

# The Epic Groovy Puzzlers Season II: The Revenge of the Parentheses



CREATE  
THE FUTURE

JavaOne

October 25–29, 2015

San Francisco


#javaone

# Frogs ❤️ Groovy

## Download Groovy

- # Distributions
- # Through GVM
- # From your build tools
- # Other ways to get Groovy
- # System requirements

## Download

 Improve this doc

In this download area, you will be able to download the [distribution](#) (binary and source), the Windows installer (for some of the versions) and the documentation for Groovy.

All the downloads are hosted in [Bintray's Groovy repository](#).

Registering on Bintray allows you to rate, review, and register for new version notifications.

 Download

# Frogs ❤️ Groovy

- ★ Groovy Distributing G&G from Bintray
- ★ Groovy Developing G&G with Artifactory
- ★ Groovy 90% of Bintray is G&G
- ★ Groovy Artifactory plugins are Groovy
- ★ Groovy Gradle and Grails plugins on Bintray

# First Season Was a Blast!

---

## Emerging Languages

The Epic Groovy Puzzlers S02:  
The Revenge of the Parentheses



Golden Gate  
6/7/8

---



**CLICK AND HACK**



**THE TYPING BROTHERS**

**BTW,**





# 1. TWO ENTERTAINING GUYS ON STAGE



# Puzzlers Squad!

Fred Simon, JFrog  
Chief Architect  
@freddy33



Baruch (a.k.a. JBaruch),  
JFrog Dev Advocate  
@jbaruch



1. TWO ENTERTAINING GUYS ON STAGE
  2. FUNNY PUZZLING QUESTIONS
  3. YOU THINK AND VOTE
  4. AWESOME GROOVY T-SHIRTS FLY IN THE AIR
  5. OFFICIAL TWITTER HANDLE!
- #GROOVYPUZZLERS



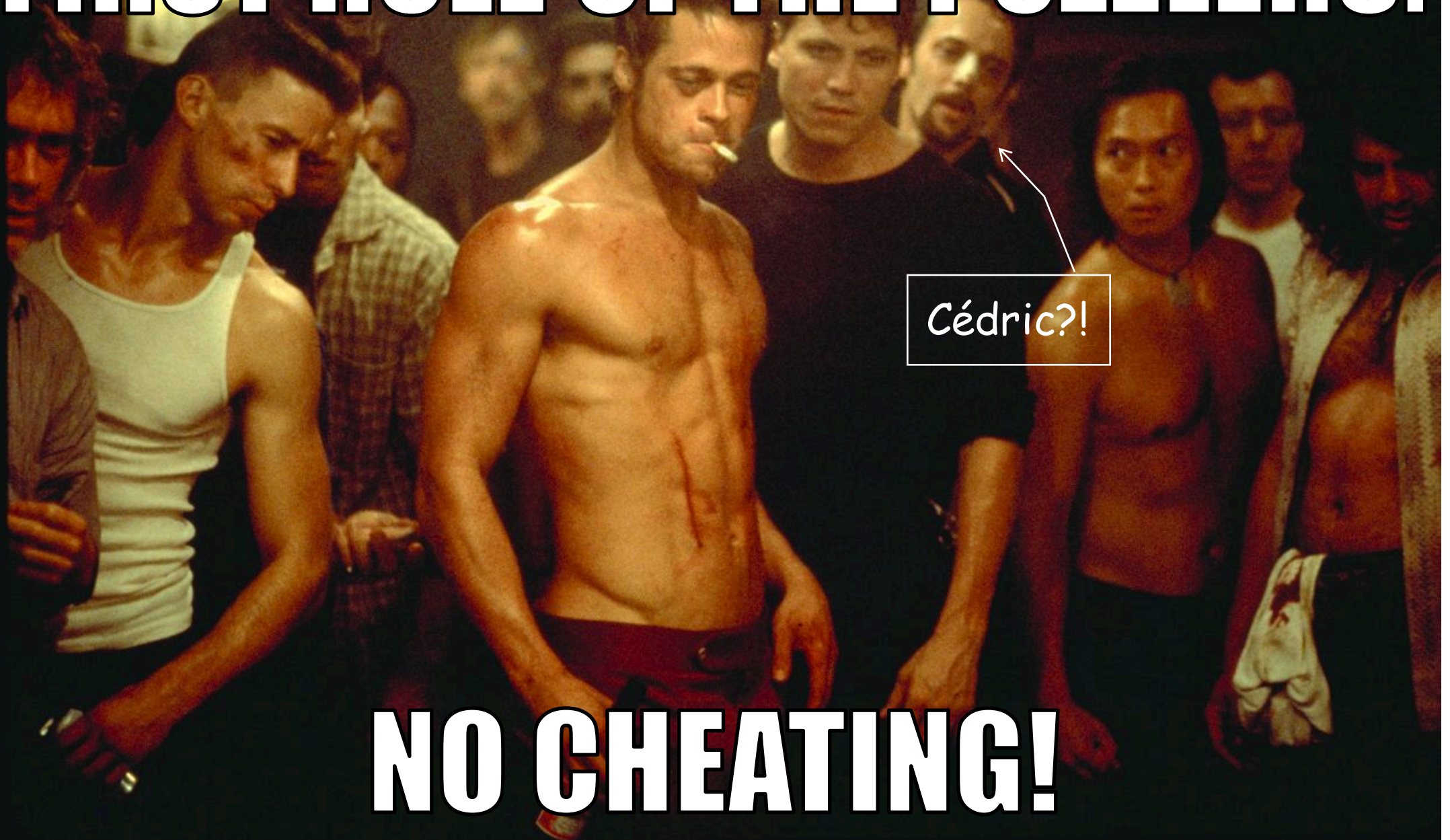
**FIRST RULE OF THE PUZZLERS:**



**NO CHEATING!**



**FIRST RULE OF THE PUZZLERS:**



Cédric?!

**NO CHEATING!**

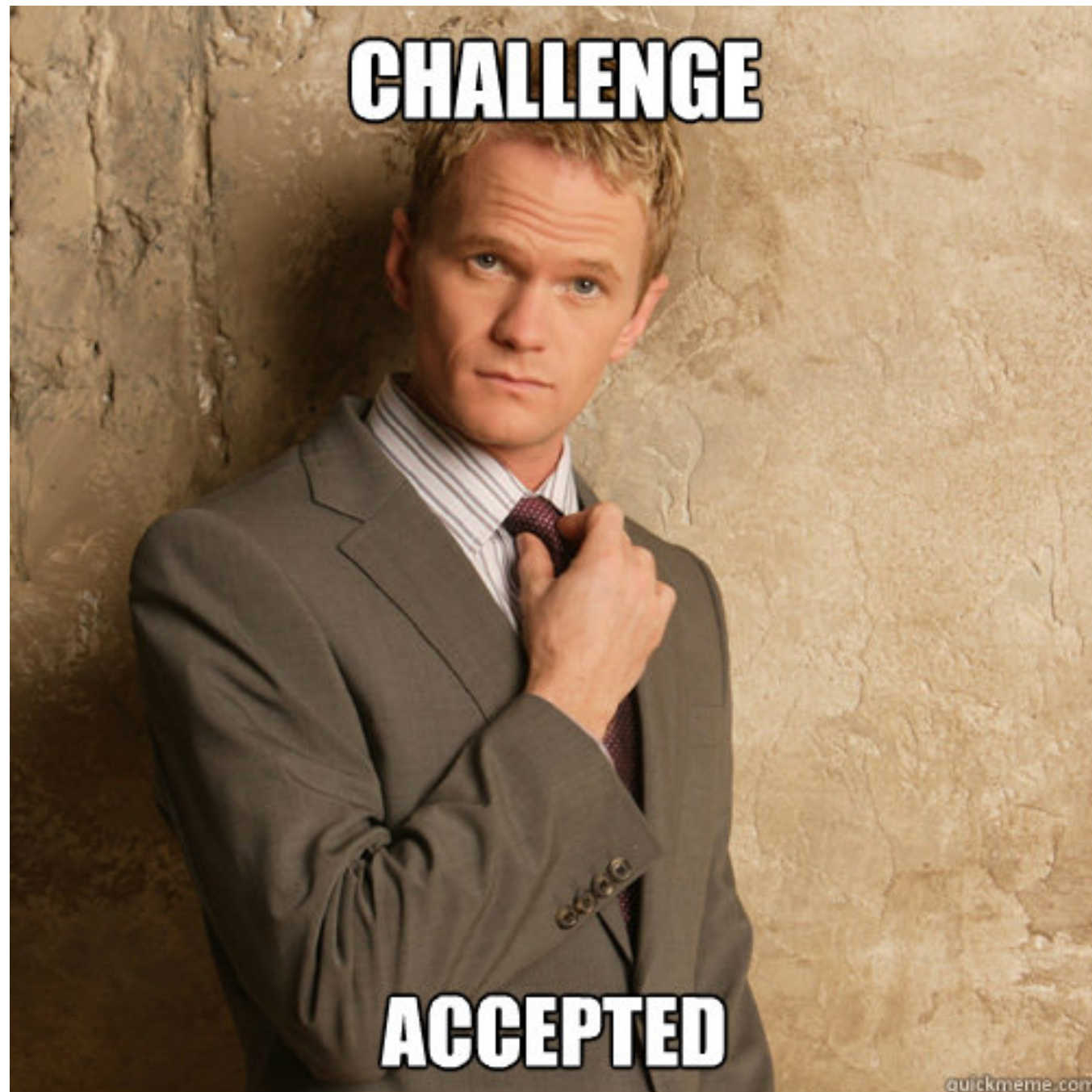
# All works (or doesn't work) in Groovy

## 2.4.4





**CHALLENGE**



**ACCEPTED**



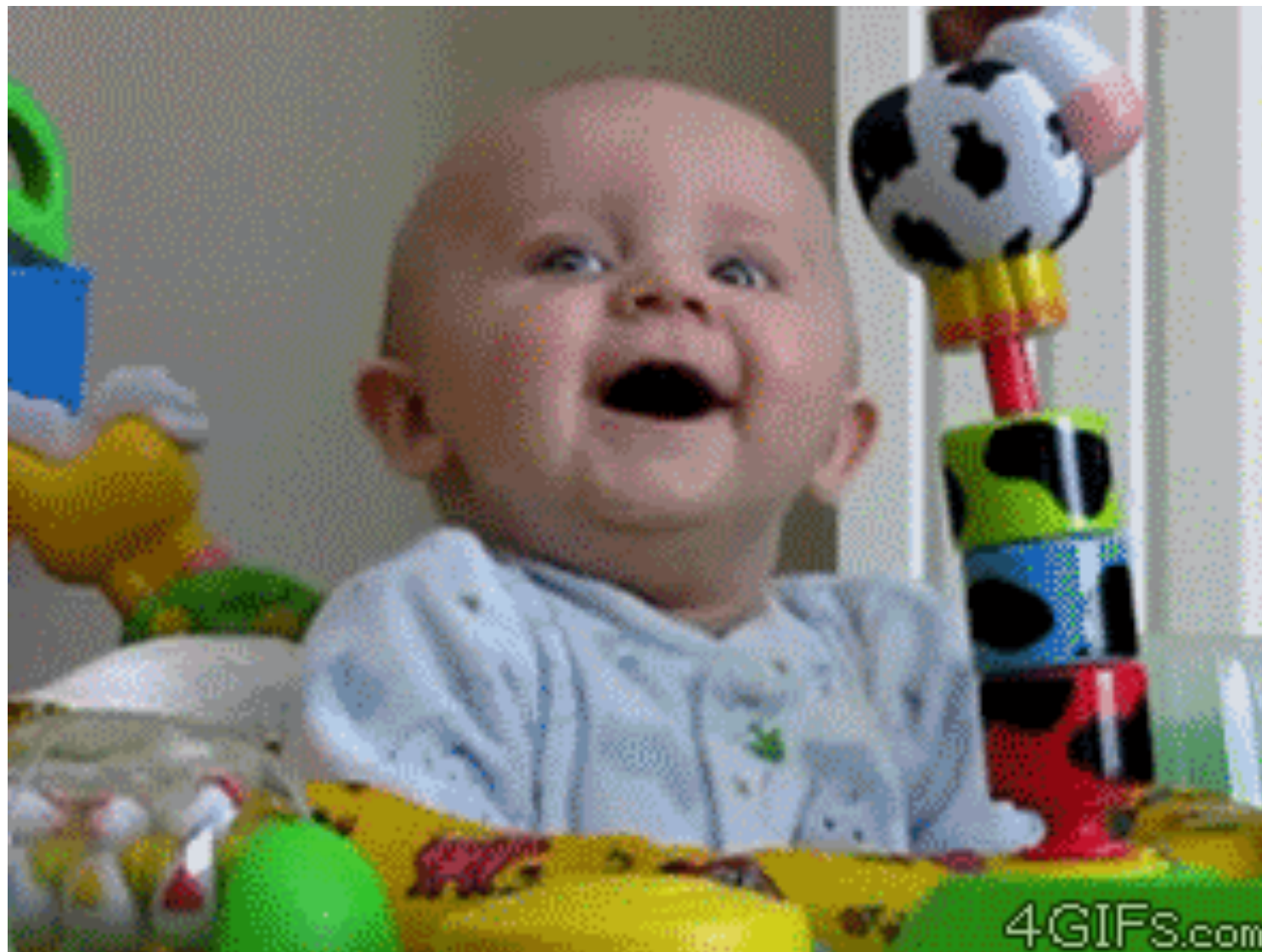
```
'a'..'z'.each { println it }
```

A. a  
b  
c  
.  
.  
.  
z

B. NoSuchMethodError



D. Won't run





```
( 'a' .. 'z' ).each { println it }
```



You knew it, right?

*“All problems in computer science can be solved by another pair of parentheses”*



John McCarthy, the inventor of LISP

# And the t-shirt goes to...



**Ken Kousen**

@kenkousen FOLLOWS YOU

Software trainer and developer, NFJS speaker, and author of Making Java Groovy

📍 Marlborough, CT

🔗 [kousenit.com](http://kousenit.com)

🕒 Joined August 2008





# How Many Bachs?

```
def back = 'back'  
def quotes = ["I'll be $back",  
"I'll be ${-> back}",  
"I'll be ${back}",  
"I'll be "+back]  
println quotes  
back = 'Bach'  
println quotes
```

A.No Bachs

B. Bach

C.Two Bachs

D.Three Bachs



**Only closures are evaluated at runtime**  
**Others are inlined**

# Only closures are evaluated at runtime Others are inlined


```
def back = 'back'  
def quotes = ["I'll be $back",  
"I'll be ${-> back}",  
"I'll be ${back}",  
"I'll be "+back]
```



# Only closures are evaluated at runtime Others are inlined

```
def back = 'back'  
def quotes = ["I'll be $back",  
"I'll be ${-> back}",  
"I'll be ${back}",  
"I'll be "+back]
```

That is the only closure



# And the t-shirt goes to...





**IRON MAIDEN**

THE NUMBER OF  
THE BEAST

You are here: [InfoQ Homepage](#) » [Presentations](#) » Plugging the Users in - Extend Your Application with Pluggable Groovy DSL

# Plugging the Users in - Extend Your Application with Pluggable Groovy DSL

Recorded at:




by [Baruch Sadogursky](#) on Mar 12, 2014 | [Discuss](#)

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```
A problem has been detected and windows has been shut down to prevent damage
to your computer.

DRIVER_POWER_STATE_FAILURE

If this is the first time you've seen this Stop error screen,
restart your computer. If this screen appears again, follow
these steps:

Check to make sure any new hardware or software is properly installed.
If this is a new installation, ask your hardware or software manufacturer
for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware
or software. Disable BIOS memory options such as caching or shadowing.
If you need to use Safe Mode to remove or disable components, restart
your computer, press F8 to select Advanced Startup options, and then
select Safe Mode.

Technical information:

*** STOP: 0x0000009F (0x0000000000000003, 0xFFFFFA800FF75440, 0xFFFFF80000B9C3D8, 0
xFFFFFA8010AB1270)

Collecting data for crash dump ...
Initializing disk for crash dump ...
Beginning dump of physical memory.
Dumping physical memory to disk: 5
```


00:32:20

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01:17:30



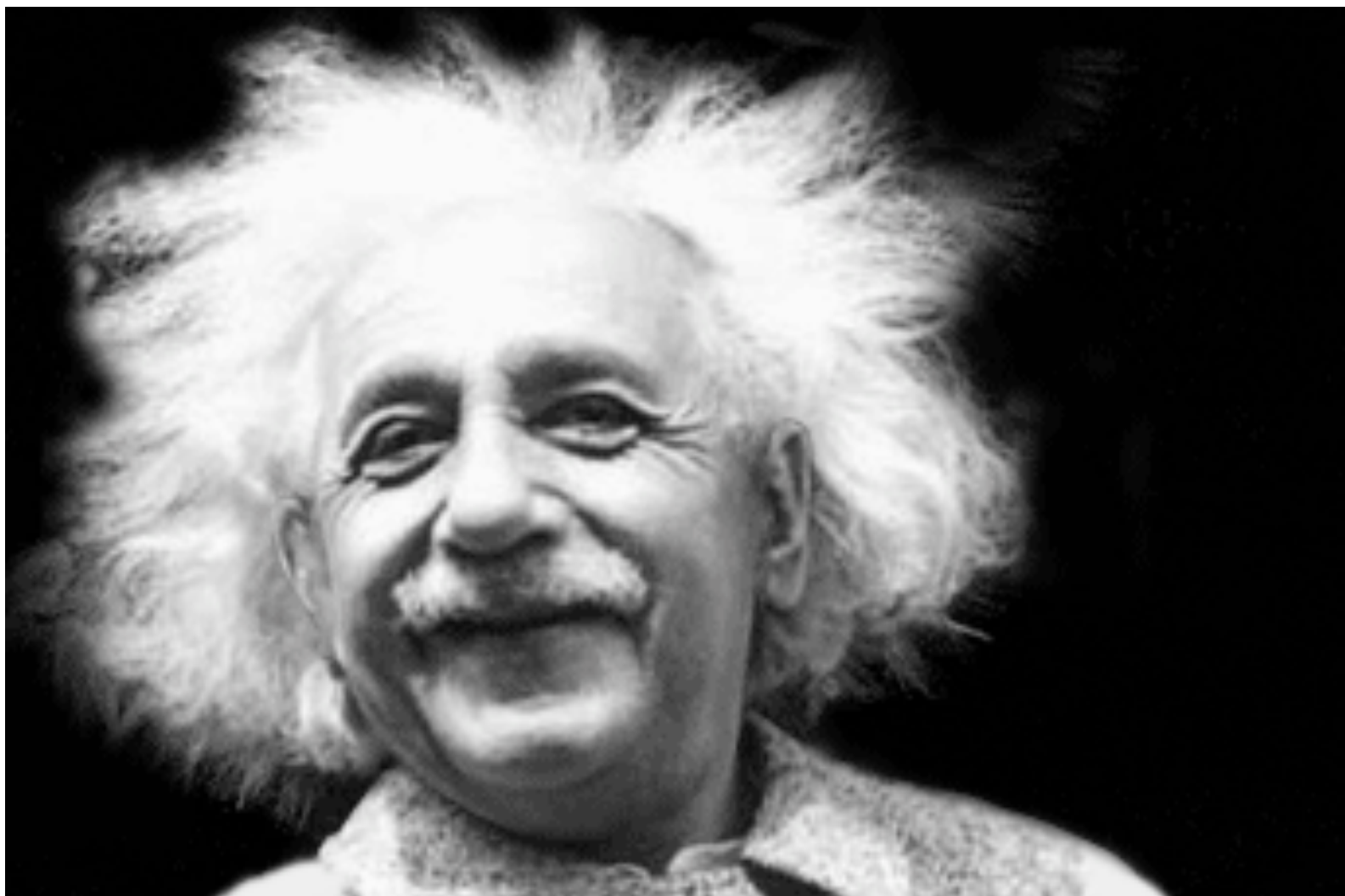
# How one prints 666?

A. `def beast = '6' *`  `PI`

B. `def beast = '6' * '3'`

C. `def beast = '667' - 1`


D. `def beast = '6' + '6' + 0 + 6`




```
def beast = '6' * Math.PI
```







```
def beast = '6' * 3.1415926...
```

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 groovy / groovy-core


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Groovy programming language <http://www.groovy-lang.org>

12,326 commits35 branches149 releases129 contributors


 branch: master ▾ groovy-core / +


Merge pull request #647 from christoph-frick/master


 **PascalSchumacher** authored 6 hours ago latest commit 49c533de71

 benchmark	minor refactor: remove some checkstyle warnings	8 months ago
 buildSrc	minor refactor: remove some checkstyle warnings	8 months ago
 config	GROOVY-3457: Preparing for addition of new StreamingTemplateEngine	7 months ago
 gradle	Disable license and japicmp plugin since they still conflict with Art...	9 hours ago
 lib	Raw modifications to run Groovy on Android	10 months ago
 security	GROOVY-5305: Update dependencies (hsqldb)	3 years ago
 src	Merge pull request #647 from christoph-frick/master	6 hours ago
 subprojects	Documentation: add section on StreamingTemplateEngine	2 days ago
 xdocs/images	Remove the Maven 1 build files since we have now officially moved to ...	8 years ago
 .gitignore	Tests that fail when using @Grab with Extension Modules	3 months ago

<> Code

 Pull requests 32


 Pulse


 Graphs

HTTPS clone URL

<https://github.com/groovy/groovy-core>

You can clone with [HTTPS](#), [SSH](#), or [Subversion](#).

 Clone in Desktop

 Download ZIP

```
/**
 * Repeat a String a certain number of times.
 *
 * @param self    a String to be repeated
 * @param factor the number of times the String should be repeated
 * @return a String composed of a repetition
 * @throws IllegalArgumentException if the number of repetitions is < 0
 * @since 1.0
 */
public static String multiply(String self, Number factor) {
    int size = factor.intValue();
    ...
}
```



```
def beast = '6' * 3.1415926...
```

```
def beast = '6' * 3
```

# Pop Quiz!

B. **def** beast = '6' \* '3'

C. **def** beast = '667' - 1

D. **def** beast = '6' + '6' + 0 + 6





# Pop Quiz!

B. **def** beast = '6' \* '3'

C. **def** beast = '667' - 1

D. **def** beast = '6' + '6' + (0 + 6)



# Pop Quiz!

B. `def beast = '6' * '3'`

C. `def beast = '667' - 1`

D. `def beast = '6' + '6' + (0 + 6)`



# And the t-shirt goes to...







```
class THERE_CAN_BE_ONLY_ONE { }
```

```
class MacLeod {
```

```
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class clazz = THERE_CAN_BE_ONLY_ONE  
        return clazz.newInstance()  
    }
```

```
}
```

```
println new MacLeod().THERE_CAN_BE_ONLY_ONE
```

```

class THERE_CAN_BE_ONLY_ONE { }

class MacLeod {

    THERE_CAN_BE_ONLY_ONE
    getTHERE_CAN_BE_ONLY_ONE() {
        Class clazz = THERE_CAN_BE_ONLY_ONE
        return clazz.newInstance()
    }

}

println new MacLeod().THERE_CAN_BE_ONLY_ONE

```

- A. Won't start
- B. No such property: THERE\_CAN\_BE\_ONLY\_ONE for class: MacLeod
- C. THERE\_CAN\_BE\_ONLY\_ONE@3d74bf60
- D. Another exception





A. MultipleCompilationErrorsException

B. StackOverflowError



C. NullPointerException

D. Yet Another Exception





```
class MacLeod {  
  
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class clazz = THERE_CAN_BE_ONLY_ONE  
        return clazz.newInstance()  
    }  
  
}
```

```
class MacLeod {  
  
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class clazz = getTHERE_CAN_BE_ONLY_ONE()  
        return clazz.newInstance()  
    }  
  
}
```

# Let's Fix It!

```
Class<THERE_CAN_BE_ONLY_ONE> clazz = THERE_CAN_BE_ONLY_ONE.class
```



```
class MacLeod {
```

```
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class<THERE_CAN_BE_ONLY_ONE> clazz = THERE_CAN_BE_ONLY_ONE.class  
        return clazz.newInstance()  
    }
```

```
}
```



```
class MacLeod {  
  
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class<THERE_CAN_BE_ONLY_ONE> clazz = getTHERE_CAN_BE_ONLY_ONE().class  
        return clazz.newInstance()  
    }  
  
}
```

# Let's Fix It!

```
Class<THERE_CAN_BE_ONLY_ONE> clazz = (THERE_CAN_BE_ONLY_ONE as Class)
```



```
class MacLeod {  
  
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class<THERE_CAN_BE_ONLY_ONE> clazz = (THERE_CAN_BE_ONLY_ONE as Class)  
        return clazz.newInstance()  
    }  
  
}
```

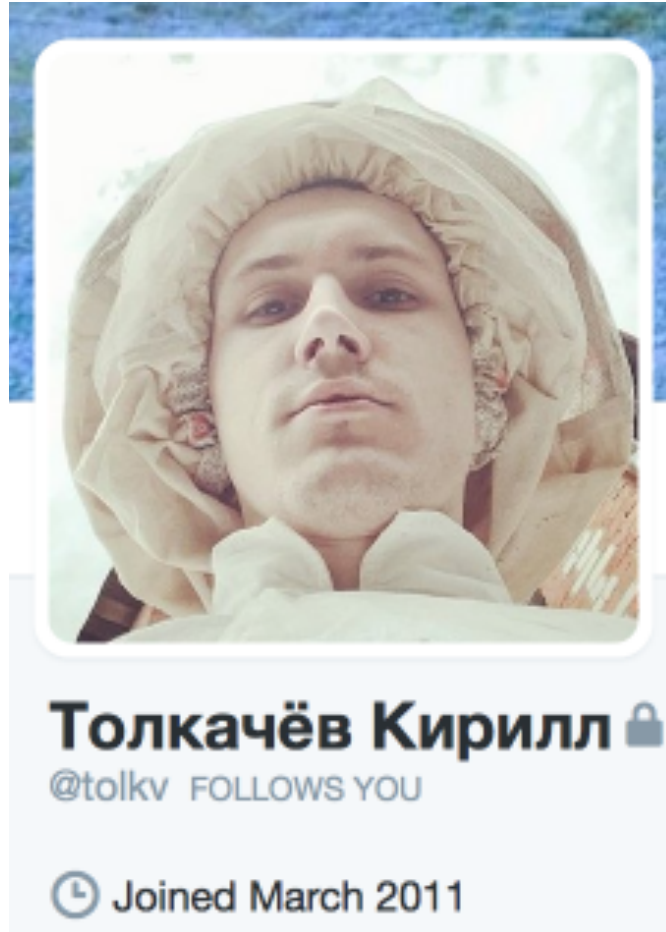


```
class MacLeod {  
  
    THERE_CAN_BE_ONLY_ONE getTHERE_CAN_BE_ONLY_ONE() {  
        Class<THERE_CAN_BE_ONLY_ONE> clazz = (getTHERE_CAN_BE_ONLY_ONE() as Class)  
        return clazz.newInstance()  
    }  
  
}
```

**Let's Fix It!**



# And the t-shirt goes to...







**MISSED ME?**

```
@groovy.transform.InheritConstructors
class TreaayeMap extends HashMap {
}
```

```
TreaayeMap a = [5]
```

```
TreaayeMap b = [6]
```

```
println "${a.getClass()} ${a.equals(b)}"
```

A. class HashMap true

B. class TreaayeMap false

C. class TreaayeMap true

D. class HashMap false





WAPETHECODE



**RTFM!**

## List and map constructors

In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

- the assignment is a variable declaration and **A** is a list literal and **T** has a constructor whose parameters match the types of the elements in the list literal
- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys



TreaayeMap a = [5]

## List and map constructors

In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

- the assignment is a variable declaration and **A** is a list literal and **T** has a constructor whose parameters match the types of the elements in the list literal
- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys

TreaayeMap a = [5]

### List and map constructors



In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

- the assignment is a variable declaration and **A** is a list literal and **T** has a constructor whose parameters match the types of the elements in the list literal
- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys

TreaayeMap a = [5]

### List and map constructors

In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

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- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys

TreaayeMap a = [5]

### List and map constructors

In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

- the assignment is a variable declaration and **A** is a list literal and **T** has a constructor whose parameters match the types of the elements in the list literal
- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys

```
@groovy.transform.InheritConstructors
class TreayeMap extends HashMap {
}
```

```

/**
 * Constructs an empty <tt>HashMap</tt> with the specified initial
 * capacity and the default load factor (0.75).
 *
 * @param initialCapacity the initial capacity.
 * @throws IllegalArgumentException if the initial capacity is negative.
 */
public HashMap(int initialCapacity)

```

```

TreaayeMap a = [5]
List and map constructors
@groovy.transform.InheritConstructors
class TreaayeMap extends HashMap {
}

```

In addition to the assignment rules above, if an assignment is deemed invalid, in type checked mode, a *list* literal or a *map* literal **A** can be assigned to a variable of type **T** if:

- the assignment is a variable declaration and **A** is a list literal and **T** has a constructor whose parameters match the types of the elements in the list literal
- the assignment is a variable declaration and **A** is a map literal and **T** has a no-arg constructor and a property for each of the map keys



# `equals()` doesn't care about capacity, mappings only

```
*/
public boolean equals(Object o) {
    if (o == this)
        return true;

    if (!(o instanceof java.util.AbstractMap))
        return false;
    Map<?,?> m = (Map<?,?>) o;
    if (m.size() != this.size())
        return false;
    try {
        Iterator<Entry<K,V>> iter = this.entrySet().iterator();
        while (iter.hasNext()) {
            Entry<K,V> entry = iter.next();
            Object key = entry.getKey();
            Object value = entry.getValue();
            if (!m.containsKey(key))
                return false;
            Object mValue = m.get(key);
            if (!value.equals(mValue))
                return false;
        }
    } catch (ClassCastException | NullPointerException ignored) {}
    return true;
}
```

Documentation for equals(Object)

[java.util.AbstractMap](#)  
public boolean **equals**(@Nullable [java.lang.Object](#) o)  
Compares the specified object with this map for equality. Returns true if the given object is also a map and the two maps **represent the same mappings**. More formally, two maps m1 and m2 represent the same mappings if m1.entrySet().equals(m2.entrySet()). This ensures that the equals method works properly across different implementations of the Map interface.

# And the t-shirt goes to...



**Sergey Tselovalnikov**

@SerCeMan

Love IT, love other interesting things.  
Develop in Java, Groovy, C++. JUG.EKB  
([jugkb.ru](http://jugkb.ru)) creator.

📍 Saint-Petersburg

🕒 Joined November 2010



```
ArrayList<String> expendables = ['Arnold', 'Chuck', 'Sylvester']
def expendable = //someone from the list

for(String hero in expendables) {
    if(hero == expendable){
        expendables.remove(hero)
    }
}

println expendables
```

# Which one won't cause a ConcurrentModificationException?

```
ArrayList<String> expendables = ['Arnold', 'Chuck', 'Sylvester']
def expendable = //someone from the list

for(String hero in expendables) {
    if(hero == expendable){
        expendables.remove(hero)
    }
}

println expendables
```

A. Can't avoid CME

B. Arnold

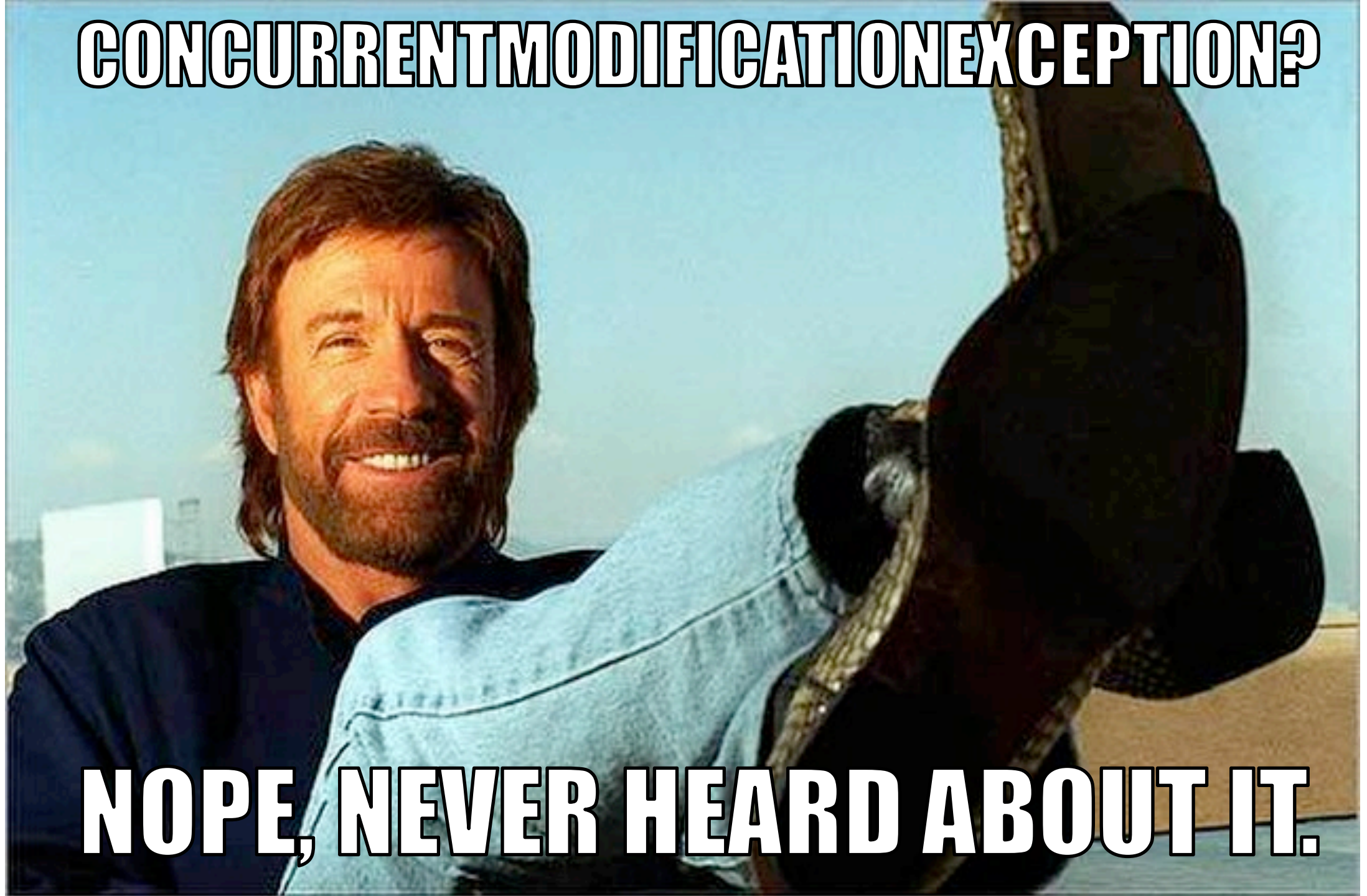
C.  Groovy

D. Sylvester





**CONCURRENTMODIFICATIONEXCEPTION?**



**NOPE, NEVER HEARD ABOUT IT.**



# You have been warned.

```
public class ConcurrentModificationException  
extends RuntimeException
```

This exception may be thrown by methods that have detected concurrent modification of an object when such modification is not permissible.

For example, it is not generally permissible for one thread to modify a Collection while another thread is iterating over it. In general, the results of the iteration are undefined under these circumstances. Some Iterator implementations (including those of all the general purpose collection implementations provided by the JRE) may choose to throw this exception if this behavior is detected. Iterators that do this are known as *fail-fast* iterators, as they fail quickly and cleanly, rather than risking arbitrary, non-deterministic behavior at an undetermined time in the future.

Note that this exception does not always indicate that an object has been concurrently modified by a *different* thread. If a single thread issues a sequence of method invocations that violates the contract of an object, the object may throw this exception. For example, if a thread modifies a collection directly while it is iterating over the collection with a fail-fast iterator, the iterator will throw this exception.

Note that fail-fast behavior cannot be guaranteed as it is, generally speaking, impossible to make any hard guarantees in the presence of unsynchronized concurrent modification. Fail-fast operations throw `ConcurrentModificationException` on a **best-effort basis**. Therefore, it would be wrong to write a program that depended on this exception for its correctness:

*ConcurrentModificationException should be used only to detect bugs.*

# Let's decompile this, baby!

```
List expendables = Arrays.asList(new String[]{"Arnold", "Chuck", "Sylvester"});
String expendable = "Chuck";
Iterator iterator = expendables.iterator();

while(iterator.hasNext()) {
    String hero = (String)iterator.next();
    if(hero.equals(expendable)) {
        expendables.remove(hero);
    }
}
```

```
while(iterator.hasNext()) {  
    String hero = (String)iterator.next();  
    if(hero.equals(expendable)) {  
        //      expendables.remove(hero);  
    }  
}
```



```
while(iterator.hasNext()) {  
    String hero = (String)iterator.next();  
    if(hero.equals(expendable)) {  
        //      expendables.remove(hero);  
    }  
}
```

```
public E next() {  
    checkForComodification();  
    ...  
    cursor = i + 1;  
}
```

```
public boolean hasNext() {  
    return cursor != size();  
}
```

Modifications are only  
checked in the next  
cycle

Getting ready for  
hasNext() check in the  
next cycle

Exit on last element +1 ==  
size()

```
while(iterator.hasNext()) {  
    String hero = (String)iterator.next();  
    if(hero.equals(expendable)) {  
        //      expendables.remove(hero);  
    }  
}
```

```
public E next() {  
    checkForComodification();  
    ...  
    cursor = i + 1;  
}
```

← After Sylvester cursor is 3

```
public boolean hasNext() {  
    return cursor != size();  
}
```

← And size is 3 as well

All good. Now let's mess with it.

```
while(iterator.hasNext()) {  
    String hero = (String)iterator.next();  
    if(hero.equals(expendable)) {  
        expendables.remove(hero);  
    }  
}
```

```
public E next() {  
    checkForComodification();  
    ...  
    cursor = i + 1;  
}
```

```
public boolean hasNext() {  
    return cursor != size();  
}
```



After Chuck the cursor is 2



Then we remove the element



And now the size now is 2!

It won't get to the next() to run checkForComodification!

**Hey, what about me?!**



```
while(iterator.hasNext()) {  
    String hero = (String)iterator.next();  
    if(hero.equals(expendable)) {  
        expendables.remove(hero);  
    }  
}
```

```
public E next() {  
    checkForComodification();  
    ...  
    cursor = i + 1;  
}
```

```
public boolean hasNext() {  
    return cursor != size();  
}
```



After Sylvester the cursor is 3



Then we remove the element



But the size now is 2!

It will go to another loop and fail on checkForComodification!



# And the t-shirt goes to...

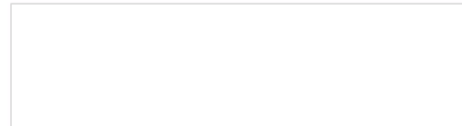


## Evgeny Borisov

Senior Java Consultant at Trainologic

Israel | Education Management

Current	Democracy Startup, Trainologic, JFrog Ltd
Previous	IDI Israel, AlphaCSP
Education	Polytechnic





```
def numbers = [[2, 3, 5][2, 4, 8][42, 73, Integer.MAX_VALUE, 0]]  
println numbers
```

```
def numbers = [[2, 3, 5], [2, 4, 8], [42, 73, Integer.MAX_VALUE, 0]]  
println numbers
```

A. [[2, 3, 5], [2, 4, 8], [42, 73, 2147483647, 0]]

B. Won't run

C. [[null,  null, 5]]

D. null

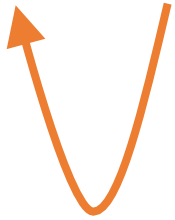




```
def numbers = [[2, 3, 5][2, 4, 8][42, 73, Integer.MAX_VALUE, 0]]  
println numbers
```

```
assert ['a', 'b', 'c'][0, 2] == ['a', 'c']
```

```
[2, 3, 5][2, 4, 8]
```

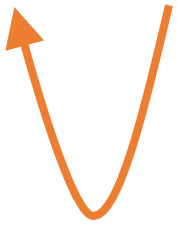


```
[5, null, null][42, 73, Integer.MAX_VALUE, 0]
```

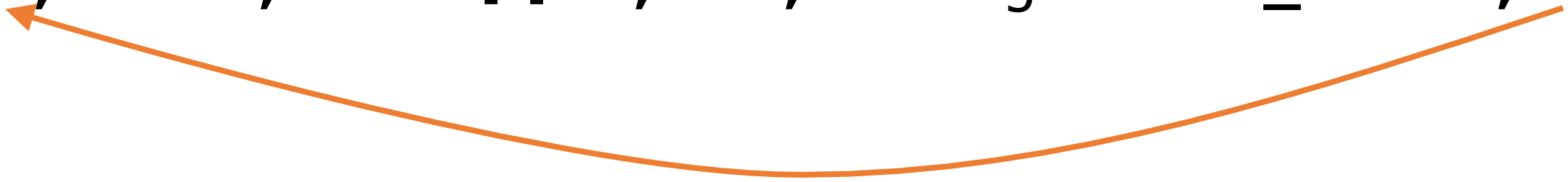


```
def numbers = [[2, 3, 5][2, 4, 8][42, 73, Integer.MAX_VALUE, 0]]  
println numbers
```

[2, 3, 5][2, 4, 8]



[5, null, null][42, 73, Integer.MAX\_VALUE, 0]



[[null, null, null, 5]]

# No t-shirt for this guy 😞

groovy

spock

share edit close flag

asked Apr 8 at 17:44



orbfish

2,157 ● 4 ● 22 ● 40

---

We used this awesome question as a puzzler in the second season of the #groovypuzzlers and want to send you a thank-you t-shirt. How can I reach you? – [JBaruch Sep 13 at 4:49](#)

---

[add a comment](#)

start a bounty

Schwarzenegger

JAMES CAMERON'S

True Lies



DIGITALLY THX MASTERED  
FOR SUPERIOR SOUND AND PICTURE QUALITY

```
String truth = 'false'  
boolean groovyTruth = truth  
println groovyTruth
```



```
String truth = 'false'  
boolean groovyTruth = truth  
println groovyTruth
```

A. false

B. true



C. ClassCastException

D. Startup error



DGDO | ~



**RTFM!**



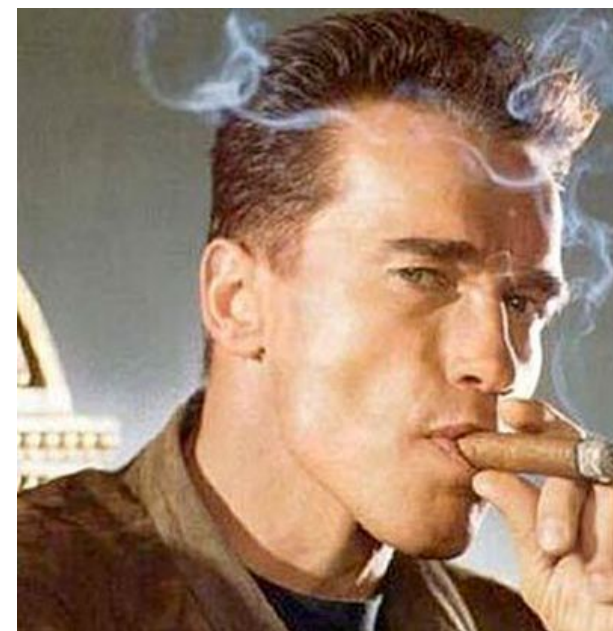
## § Strings

Non-empty Strings, GStrings and CharSequences are coerced to true.

---

```
assert 'a'
assert !''
def nonEmpty = 'a'
assert "$nonEmpty"
def empty = ''
assert !"$empty"
```

---

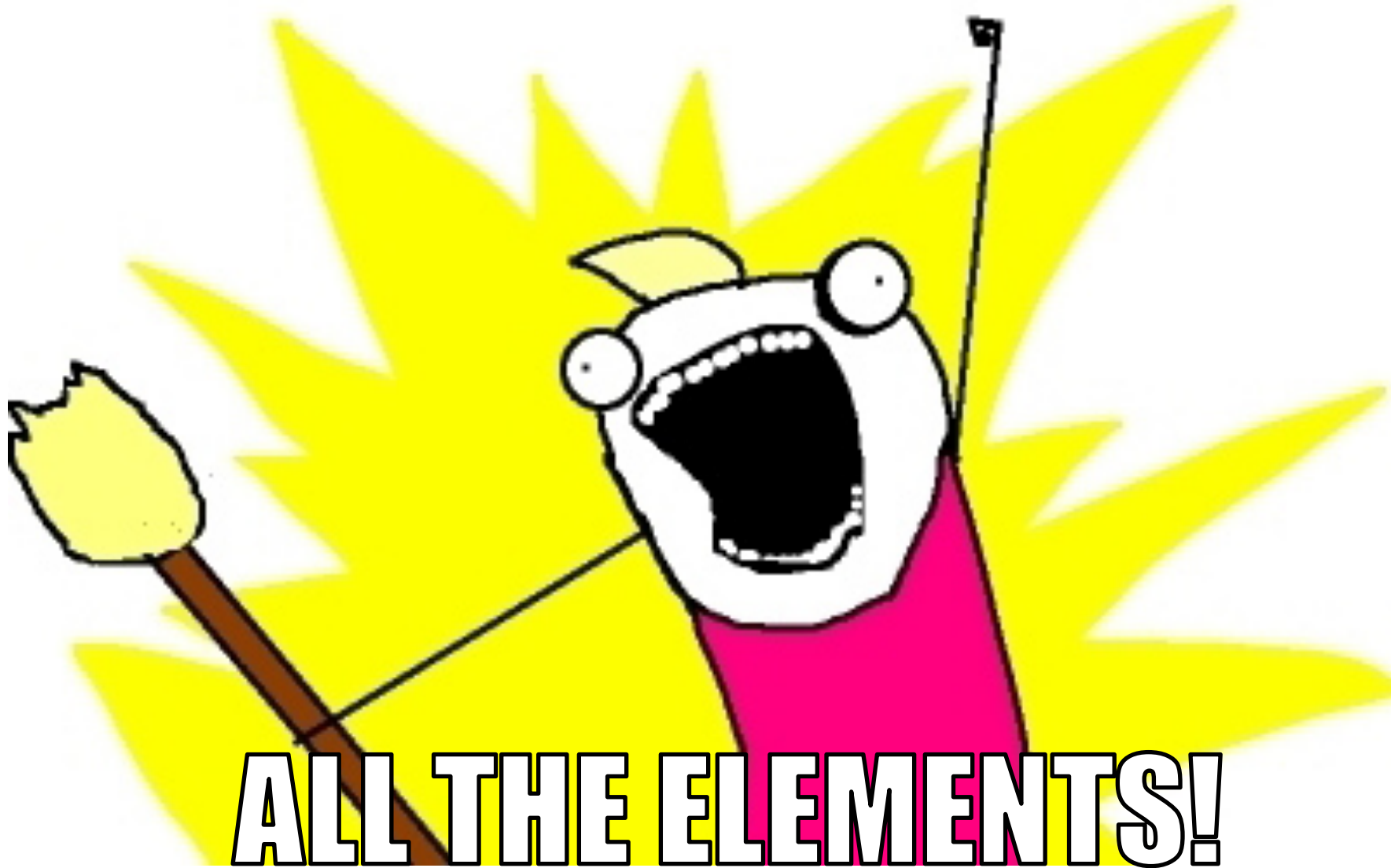


# And the t-shirt goes to...





COLLECT



ALL THE ELEMENTS!

```
class Kitty { def fur }  
def kitties = [new Kitty(fur: 'soft'), new Kitty(fur: 'warm'), new Kitty(fur: 'purr') ]  
  
println kitties.collect { it.fur }  
println kitties*.fur  
println kitties.fur
```

How many of the printed lines will be the same?

- A. All different
- B. 2 similar, one different
- C. All the same
- D. Won't run





```
class Kitty { def fur }  
def kitties
```

```
println kitties.collect { it.fur }  
println kitties*.fur  
println kitties.fur
```

How many of the printed lines will be the same?

- A. All different
- B. 2 similar, one different
- C. All the same
- D. Won't compile





```
class Kitty { def fur }  
def kitties
```

```
println kitties.fur
```

```
class Kitty { def fur }  
def kitties
```

```
println kitties.fur
```



```
class Kitty { def fur }  
def kitties
```

```
println kitties.collect { it.fur }
```

```
class Kitty { def fur }  
def kitties
```

```
println kitties.collect { it.fur }
```

```
public static Collection asCollection(Object value) {  
    if (value == null) {  
        return Collections.EMPTY_LIST;  
    }  
    ...  
}
```

```
class Kitty { def fur }
```

```
def kitties
```

```
println kitties*.fur
```



```
class Kitty { def fur }  
def kitties  
  
println kitties*.fur
```

The spread operator is null-safe, meaning that if an element of the collection is null, it will return null instead of throwing a `NullPointerException`:

```
class Kitty { def fur }  
def kitties  
  
println kitties*.fur
```

The spread operator is null-safe, meaning that if an element of the collection is null

`NullPointerException`:



# Consistency, yeah.

```
[]
```

```
null
```

```
Caught: java.lang.NullPointerException:  
Cannot get property 'fur' on null object
```

# And the t-shirt goes to...





GEORGE ORWELL'S

# ANIMAL FARM

ALL ANIMALS ARE CREATED EQUAL  
BUT SOME ARE MORE EQUAL THAN OTHERS

STARRING  
NARRATION  
STORY BY

MAURICE DENHAM  
GORDON HEATH  
GEORGE ORWELL

DIRECTORS  
MUSIC BY

JOY BATCHELOR  
JOHN HALAS  
MATYAS SEIBER

HAZZAN.CO



```
assert 1L == 1  
println 1L.equals(1)
```

- A. Assertion failed
- B. true
- C. false
- D. MissingMethodException







**RTFM!**

## 10. Behaviour of `==`

In Java `==` means equality of primitive types or identity for objects. In Groovy `==` translates to `a.compareTo(b)==0`, iff they are `Comparable`, and `a.equals(b)` otherwise. To check for identity, there is `is`. E.g. `a.is(b)`.

```

/**
 * Compare two Numbers. Equality (==) for numbers dispatches to this.
 *
 * @param left a Number
 * @param right another Number to compare to
 * @return the comparison of both numbers
 * @since 1.0
 */
public static int compareTo(Number left, Number right) {
    /** @todo maybe a double dispatch thing to handle new large numbers? */
    return NumberMath.compareTo(left, right);
}

```

```

/**
 * Compares this object to the specified object. The result is
 * {@code true} if and only if the argument is not
 * {@code null} and is a {@code Long} object that
 * contains the same {@code long} value as this object.
 *
 * @param obj the object to compare with.
 * @return {@code true} if the objects are the same;
 *         {@code false} otherwise.
 */
public boolean equals(Object obj) {
    if (obj instanceof Long) {
        return value == ((Long)obj).longValue();
    }
    return false;
}

```



# And the t-shirt goes to...



# Conclusions







READABLE  
NEAT

3. SOMETIMES IT IS

4. USE STATIC CODE  
(INTELLI IDEA)

5. RTFM

6. PARENTHESES. ALWAYS USE  
PARENTHESES.





WE KEEP GOING! (LOOK AT THE  
AWESOME T-SHIRTS!)

PUZZLERS? GOTCHAS? FETAL  
POSITION INDUCING BEHAVIOR?

- PUZZLERS@JEROG.COM  
- @GROOVYPUZZLERS

# Jfrog always pays its debts



Deigote  
@deigote



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Reply Retweeted Favorited More



Iván López  
@ilopmar



Follow

I've received an amazing t-shirt from @jfrog for sending them a #Groovylang puzzler. Thank you @NoamTenne :-)

Reply Retweeted Favorite More





POSITIVE FEEDBACK?

FILL THE FEEDBACK FORM!

PRAISE US ON TWITTER

#GROOVYPUZZLERS

- @GROOVYPUZZLERS

- @GAMUSSA

- @JBARUCH

NEGATIVE FEEDBACK?

/DEV/NULL

**No, Thank you!**

