by Carmine Dodaro

Spring

- Open source framework
- Created to address the complexity of enterprise application development
- Any Java application can benefit from Spring in terms of simplicity and testability

Spring Framework



Spring Framework (2)

- The Spring Framework is made up of several modules
- Do I need to use all of the modules? No, it is possible to use a fragment of Spring Framework
- Spring offers integration points with several other frameworks and libraries

Important Features

- Is Lightweight, in terms of both size (more or less 2.5 MB) and overhead (negligible)
- Supports of Dependency Injection (DI), objects are passively given their dependencies instead of creating or looking for dependent objects for themselves
- Supports Aspect Oriented Programming (AOP), i.e. application objects are not responsible for other system aspects, such as logging
- Is a Container, in the sense that it contains and manages the lifecycle and configuration of application objects
- Is a Framework, since it allows to configure and compose complex applications from simpler components

Dependency Injection

- All real-world applications are made up of two or more classes that collaborate with each other
- In general, each object is responsible for obtaining its own references to the objects it collaborates with
- Using Dependency Injection objects are given their dependencies at creation time by some external entity that coordinates each object in the system
- Objects are not responsible for finding or creating the other objects that they need
- Instead, they are given references to the objects that they collaborate with by the container
- The act of creating these associations between application objects is referred to as wiring

Application Context

- An ApplicationContext is responsible
  - to load bean definitions
  - to wire beans together
  - to dispense beans upon request
  - . . . and much more
- Many implementations of ApplicationContext
  - ClassPathXmlApplicationContext: loads a context definition from an XML file located in the classpath
  - FileSystemXmlApplicationContext: loads a context definition from an XML file in the file system
  - XmlWebApplicationContext: loads context definitions from an XML file contained within a web application

AOP: Basic Concepts

- Aspect: a modularization of a concern that cuts across multiple classes
- Join point: a point during the execution of a program (e.g. the execution of a method)
- Advice: action taken by an aspect at a particular join point
  - **Before**: Advice that executes before a join point
  - **After returning**: Advice to be executed after a join point completes normally
  - **After throwing**: Advice to be executed if a method exits by throwing an exception
  - **After (finally)**: Advice to be executed regardless of the means by which a join point exits
  - **Around**: Advice that surrounds a join point such as a method invocation
- Pointcut: a predicate that matches join points (e.g. the execution of a method with a certain name)