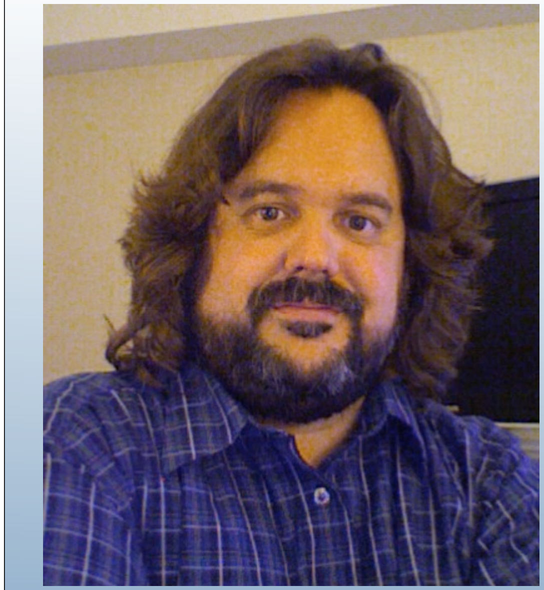
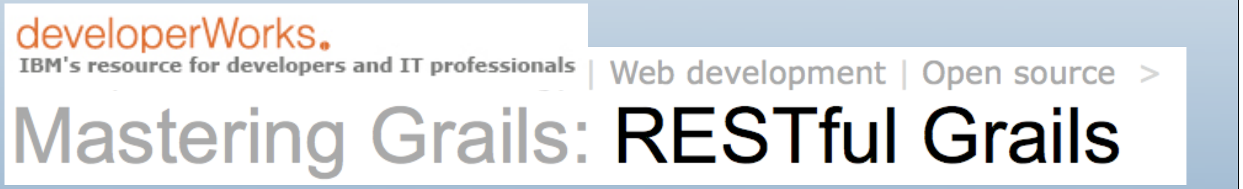
DSLs in Groovy

Say what you mean,
Mean what you say



Scott Davis
http://davisworld.org



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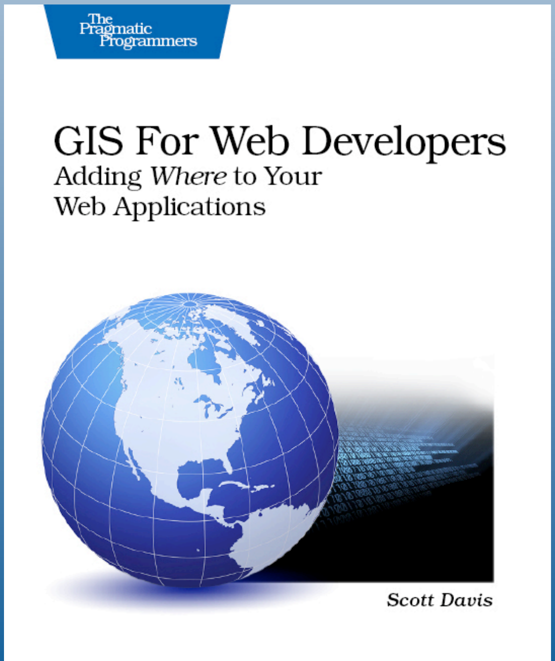
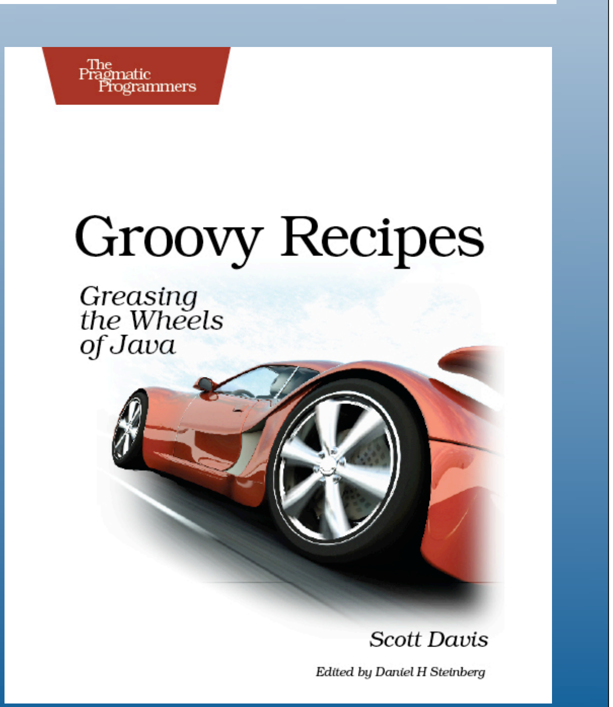
Mastering Grails: RESTful Grails



The Pragmatic Programmers

GIS For Web Developers
Adding *Where* to Your Web Applications

Scott Davis



The Pragmatic Programmers

Groovy Recipes
Greasing the Wheels of Java

Scott Davis

Edited by Daniel H Steinberg

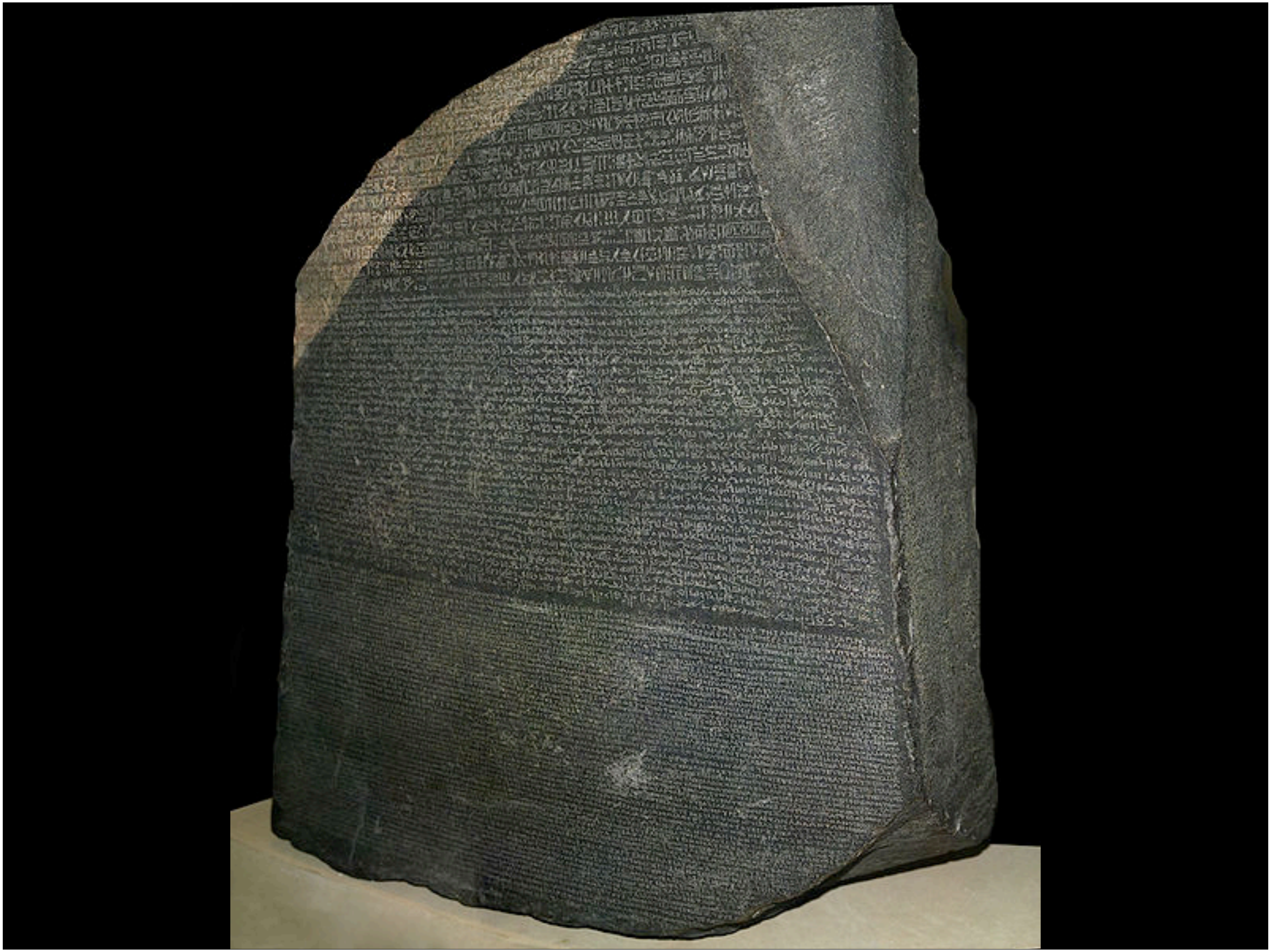
What is a Domain Specific Language?

Domain

facebook®

Letras Hispanas
Letras Hispanas
Letras Hispanas
Letras Universales
Letras Universales
Letras Universales
Letras
Libros en Inglés
amazon.com
and you're done.™
ENTER
ABCDE

GARAGE
SALE
Friday & Saturday only
ebay™



Language

Java™

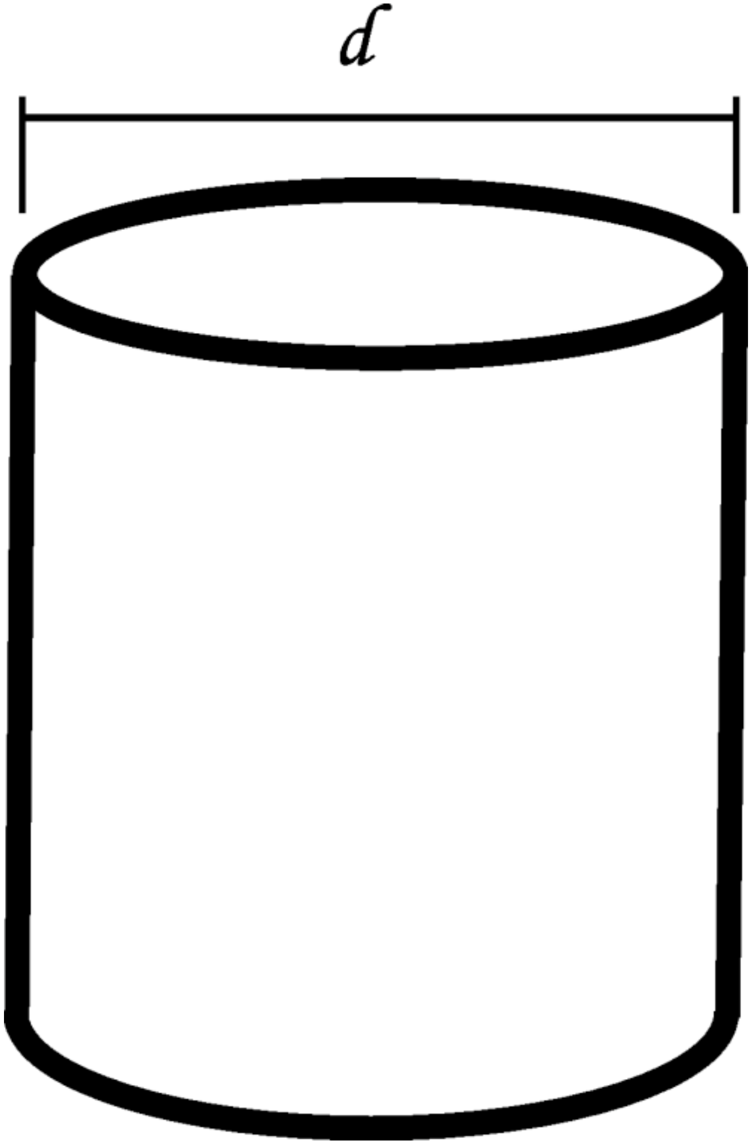
Sun Microsystems

ГОРЬКИЙ

DSL:

a specific tool for a
specific job

SQL



d

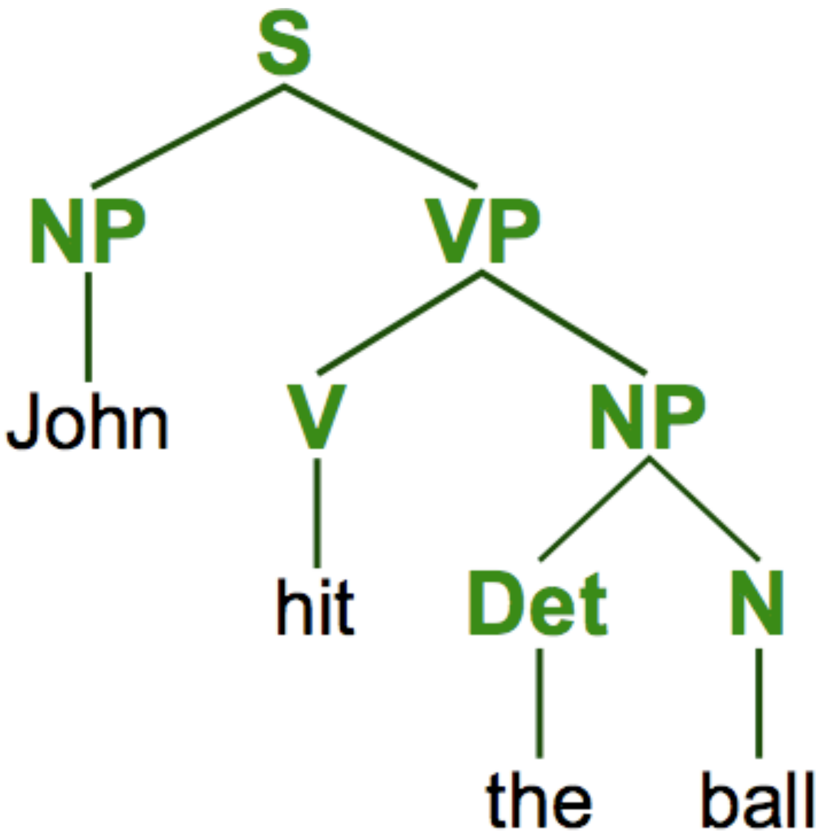
```
select title, author
from book
where isbn = ‘abc123’;
```

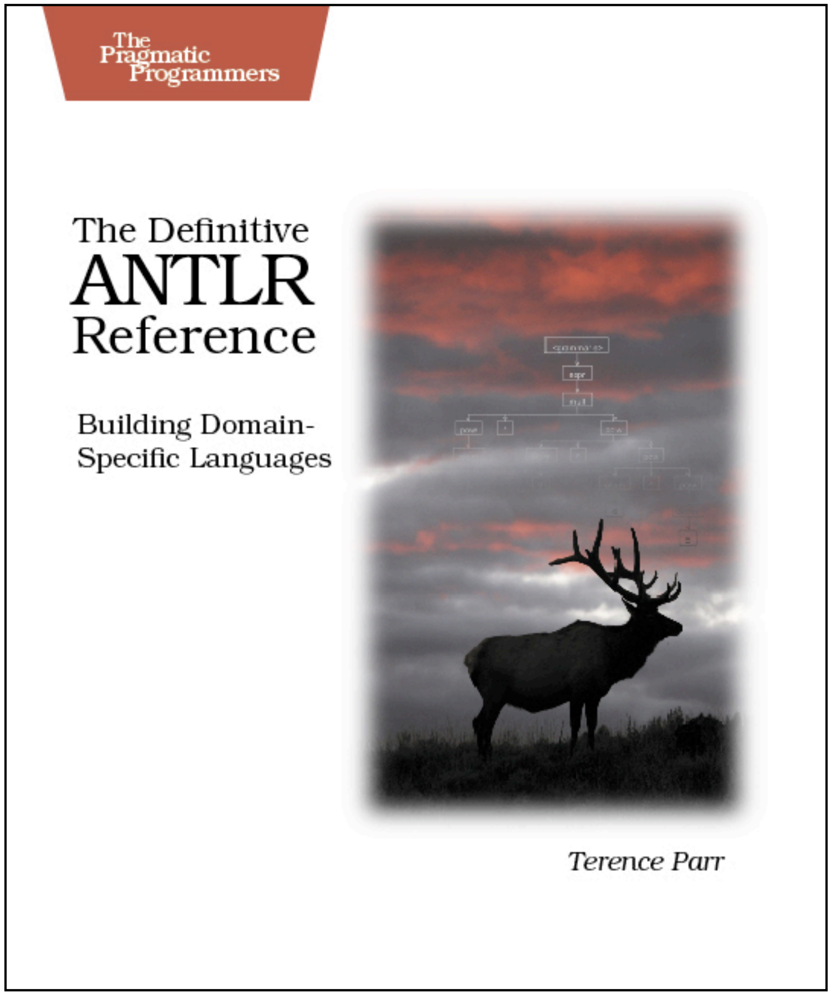
```
<target name="compile"
        description="Compiles the Java code">
    <mkdir dir="${build.dir}" />
    <mkdir dir="${classes.dir}" />

    <javac srcdir="${source.dir}"
           destdir="${classes.dir}"
           debug="on" deprecation="on">
      <classpath refid="compile.classpath"/>
    </javac>

    <copy todir="${classes.dir}">
      <fileset dir="${source.dir}">
        <include name="**/*.properties" />
        <include name="**/*.xml" />
      </fileset>
    </copy>
</target>
```

Internal

or

External?


S
NP
VP
John
V
NP
hit
Det
N
the
ball

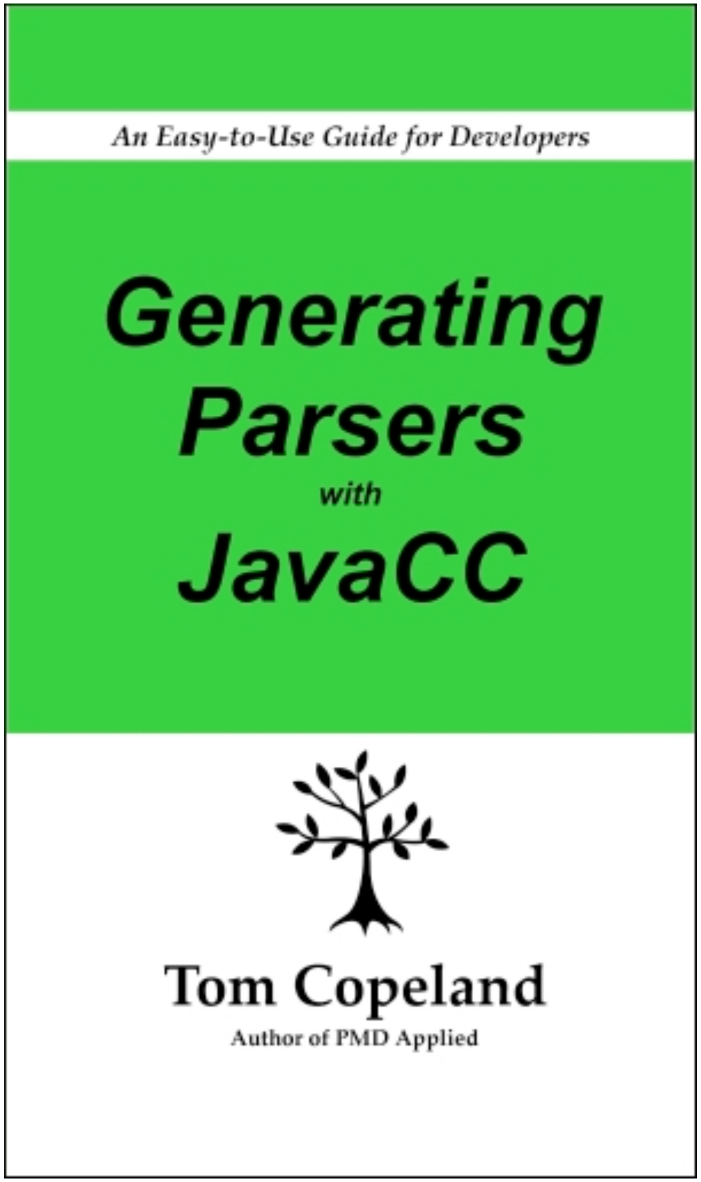


The Pragmatic Programmers

The Definitive ANTLR Reference

Building Domain-Specific Languages

Terence Parr

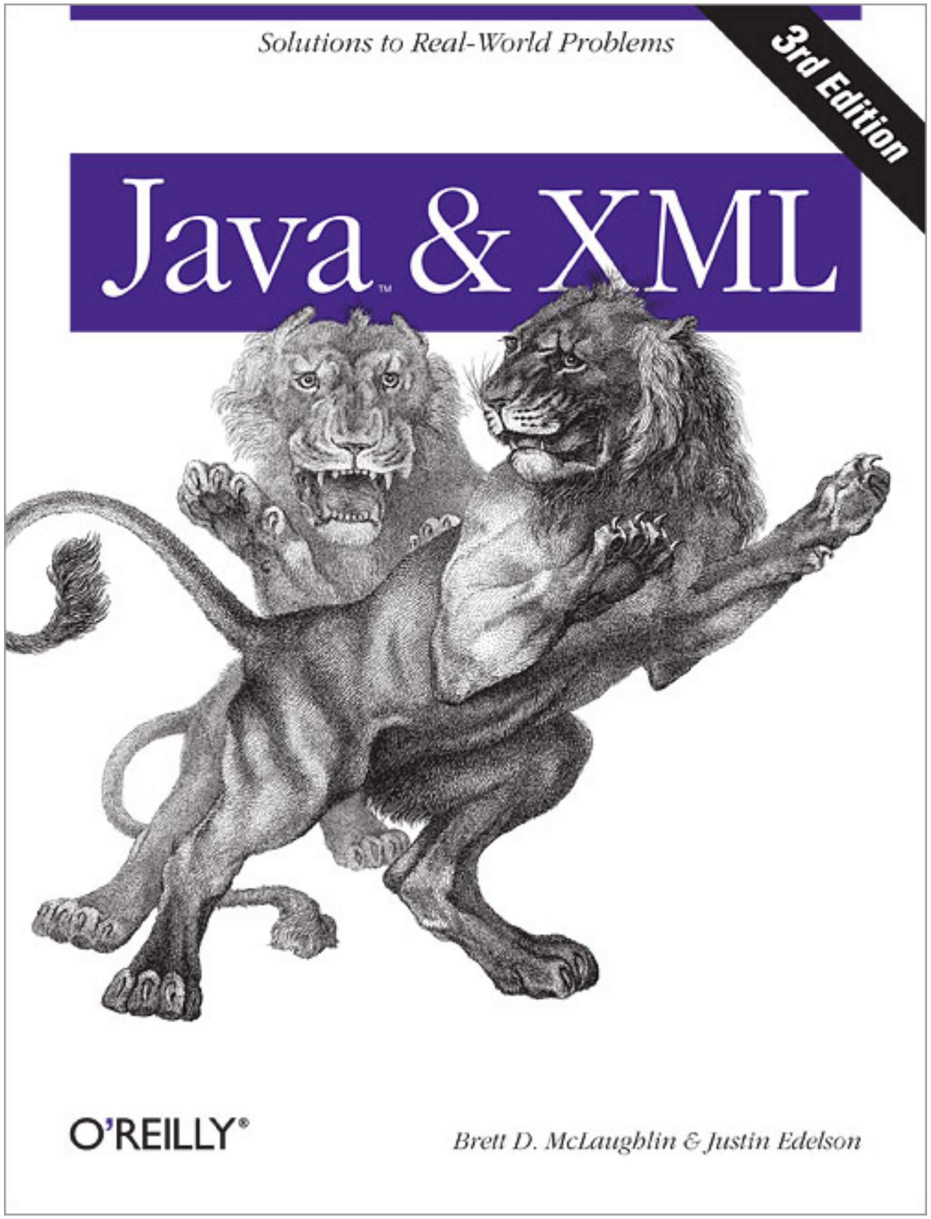


An Easy-to-Use Guide for Developers

Generating Parsers with JavaCC

Tom Copeland

Author of PMD Applied



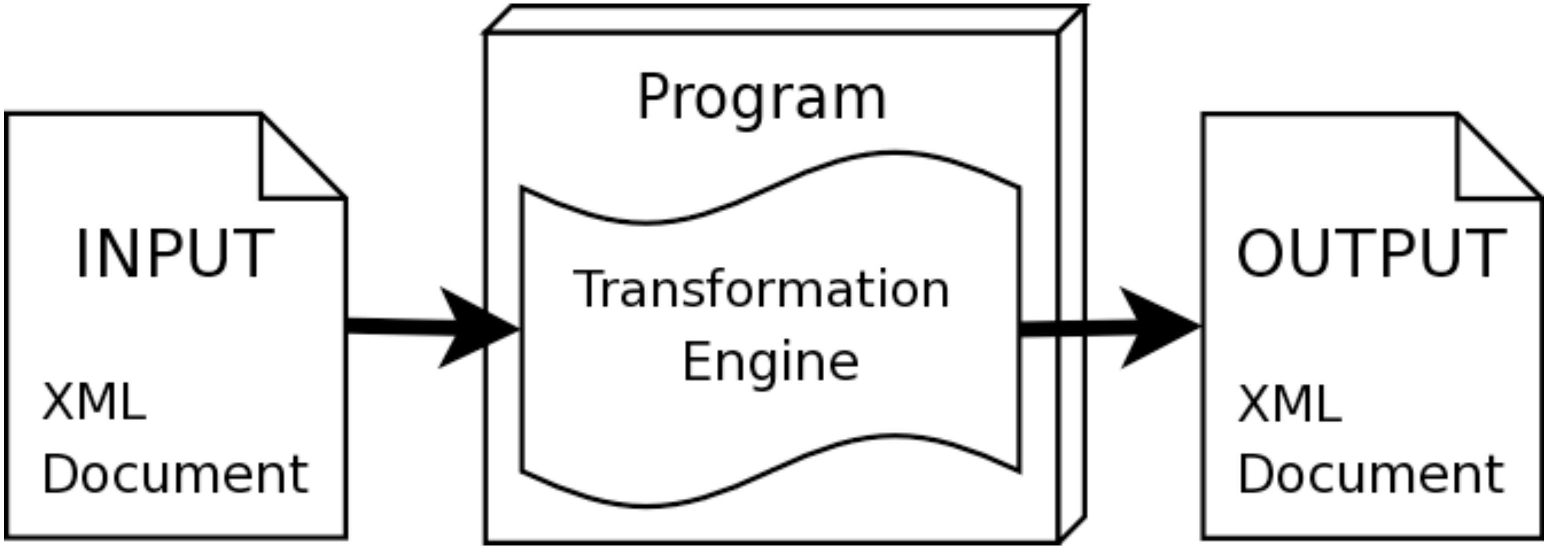
Solutions to Real-World Problems

3rd Edition

Java™ & XML

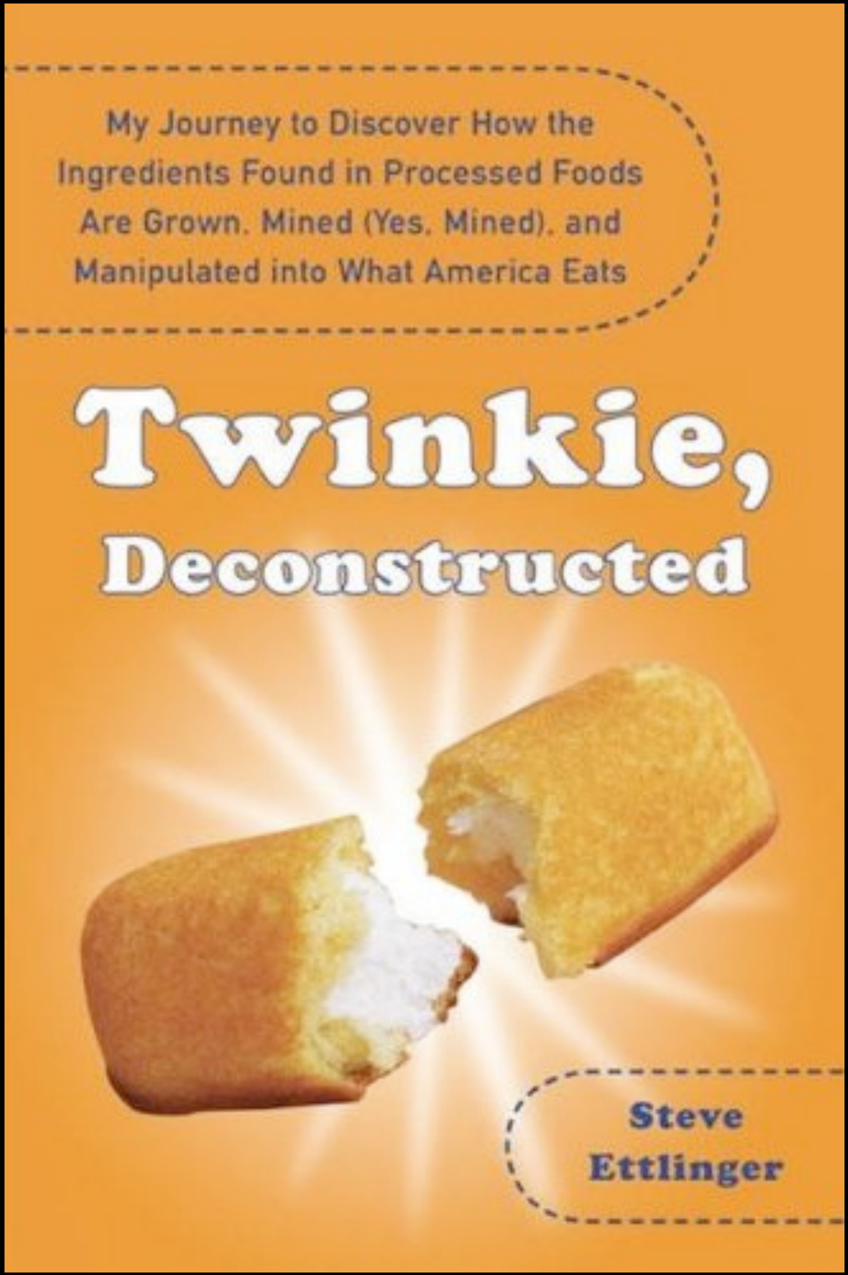
O'REILLY®

Brett D. McLaughlin & Justin Edelson


INPUT
XML
Document
Program
Transformation
Engine
OUTPUT
XML
Document

Simplicity

* Cornstarch
* Corn flour
* Corn syrup solids
* Mono and diglycerides
* Soy lecithin
* Polysorbate 60
* Dextrin
* Calcium caseinate
* Sodium stearol lactylate
* Wheat gluten
* Calcium sulfate
* Natural and artificial flavors
* Caramel color
* Sorbic acid (to retain freshness)
* Artificial color (yellow 5, red 40)



My Journey to Discover How the
Ingredients Found in Processed Foods
Are Grown, Mined (Yes, Mined), and
Manipulated into What America Eats

Twinkie,
Deconstructed

Steve
Ettlinger

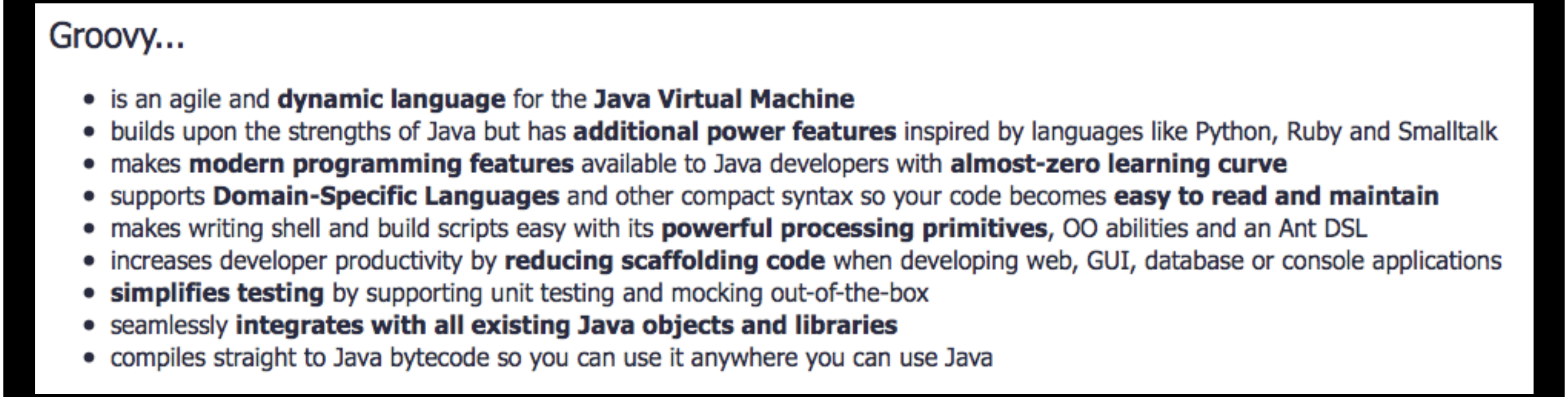
```
select * from books;
```

What is Groovy?

Groovy is a DSL for Java

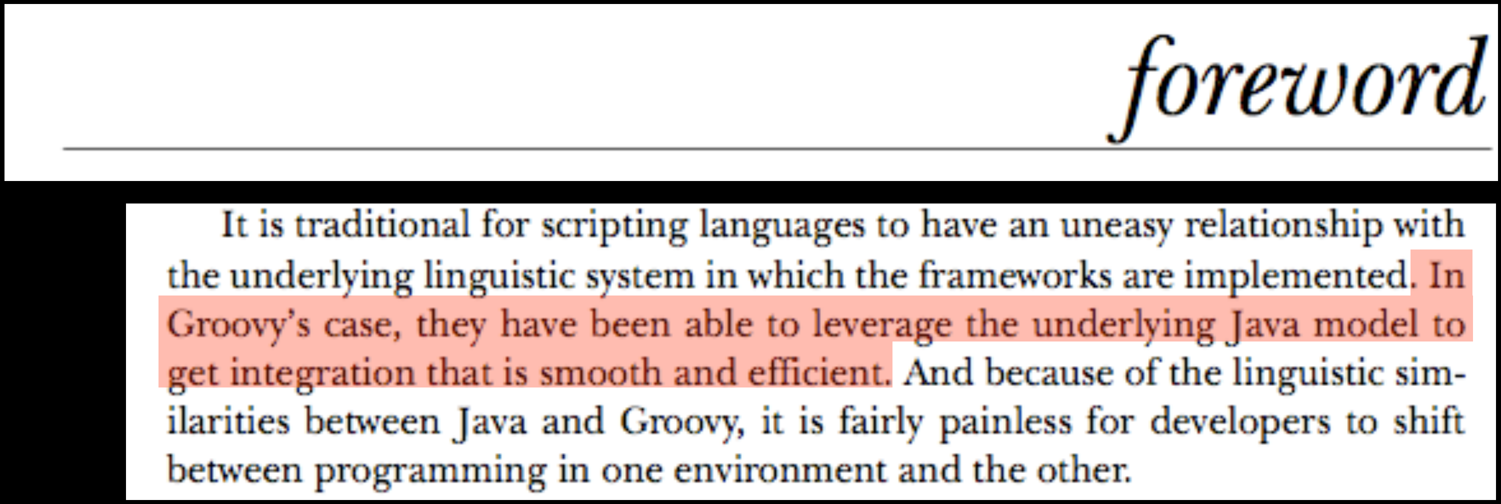
Groovy

An agile dynamic language for the Java Platform



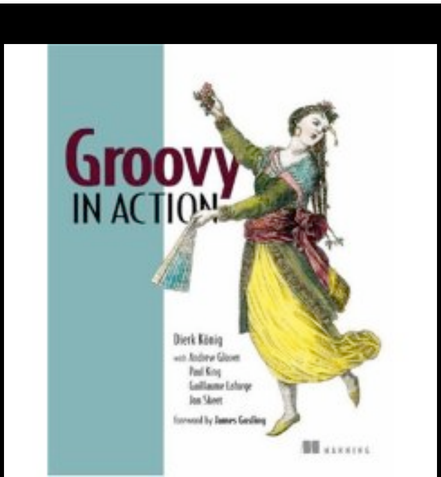
Groovy...

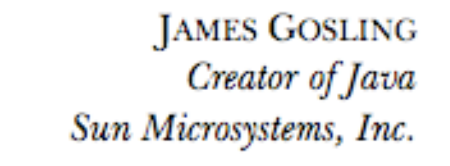
- is an agile and **dynamic language** for the **Java Virtual Machine**
- builds upon the strengths of Java but has **additional power features** inspired by languages like Python, Ruby and Smalltalk
- makes **modern programming features** available to Java developers with **almost-zero learning curve**
- supports **Domain-Specific Languages** and other compact syntax so your code becomes **easy to read and maintain**
- makes writing shell and build scripts easy with its **powerful processing primitives**, OO abilities and an Ant DSL
- increases developer productivity by **reducing scaffolding code** when developing web, GUI, database or console applications
- **simplifies testing** by supporting unit testing and mocking out-of-the-box
- seamlessly **integrates with all existing Java objects and libraries**
- compiles straight to Java bytecode so you can use it anywhere you can use Java



foreword

It is traditional for scripting languages to have an uneasy relationship with the underlying linguistic system in which the frameworks are implemented. In Groovy's case, they have been able to leverage the underlying Java model to get integration that is smooth and efficient. And because of the linguistic similarities between Java and Groovy, it is fairly painless for developers to shift between programming in one environment and the other.





JAMES GOSLING
Creator of Java
Sun Microsystems, Inc.

Installing Groovy

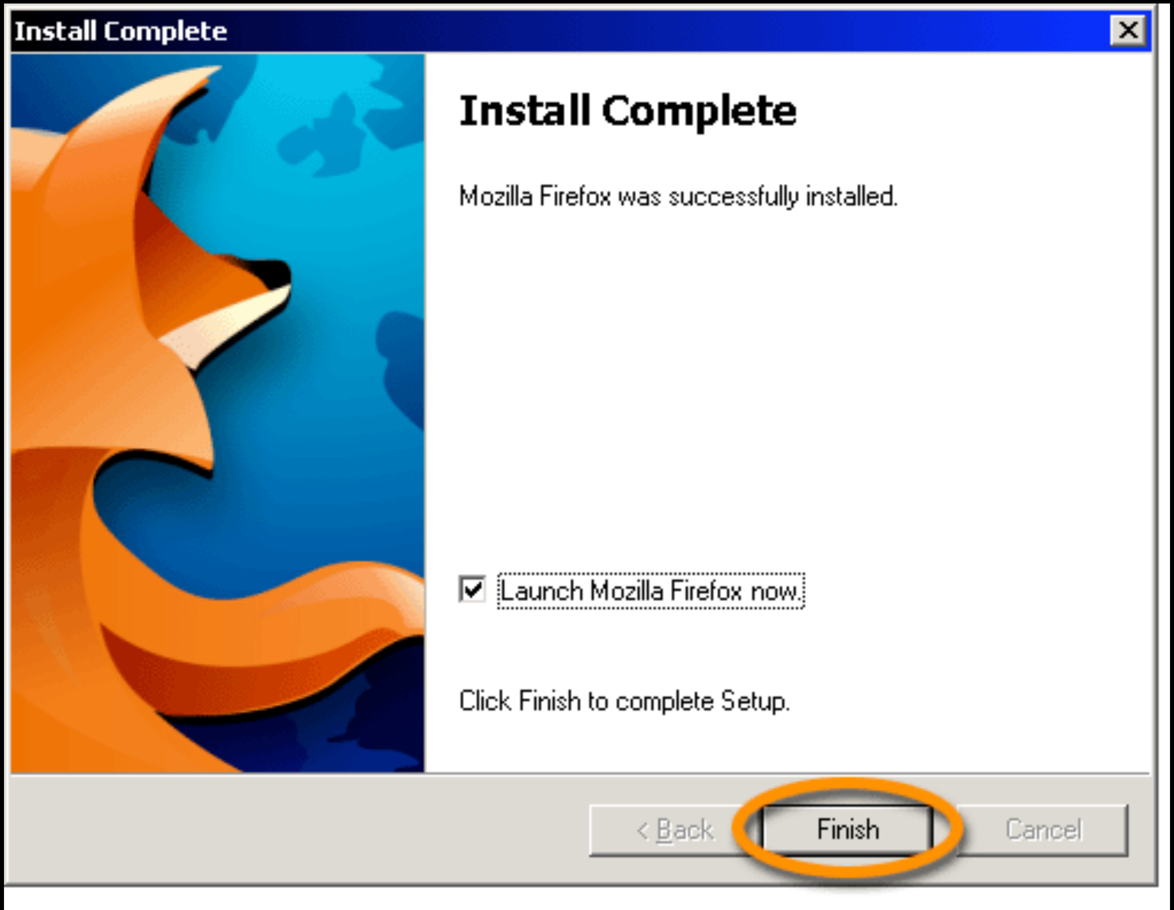
- Three steps:
  1. Download and unzip Groovy from http://groovy.codehaus.org
  2. Create a GROOVY_HOME environment variable
  3. Add $GROOVY_HOME/bin to the PATH

- Adding Groovy to your Java project is as simple as adding a single JAR to your CLASSPATH
  - $GROOVY_HOME/embeddable/groovy-all-1.5.7.jar

```
public class HelloJava{
  public static void main(String[] args){
    System.out.println("Hello Java");
  }
}
```

```
println “Hello Groovy”
```

A DSL for Installation



Install Complete

Install Complete

Mozilla Firefox was successfully installed.

☑ Launch Mozilla Firefox now.

Click Finish to complete Setup.

```
#!/usr/bin/env groovy

if(args){
  def project = args[0]
  println "Installing ${project}..."
  "cp jboss.tar.gz /install/jboss".execute()
  println "Finished installing ${project}..."
} else{
  println """USAGE: install jboss
    [from src/dir] [to dest/dir]"""
}
```

A DSL for Time

12 1 2 3 4 5 6 7 8 9 10 11

```
Integer.metaClass.getHour = {->
  delegate * 60
}

Integer.metaClass.getMinutes = {->
  delegate
}

println 1.hour + 30.minutes
```

A DSL is a specific tool

Internal or External

To simplify the solution

Groovy is an outstanding tool for building DSLs

DSLs in Groovy

Say what you mean,
Mean what you say