Java futures

Looking at

- Evolution of Java
- Java politics

What goes around comes around

- composition → inheritance → composition

- functional programming (lisp)
  → object-oriented programming (java)
  → oop + functional programming (java8+)

Generics

- Java without generics - before Java5
  - Storing stuff in a collection – can hold any referenced type
- Java with generics – Java5 and up
  - Collection hold objects of given type
  - Simplifies reading and writing elements

Java with generics

- What's been gained?
- Type safety - compiler detects collection type errors

Java with generics

- What else has been gained?
- See the generics FAQ...all 352 pages!!!
  - Generic types and generic methods...
  - Type parameters, wildcard instantiation...
  - Genericity & inheritance...
  - ...

What people are saying

''I don't know how to ease into this gently. So I'll just spit it out. Generics are a mistake. This is not a problem based on technical disagreements. It's a fundamental language design problem.''

Ken Arnold

- Ken Arnold is the author of *The Java Programming Language*, and he can't understand generics...

Java - what happened?

- Initially a pretty simple "blue-collar" language
  - Followed 80 / 20 rule - had 80% of desired features for 20% of the complexity
  - ''When in doubt, leave it out.''
- Then ''feature-envy'' set in prompted by...
  - ...''C# has some feature A and Java doesn't''
  - ...''Ruby, Python, etc. have some feature B and Java doesn't''
  - ...''wouldn't it be cool to add feature C, just because it's cool!''

Java – what happened?

- Eg, inner classes, enumerations, annotations, generics, builtin databases, lambda functions, closures, streams, modules...
- A major psychodrama concerned closures
  - Finally made it into Java 8 (as lambda functions)
  - See
    - Java closures site
    - Bruce Eckel - *Java: Evolutionary Dead End*
- Latest psychodrama - Java 9 introduces *modules* (packages of packages)

Java - what choices

- Freeze the language (à la C)
- And risk developers abandoning for ''sexier'' languages
- Java is steadily losing popularity

Java - what choices

- Add features while maintaining backward compatibility
- And risk the complexity of C++ (backward compatible with C)

Java - what choices

- Add features that may break compatibility with existing codebase
- Python 3 has taken this courageous but sometimes painful approach
- Implementation can be greatly simplified

Java - what choices

- Abandon source-code compatibility while maintaining binary compatibility
- Eg, Scala, Groovy, Clojure, Jython...

Java - what choices

''Java is functional; trying to add every feature will break it. If you really need those features, perhaps using another JVM language that is designed from scratch to support those features (Scala, for example) is a better choice than trying to (badly) force it into Java.''

Bruce Eckel

New and improved Java 7/8

- Major enhancement
- Lambda expressions enable closures

New and improved Java 9

- Major enhancement
- Modules (packages of packages) allows fine-tuning of encapsulation

New and improved Java > 17

- Major enhancement
- Value-based classes and value objects

New and improved Java > 17

- Major enhancement
- Value-based classes and value objects

- ...maybe...maybe not...

Java futures

- Today – “How many of you know COBOL?”

Java futures

- Today – “How many of you know COBOL?”
- In 10 years - “How many of you know Java?”
- Takeaway lessons
  - Learn the principles, details are subject to change
  - Don't put all your eggs in one basket

And now for something completely different...

Java is free, right?

- What exactly is the difference between:
  - open source
  - free...as in gratuit (or, free as in beer)
  - free...as in libre

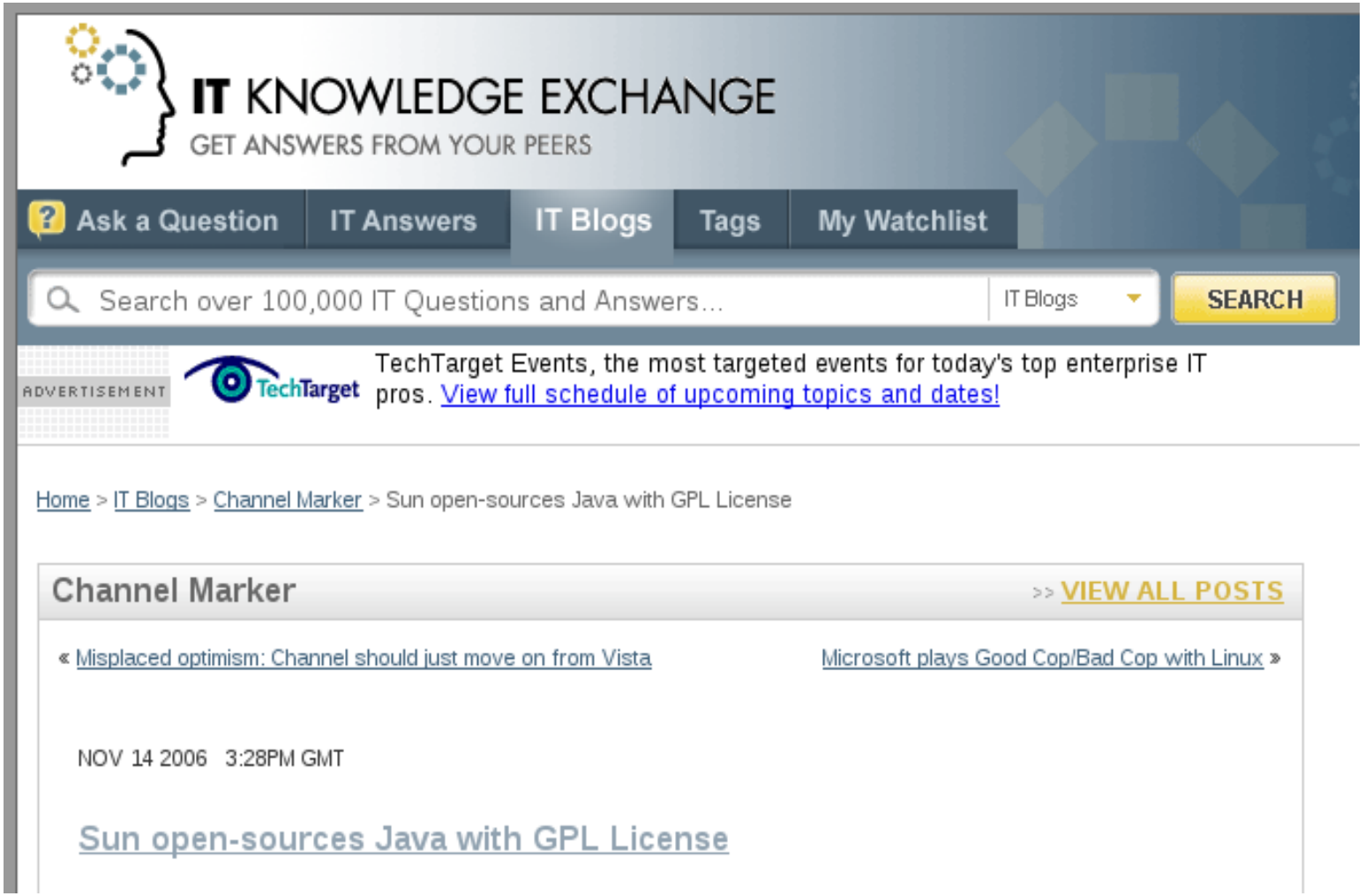
Java is free, right?

- Richard Stallman had warned for years about the Java trap:

“If you develop a Java program on Sun's Java platform, you are liable to use Sun-only features without even noticing. By the time you find this out, you may have been using them for months, and redoing the work could take more months. You might say, “It's too much work to start over.” ...”

Java is what, exactly?

- Under GPL licence – free as in libre?



Java is what, exactly?

- Oh oh...

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Oracle to Buy Sun for $7.4 Billion

April 20, 2009, 7:50 AM

Update | 8:38 a.m. *The New York Times's Ashlee Vance has more on the Oracle-Sun deal here.*

Oracle on Monday agreed to buy **Sun Microsystems** for $7.4 billion, weeks after **I.B.M.** walked away from deal talks to buy Sun for $7 billion.

Java is what, exactly?

- Oops...

Java is what, exactly?

“Now, if you are choosing a programing language, aren’t you more likely to consider something truly unencumbered like Ruby or Python — where something like this just wouldn’t happen — than you are Java? Joel West points out a problem that Sun always had — that of semi-openness — which now comes back to bite those that trusted it.”

Verdict

Pow! Oracle told by judge to cover for Google's legal expenses

by **Bams Sadewo** on Jun 05, 2012 with **5 Comments**

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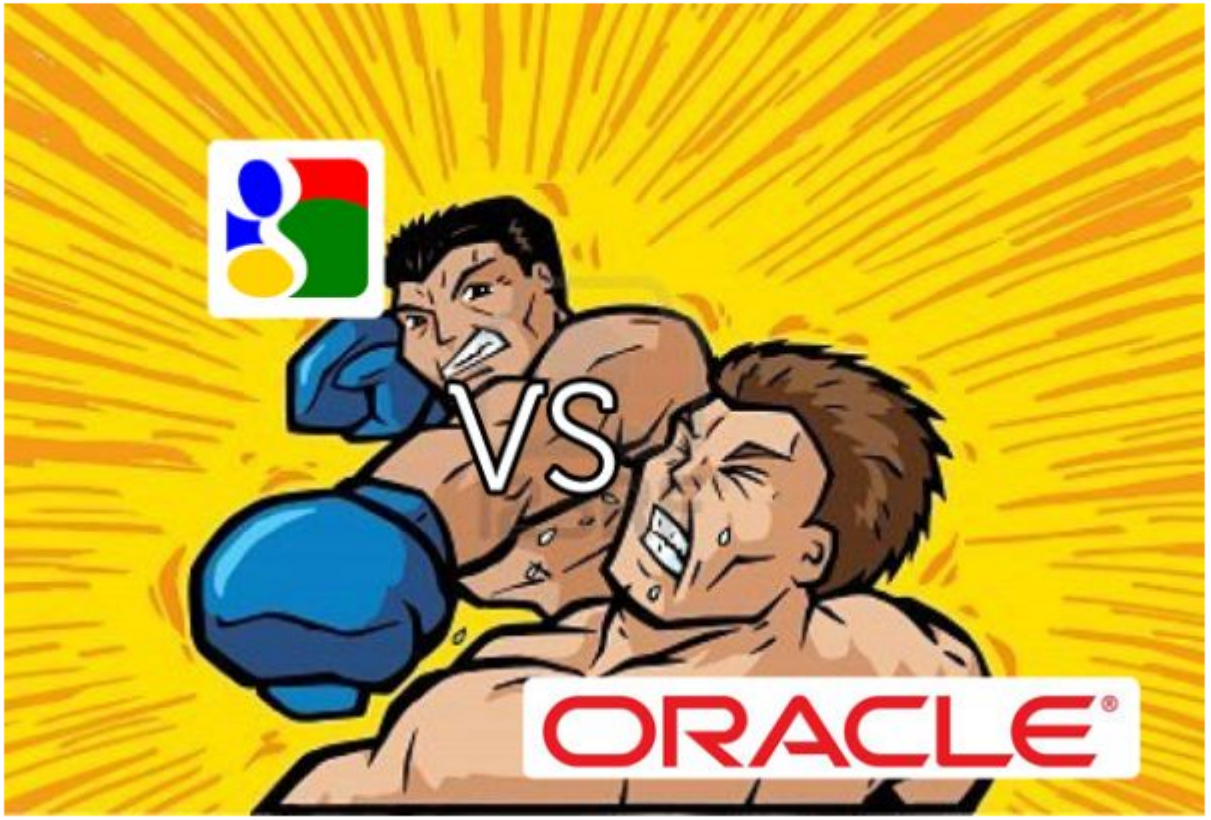

The smackdown against Oracle in the courtroom continues. It was only last week that victory

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Verizon Galaxy N
spotted, release
available; U.S. C
it too

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about the Jelly B
before launch

Deal: Cheaper T-
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New Galaxy S3 J
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News & Analysis / Java APIs Copyrightable, Court Rules in Oracle vs. Google

Java APIs Copyrightable, Court Rules in Oracle vs. Google

By Chris Preimesberger | Posted 2014-05-09 Email Print

Two years ago its case seemed dead in the water, but Oracle now can pursue its high-profile copyright suit against Google over Android's use of Java.

A major intellectual property lawsuit involving IT giants Oracle and Google is in the process of determining the legal definitions of "creative" and "utilitarian" in software development.

A three-judge U.S. Court of Appeals in Washington, D.C., on May 9 overturned a 2012 circuit court decision, ruling that Oracle is entitled to copyright protection over application programming interfaces in the Java programming language that are vital components in the open-source Android operating system.

As a result, Oracle now can pursue its high-profile copyright suit against Google over Android's use of Java.

...they can be wounded!

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$10bn Oracle v Google copyright jury verdict: Google wins, Java APIs in Android are Fair Use

Big Red tells us it immediately plans to appeal

26 May 2016 at 20:19, Shaun Nichols and Chris Williams

108 91

...but they still keep coming at you...

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Software

Happy as Larry: Why Oracle won the Google Java Android case

Get a licence or build something new. It's really that simple

By Andrew Orlowski 29 Mar 2018 at 10:43 112 SHARE ▼

Comment One piece of paper. Just one lousy piece of paper. That's the difference between success and a potential $8.8bn payout.

...if something can't go on forever then it has to stop...

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Developers will be impacted if the Supreme Court upholds that Java APIs can be copyrighted

The Oracle v. Google Java API copyright showdown might move to the US Supreme Court

January 28, 2019 Jane Elizabeth

#java

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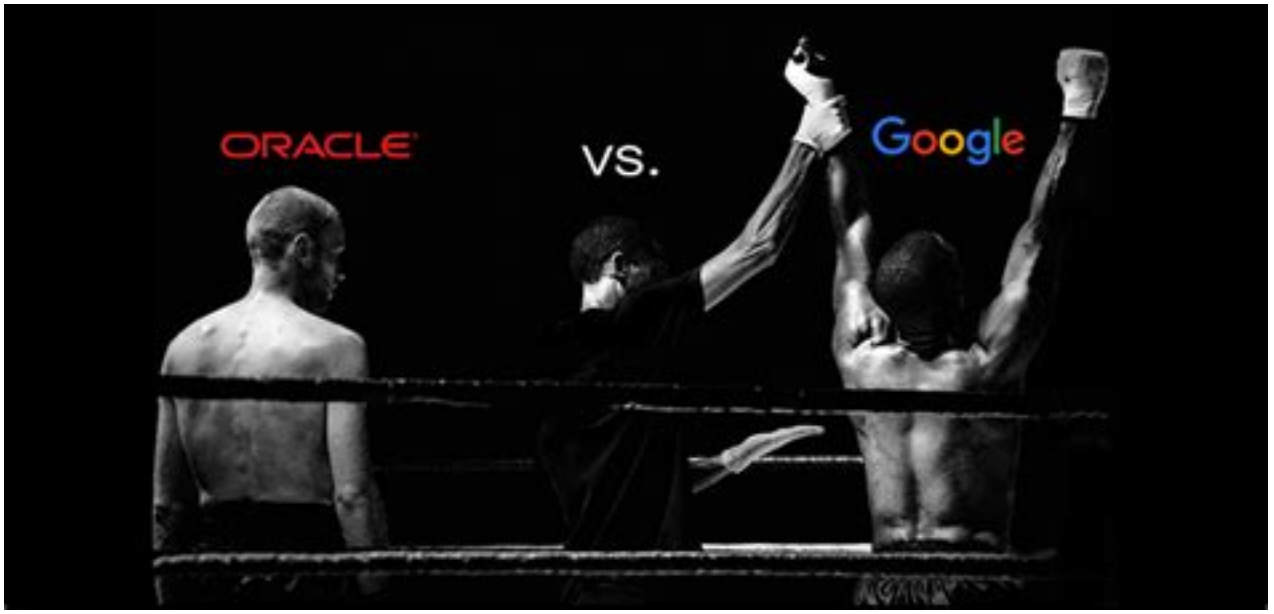
Another salvo in the Oracle v. Google copyright fight as Google appeals to the US Supreme Court to overturn the Federal Court's audacious ruling. This is more than just a problem for lawyers; developers of all kinds are impacted if the Supreme Court upholds that Java APIs can be copyrighted.

Shutterstock /Orhan Cam

SCOTUS rules for Google



- But (there's always a but):

*...the fact that the Court did not directly deal with the copyrightability of APIs will likely invite future similar lawsuits**.

* CNN

...but wait, there's more...

Stephen Colebourne's blog

Thoughts and Musings on the world of Java and beyond

Wednesday, 26 September 2018

Oracle's Java 11 trap - Use OpenJDK instead!

TL:DR; Java is still available at zero-cost, you just need to stop using Oracle JDK and start using an OpenJDK build, such as this one or this one.

The trap

Java 11 has been released. It is a major release because it has long-term support (LTS). But Oracle have also set it up to be a trap (either deliberately or accidentally).

For 23 years, developers have downloaded the JDK from Oracle and used it for $free. Type "JDK" into your favourite search engine, and the top link will be to an Oracle Java SE download page (I'm deliberately not providing a link). But that search and that link is now a trap.

Oracle JDK, the one all web searches take you to, is now commercial not $free.

The key part of the terms is as follows:

> *You may not: use the Programs for any data processing or any commercial, production, or internal business purposes other than developing, testing, prototyping, and demonstrating your Application;*

The trap is as follows:

1. Download Oracle JDK (because that is what you've always done, and it is what the web-search tells you)
2. Use it in production (because you didn't realise the license changed)
3. Get a nasty phone call from Oracle's license enforcement teams demanding lots of money

In other words, Oracle can rely on inertia from Java developers to cause them to download the wrong (commercial) release of Java. Unless you read the text/warnings/legalese very carefully you might not even realise Oracle JDK is now commercial, and that you are therefore liable to pay Oracle for using this particular JDK in production.

(Update, 2018-10-03: Searches for Java 11 and JDK 11 now seem to be resolving to OpenJDK builds, not commercial ones!)