What’s so Groovy about Groovy

A Beginners Guide to Groovy

Erik Weibust

Agenda

- Why Groovy
- Let me see it!
- Where can I learn more
- How do I use it...
- What didn’t we cover… Lots, but we got you smart enough to take the next step!

First… Who am I?

Erik Weibust… Husband, Father, Aggie, etc…

Erik Weibust… Technologist, IT Manager

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Why Groovy

Powerful, optionally typed, dynamic language

Flat learning curve

Concise, readable and expressive syntax, easy to learn for Java developers

Smooth Java integration

Seamlessly and transparently integrates and interoperates with Java and any third-party libraries

Vibrant and rich ecosystem

Web development, reactive applications, concurrency / asynchronous / parallelism library, test frameworks, build tools, code analysis, GUI building

Powerful features

Closures, builders, runtime & compile-time meta-programming, functional programming, type inference, and static compilation

Domain-Specific Languages

Flexible & malleable syntax, advanced integration & customization mechanisms, to integrate readable business rules in your applications

Scripting and testing glue

Great for writing concise and maintainable tests, and for all your build and automation tasks

Lots of big names… You won't be a trailblazer

And now it’s Apache maintained

The Groovy programming language is supported by the Apache Software Foundation and the Groovy community

Apache 2 ??? Read this and then ask a lawyer

Can

Commercial Use

Describes the ability to use the software for commercial purposes.

Modify

Describes the ability to modify the software and create derivatives.

Distribute

Describes the ability to distribute original or modified (derivative) works.

Sublicense

Private Use

Describes the ability to use/modify software freely without distributing it.

Use Patent Claims

Describes the rights to practice patent claims of contributors to the code.

Place Warranty

Cannot

Hold Liable

Describes the warranty and if the software/license owner can be charged for damages.

Use Trademark

Describes the allowance of using contributors' names, trademarks or logos.

Must

Include Copyright

Describes whether the original copyright must be retained.

Include License

Including the full text of license in modified software.

State Changes

Stating significant changes made to software.

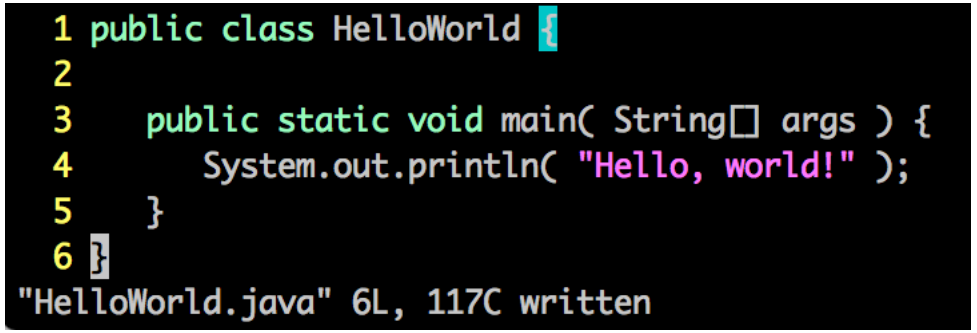
Include Notice

If the library has a "NOTICE" file with attribution notes, you must include that NOTICE when you distribute. You may append to this NOTICE file.

Let me see it!

Hello World(s)

HelloWorld with Java



HelloWorld with Groovy

```
  1 println "Hello, world!"
~
~
"HelloWorld.groovy" [New] 1L, 24C written
```

HelloWorld Output… That 1 line groovy worked ☺

```
Tue May 16 22:54 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ java HelloWorld
Hello, world!
```

```
Tue May 16 22:54 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovy HelloWorld.groovy
Hello, world!
```

Assert

Assert with Java

```
1 public class JavaAssertDemo {
2
3    public static void main( String[] args ) {
4       assert 2+2==5;
5    }
6 }
```

```
Thu May 11 18:34 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ java -ea JavaAssertDemo
Exception in thread "main" java.lang.AssertionError
        at JavaAssertDemo.main(JavaAssertDemo.java:4)
```

Assert aka ”power assert” w/ Groovy

```
1 class GroovyAssertDemo {
2
3    static void main( String[] args ) {
4       assert 2+2==5;
5    }
6 }
```

```
Thu May 11 18:35 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovy GroovyAssertDemo.groovy
Caught: Assertion failed:

assert 2+2==5
        | |
        4 false

Assertion failed:

assert 2+2==5
        | |
        4 false

        at GroovyAssertDemo.main(GroovyAssertDemo.groovy:4)
```

Java Asserts Have a Bit More (had to be fair) …

```
1 public class JavaAssertDemo2 {
2
3    public static void main( String[] args ) {
4       assert 2+2==5: "2 + 2 is *not* 5";
5    }
6 }
```

```
Sat Jun 10 09:18 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ java -ea JavaAssertDemo2
Exception in thread "main" java.lang.AssertionError: 2 + 2 is *not* 5
        at JavaAssertDemo2.main(JavaAssertDemo2.java:4)
```

… but they are completely inferior to power asserts

Java Bean / Groovy Bean

Java Bean

```java
import java.util.Date;

public class Person {

   private String name;
   private Date dob;

   public Person() {
   }

   public Person( String name ) {
      this.name = name;
      this.dob = new Date();
   }

   public Person( String name, Date date ) {
      this.name = name;
      this.dob = date;
   }

   public String getName() {
      return name;
   }

   public void setName( String name ) {
      this.name = name;
   }

   public Date getDob() {
      return dob;
   }

   public void setDob( Date dob ) {
      this.dob = dob;
   }

   public String toString() {
      return "Person(name:" + name + ", dob:" + dob + ")";
   }
}
```

Java Bean (cont.)

```
1 public class PersonDemo {
2
3    public static void main( String[] args ) {
4       Person p = new Person();
5       System.out.println( p );
6       Person p2 = new Person( "Erik" );
7       System.out.println( p2 );
8    }
9 }
```

```
o Thu May 11 22:44 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
  $ java PersonDemo
s Person(name:null, dob:null)
  Person(name:Erik, dob:Tue May 16 22:44:52 CDT 2017)
```

Groovy Bean

```groovy
@groovy.transform.ToString( includeNames=true )
class GroovyPerson {

    String name
    Date dob
}
```

```groovy
public class GroovyPersonDemo {

    public static void main( String[] args ) {
        GroovyPerson p = new GroovyPerson();
        System.out.println( p );
        GroovyPerson p2 = new GroovyPerson( name:"Erik", dob:new Date() );
        System.out.println( p2 );
    }
}
~
```

```
Mon May 15 19:14 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovy GroovyPersonDemo.groovy
GroovyPerson(name:null, dob:null)
GroovyPerson(name:Erik, dob:Mon May 15 19:14:19 CDT 2017)
```

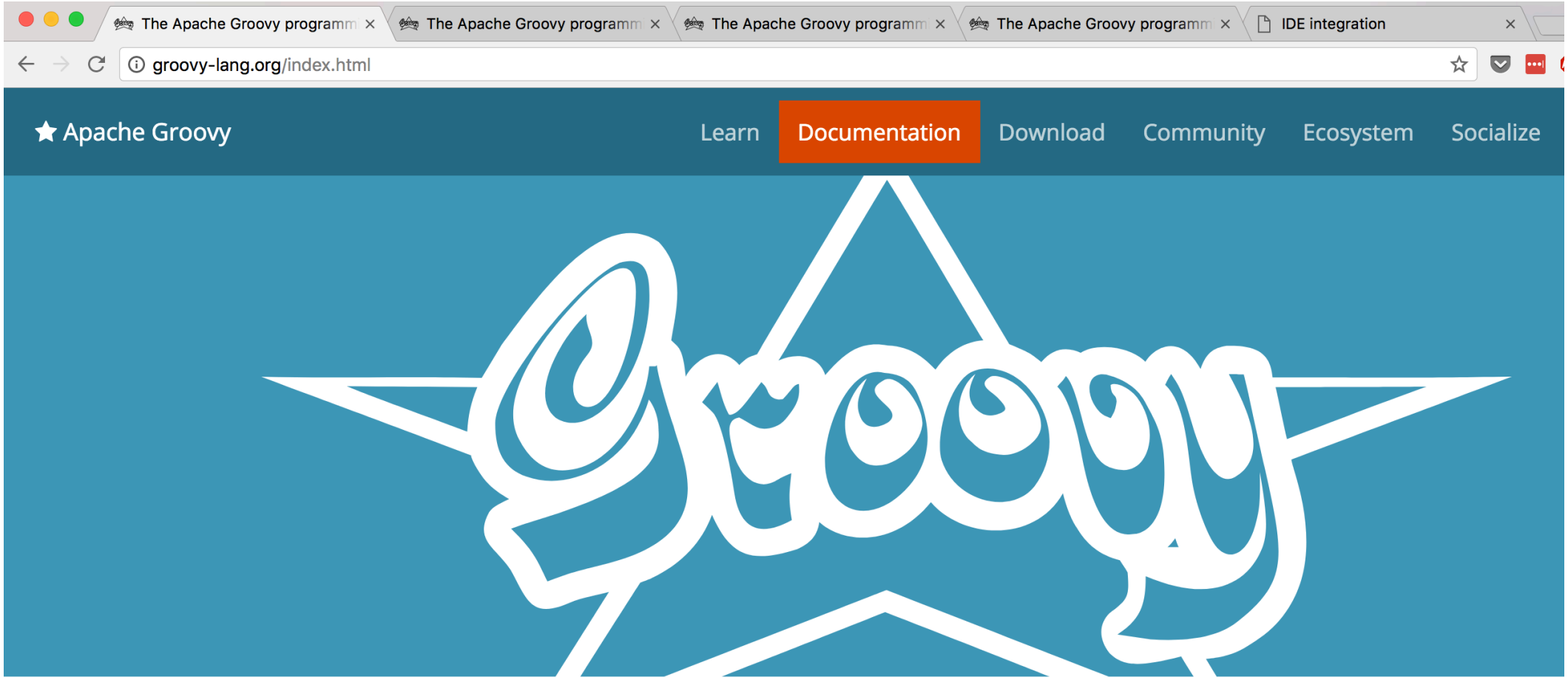
6 Lines of Groovy or 40 of Java... Same output

```
Mon May 15 19:14 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovy GroovyPersonDemo.groovy
GroovyPerson(name:null, dob:null)
GroovyPerson(name:Erik, dob:Mon May 15 19:14:19 CDT 2017)
```

```
o Thu May 11 22:44 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
  $ java PersonDemo
s Person(name:null, dob:null)
  Person(name:Erik, dob:Tue May 16 22:44:52 CDT 2017)
```

Where can I learn more

Start at the Groovy Website



So Much Great Info Here

Documentation

Improve this doc

The documentation is available as a single-page document, or feel free to pick at a direct section below.

You can also browse documentation for other versions.

Getting started

- Download Groovy
- Install Groovy
- Differences with Java
- The Groovy Development Kit
- Runtime and compile-time metaprogramming
- The Grape dependency manager
- Testing guide
- Domain-Specific Languages
- Integrating Groovy into applications
- Security
- Design patterns in Groovy
- Style guide

Groovy module guides

- Parsing and producing JSON
- Working with a relational database
- Processing XML
- Scripting Ant tasks
- Template engines
- Creating Swing UIs
- Servlet support

Language Specification

- Syntax
- Operators
- Program structure
- Object orientation
- Closures
- Semantics

Tools

- groovyc — the Groovy compiler
- groovysh — the Groovy command -like shell
- groovyConsole — the Groovy Swing console
- IDE integration

API documentation

- GroovyDoc documentation of the Groovy APIs
- The Groovy Development Kit enhancements

Groovy basics

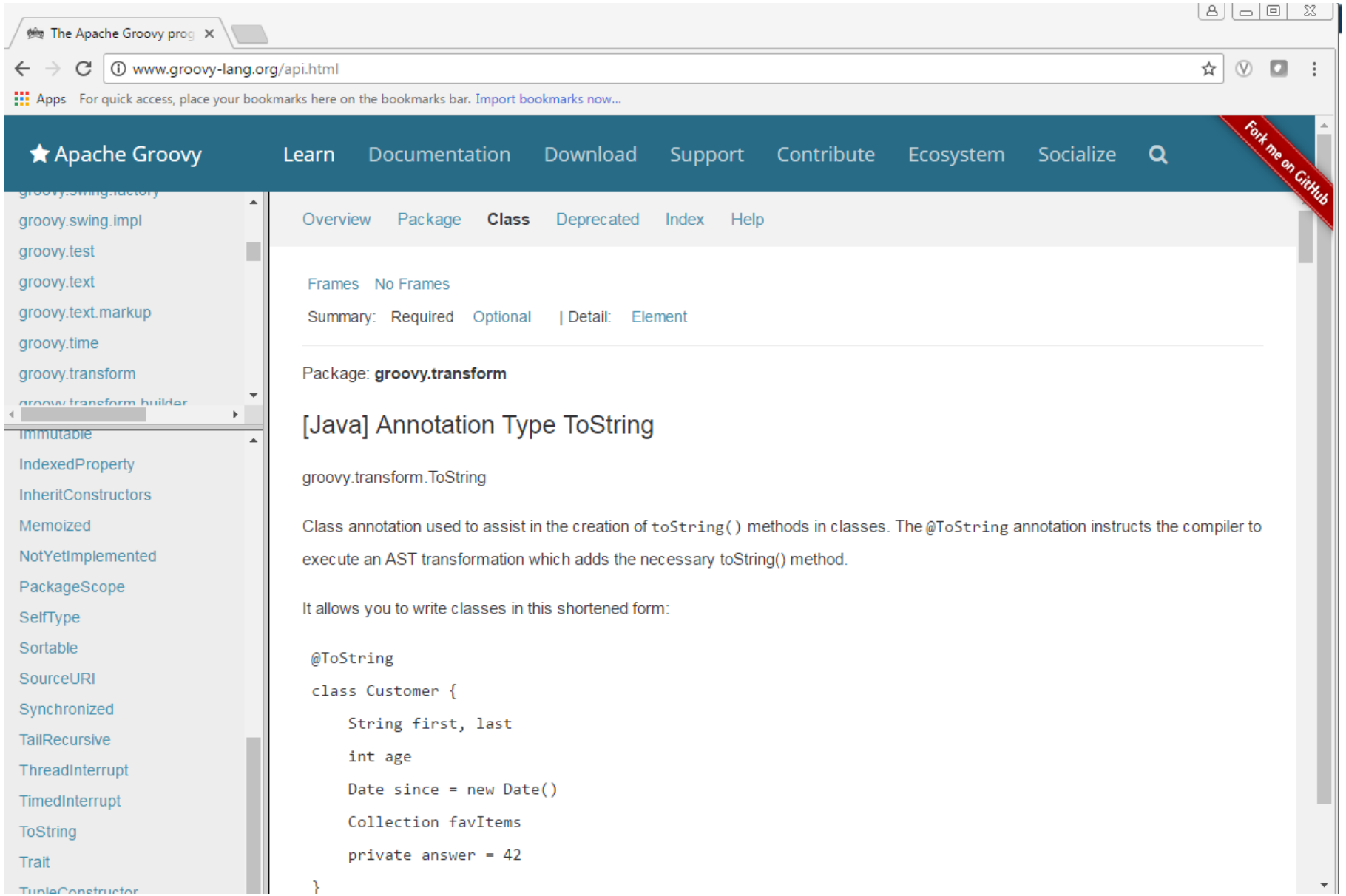
Must read for Java devs

Bookmark this

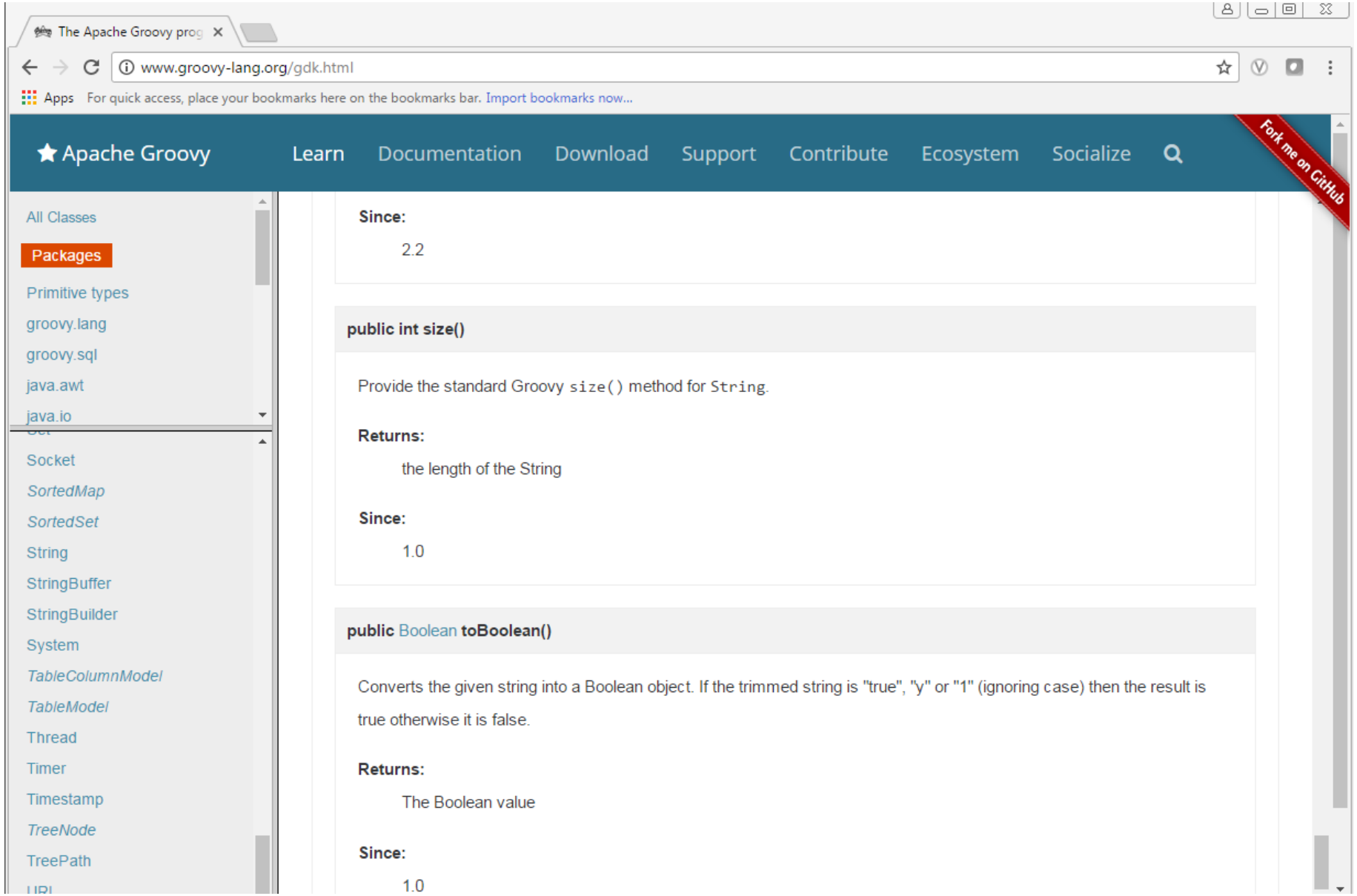
Then read this one

and this

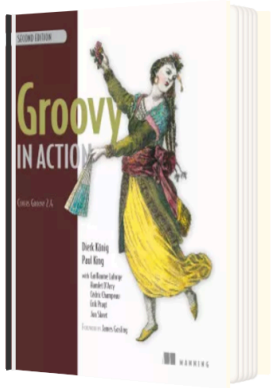
Groovy API Groovy Doc



Groovy JDK Enhancement Doc



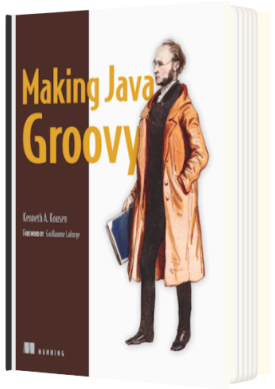
Numerous Great Books



Groovy in Action, Second Edition

By Dierk König, Paul King, Guillaume Laforge, Hamlet D'Arcy, Cédric Champeau, Erik Pragt, and Jon Skeet

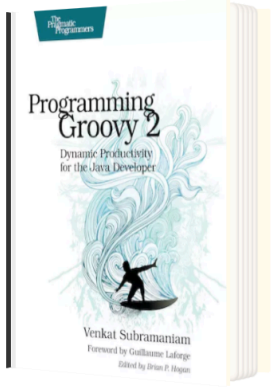
The undisputed definitive reference on the Groovy programming language, authored by core members of the development team.



Making Java Groovy

By Ken Kousen

Make Java development easier by adding Groovy. Each chapter focuses on a task Java developers do, like building, testing, or working with databases or restful web services, and shows ways Groovy can help.

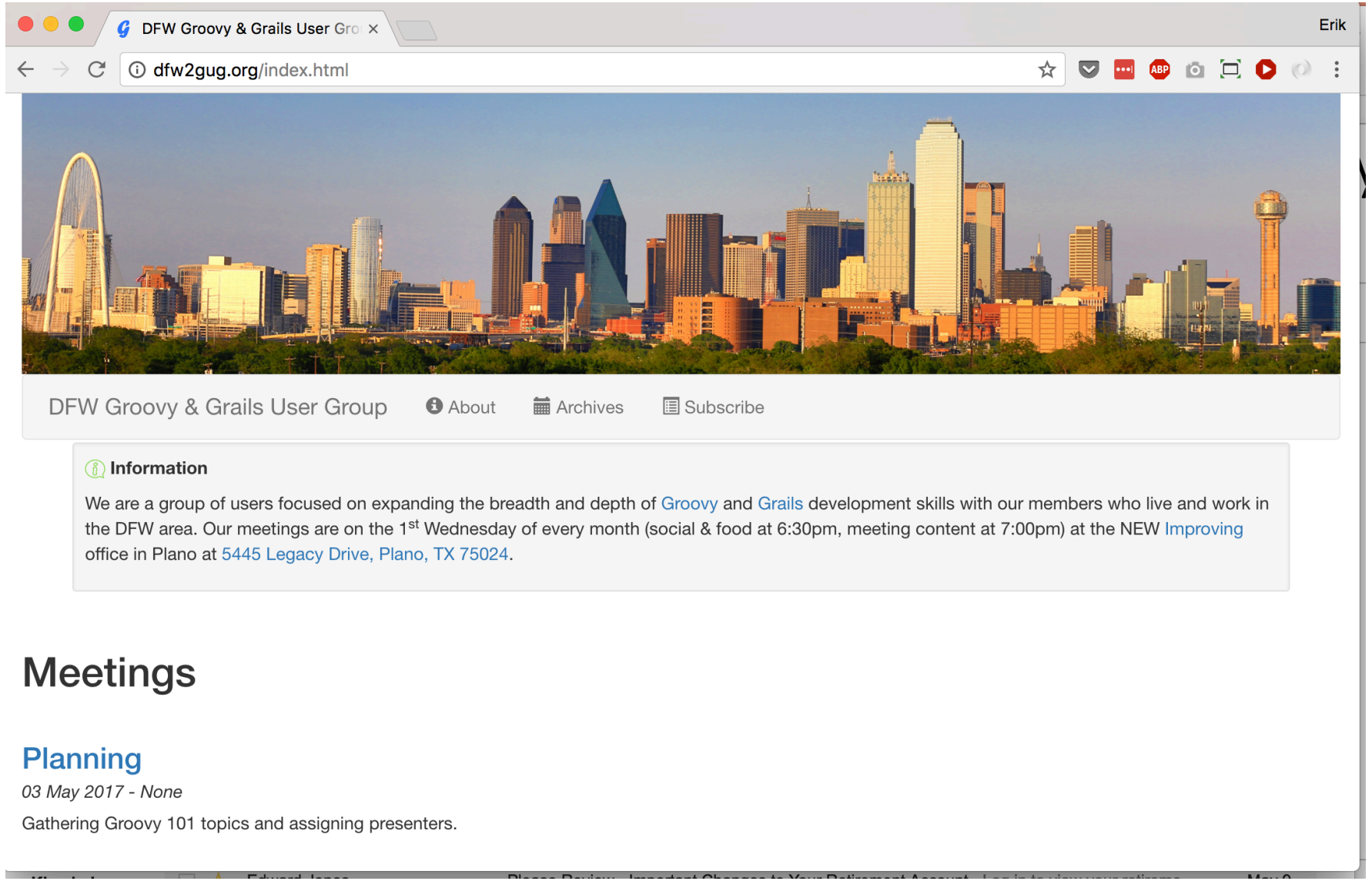


Programming Groovy 2

By Venkat Subramaniam

Dynamic productivity for the Java developer

Obviously the DFW2GUG (DFW Groovy Grails Users Group



Great Online Course from Dan Vega

Courses

Another great resource for learning Groovy is by watching a course. You could spend time hunting down various videos on the web but these courses have all the information you need packed into one place.

The Complete Apache Groovy Developer Course

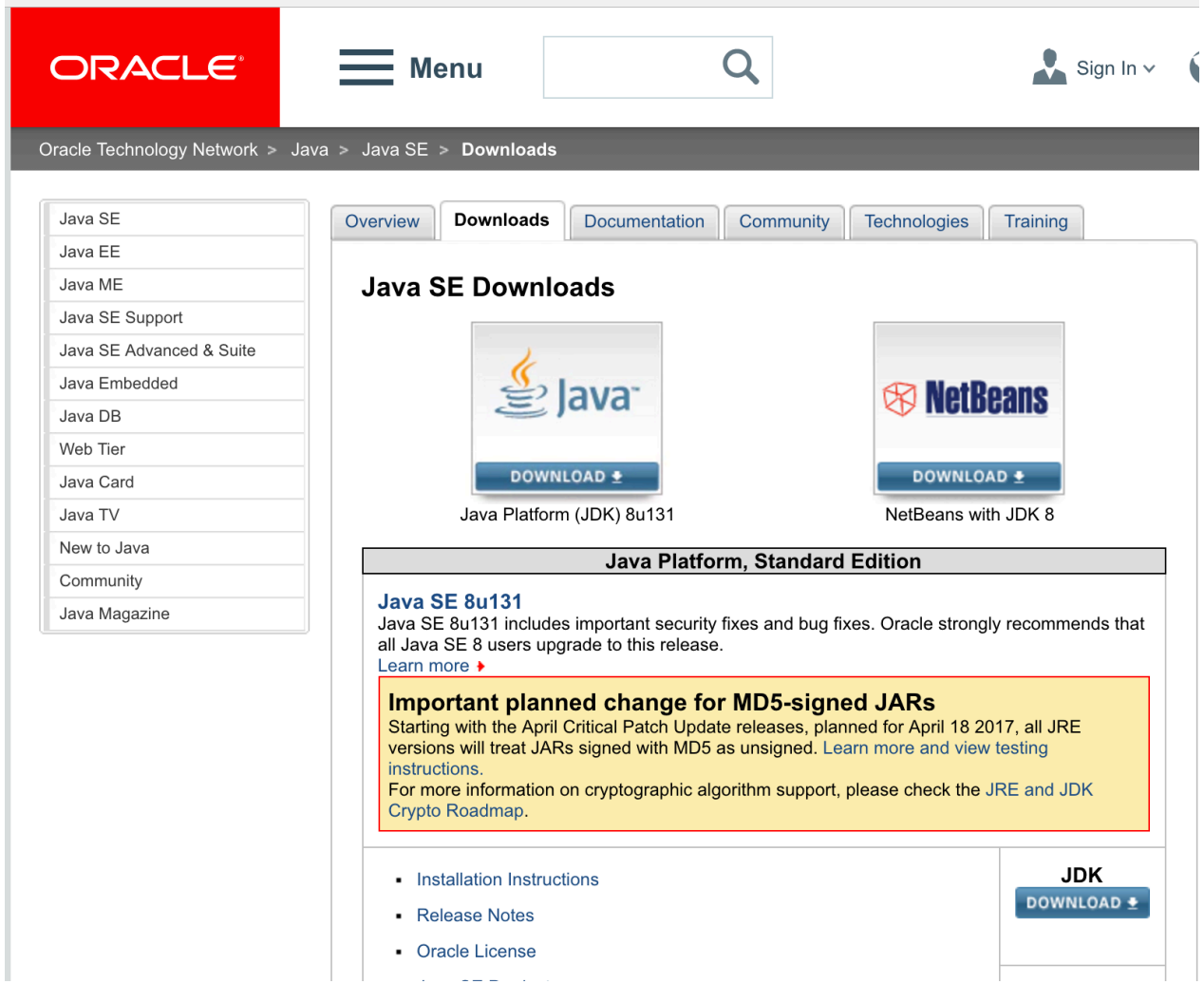
By Dan Vega

I am going to teach you everything you need to know to start using The Groovy Programming language. This course is really designed for 2 different types of people and I think both will benefit from it. If you're a beginner programmer with a some experience in another language like Python or Ruby this course is for you. Dynamic languages are generally thought of as easier for total beginners to learn because they're flexible and fun. If you're an existing Java Developer (Beginner or Experienced) this course is also for you.

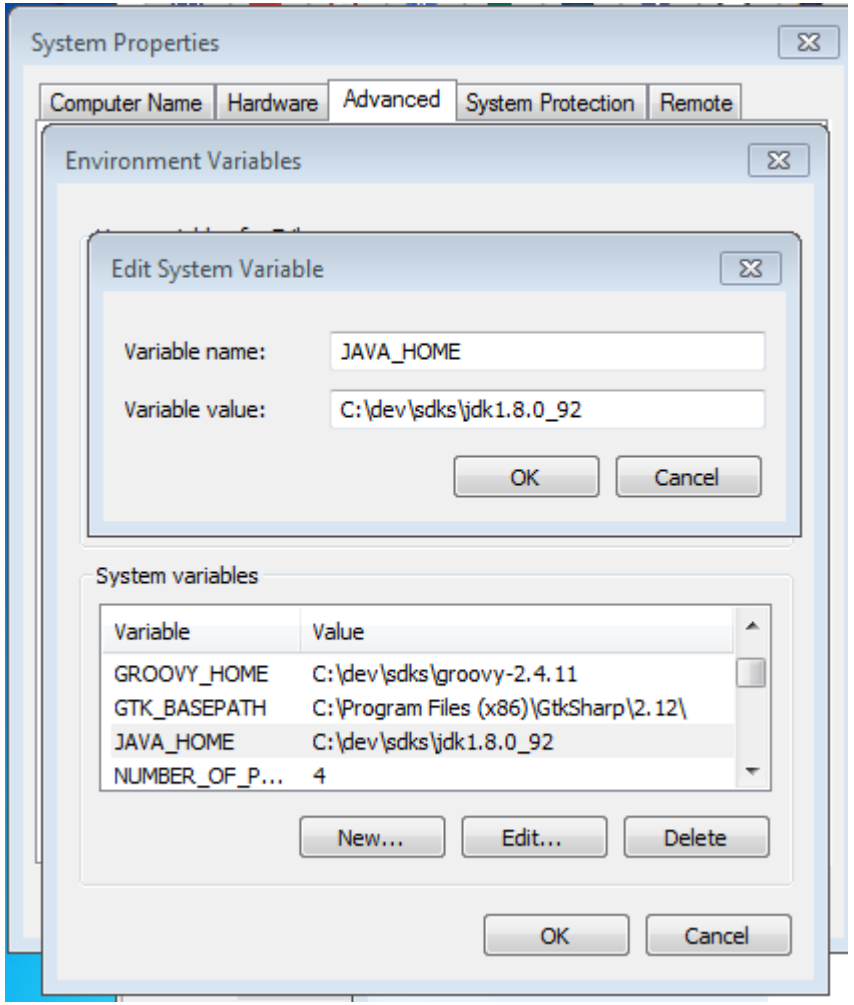
This course is packed with almost 14 hours of content. We are going to start off with getting your development environment up and running and then go through the very basics of the language. From there we are going to build on that in each section cover topics like closures, meta-programming, builders and so much more. I feel like this is one of the most complete courses around and I am excited for you to join me on this adventure.

How do I use it...

You Need a JVM and JAVA_HOME




```
17
18 export JAVA_HOME="$(/usr/libexec/java_home -v 1.8)"
19
```



Then There are Many Options to Install Groovy


```
Tue May 16 22:33 erik@Eriks-MBP ~
$ curl -s "https://get.sdkman.io" | bash
```

```
Tue May 16 22:32 erik@Eriks-MBP ~
$ sdk install groovy
```

5. Install Binary

These instructions describe how to install a binary distribution of **Groovy**.

- First, Download a binary distribution of Groovy and unpack it into some file on your local file system.
- Set your `GROOVY_HOME` environment variable to the directory you unpacked the distribution.
- Add `GROOVY_HOME/bin` to your `PATH` environment variable.
- Set your `JAVA_HOME` environment variable to point to your JDK. On OS X this is `/Library/Java/Home`, on other unixes its often `/usr/java` etc. If you've already installed tools like Ant or Maven you've probably already done this step.

groovysh

```
Tue May 16 22:41 erik@Eriks-MBP ~
$ groovysh
Groovy Shell (2.4.7, JVM: 1.8.0_92)
Type ':help' or ':h' for help.
------------------------------------------------------------------------------
groovy:000> println 'Hello, world'
Hello, world
===> null
groovy:000> class Foo {
groovy:001> def bar() {
groovy:002> println 'baz'
groovy:003> }
groovy:004> }
===> true
groovy:000> foo = new Foo()
===> Foo@17d88132
groovy:000> foo.bar()
baz
===> null
groovy:000> :doc java.util.Li
LinkedHashMap          LinkedHashSet          LinkedList
List                   ListIterator           ListResourceBundle
groovy:000> :doc java.util.List
http://docs.oracle.com/javase/8/docs/api/java/util/List.html
http://docs.groovy-lang.org/2.4.7/html/groovy-jdk/java/util/List.html
groovy:000>
```

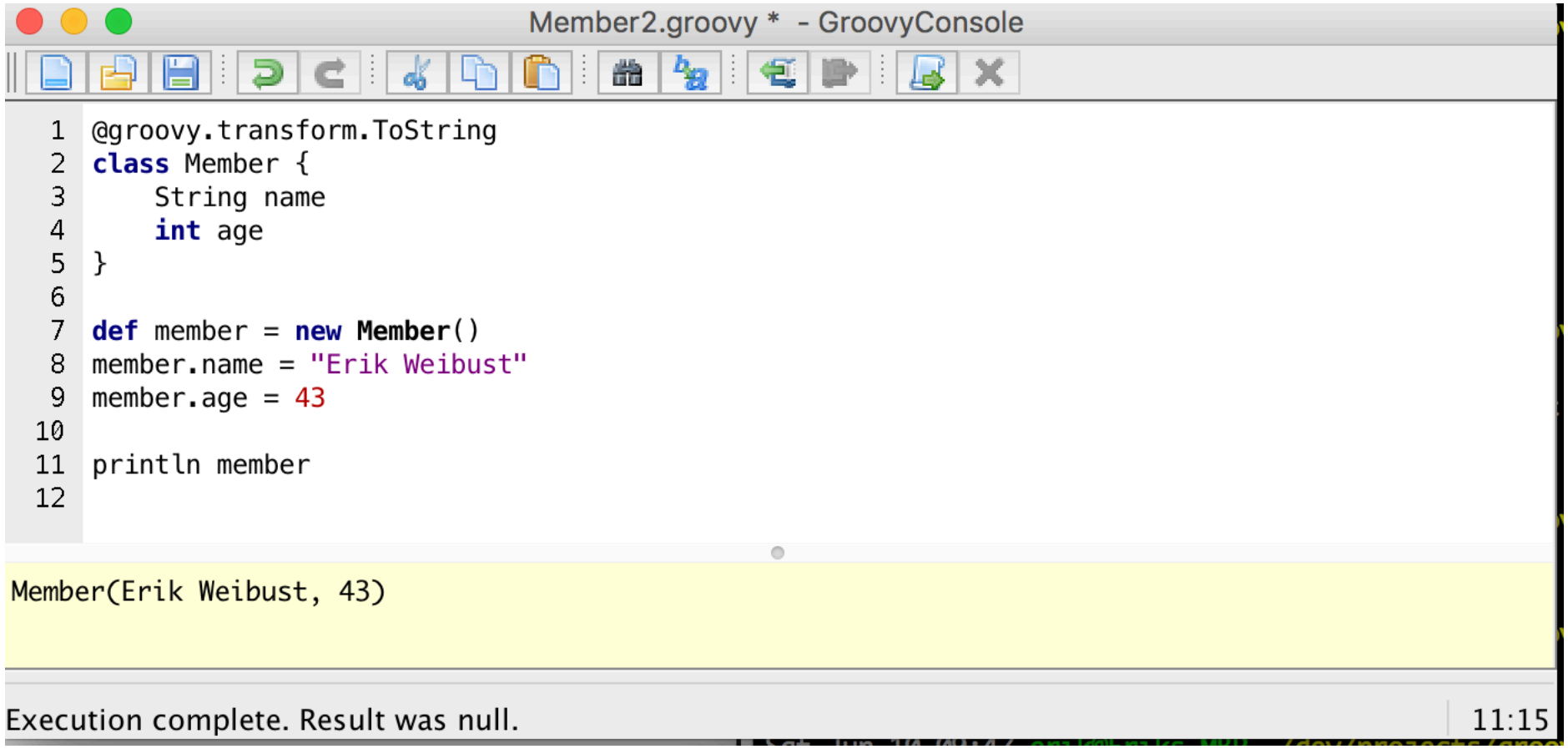
groovyc

```
Mon Jun 05 22:36 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ ls
App.groovy      Member.groovy

Mon Jun 05 22:36 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovyc *.groovy

Mon Jun 05 22:36 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ ls
App.class       App.groovy      Member.class    Member.groovy

Mon Jun 05 22:36 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ groovy App
Member(Erik Weibust, 43)

Mon Jun 05 22:36 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ java -cp /Users/erik/.sdkman/candidates/groovy/current/embeddable/groovy-all-2
.4.7.jar: App
Member(Erik Weibust, 43)
```

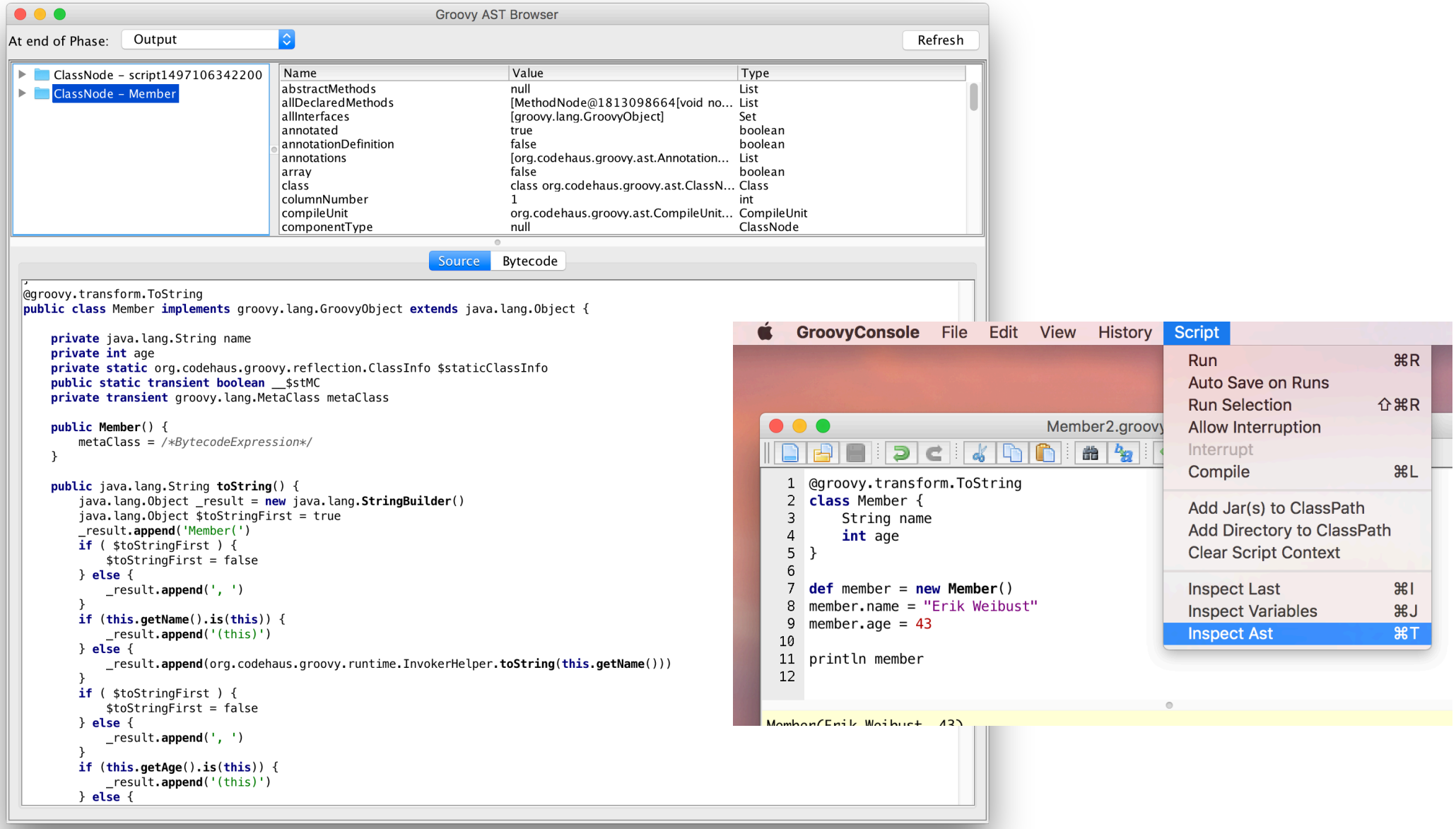
groovyc (cont.)

```
Mon Jun 05 22:34 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ cat Member.groovy
     1  @groovy.transform.ToString
     2  class Member {
     3          String name
     4          int age
     5  }

Mon Jun 05 22:34 erik@Eriks-MBP ~/dev/projects/groovy/groovy_talk
$ cat App.groovy
     1  def member = new Member( name:'Erik Weibust', age:43 )
     2  println member
```

Groovy Console (dare I say IDE?)



Groovy Console – AST Browser



Questions?

Thanks for coming!

- You can find the example code in my GitHub Repo at:
  - https://github.com/erikweibust/WhatsSoGroovy
  - Feel free to Watch, Star and Fork ☺
- The slides are also available in the above mentioned repo
- Follow me on twitter at: https://twitter.com/erikweibust
- Connect on LinkedIn at: https://www.linkedin.com/in/erikweibust/