

Java Fundamentals

Lecture 15 - Java 9 and Beyond

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Agenda for Today

- Java 9
- Exam info :)

Java 9

When/Where can I get it?

- **June 22** - Initial Release Candidate
- **July 6** - Final Release Candidate
- **July 27** - General Availability
- Early Access - <http://jdk.java.net/9/>

Why would I care? :)

- Get info about **upcoming changes**
- Live on the **cutting edge of Java**
- Know more about the **Java ecosystem**

JDK Enhancement Proposal

- **The JDK Enhancement Proposal (or JEP)** is a process drafted by Oracle Corporation for **collecting proposals for enhancements to the Java Development Kit and OpenJDK**. In the words of the Oracle, the **JEP** serve as the long-term Roadmap for JDK Release Projects and related efforts.

Features

jshell

- **Java REPL** - Read, Eval, Print loop
- **\$path_to_jdk9/bin/jshell**
- **/help** - display a list of commands
- **/save <file>** - save the code you have written to a file
- **/open <file>**
- **/exit** - exit the REPL
- <http://openjdk.java.net/jeps/222>

Factory methods for collections

- **List.of("foo", "bar", "baz")**
- **Map.of("foo", 1, "bar", 2, "baz", 3)**
- **Map.of(Map.entry("foo", 1), ..., Map.entry("baz", 3));**
- Immutable collections
- <http://openjdk.java.net/jeps/269>

Reactive API

- **Goal:** An interoperable publish-subscribe framework, enhancements to the CompletableFuture API, and various other improvements.
- **java.util.concurrent.Flow.Publisher<T>**
- **java.util.concurrent.Flow.Subscriber<T>**
- <http://openjdk.java.net/jeps/266>

Process API improvements

- **Goal:** Improve the API for **controlling and managing operating-system processes.**
- **java.util.ProcessHandle**
- **current()** - current process
- **of(int pid)** - of some native process
- <http://openjdk.java.net/jeps/102>

Stackwalker **API**

- **Goal:** Define an efficient standard API for stack walking that allows easy filtering of, and lazy access to, the information in stack traces.
- Current approaches can be costly
- **StackWalker.getInstance().walk(...)**
- <http://openjdk.java.net/jeps/259>

Compile for **older platforms**

- **javac** provides two command line options, **-source** and **-target**
- These only validate **bytecode compatibility**, **not API compatibility**
- **--release 8**
- <http://openjdk.java.net/jeps/247>

Multi-release JAR files

- **Goal:** Extend the JAR file format to allow multiple, Java-release-specific versions of class files to coexist in a single archive.
- <http://openjdk.java.net/jeps/238>

Deprecate **Java Applet** API

- **Goal:** Deprecate the Applet API, which is rapidly becoming irrelevant as web-browser vendors remove support for Java browser plug-ins. Guide developers to alternative technologies such as Java Web Start or installable applications.
- **TLDR:** Java Applets are officially dead
- <http://openjdk.java.net/jeps/289>

AOT compilation

- **Goal:** Improve the start-up time of both small and large Java applications, with at most a limited impact on peak performance.
- JIT compilers are fast, but Java programs can become so large that it takes a long time for the JIT to warm up completely. Infrequently-used Java methods might never be compiled at all, potentially incurring a performance penalty due to repeated interpreted invocations.
- <http://openjdk.java.net/jeps/295>

Module system

- **Module system** - <http://openjdk.java.net/jeps/261>
- **Modular JDK** - <http://openjdk.java.net/jeps/200>
- **Modular source code** - <http://openjdk.java.net/jeps/201>
- etc...

Declare exports, dependencies

```
mymodule/src/main/java/module-info.java
```

```
module mymodule {  
    requires java.logging;  
    exports com.zeroturnaround.jf;  
}
```

Declare exports, dependencies

```
othermodule/src/main/java/module-info.java
```

```
module othermodule {  
    requires mymodule;  
}
```

JSR #376

Java™ Platform Module System

Public Review Ballot

Ballot duration: 2017-04-25 to: 2017-05-08

These are the final results of the Public Review Ballot for JSR #376. The EC has not approved this ballot.

Votes

EC

Azul Systems, Inc. <input checked="" type="checkbox"/>	Credit Suisse <input checked="" type="checkbox"/>	Eclipse Foundation, Inc <input checked="" type="checkbox"/>	Fujitsu Limited <input checked="" type="checkbox"/>
Gemalto M2M GmbH <input checked="" type="checkbox"/>	Goldman Sachs & Co. <input checked="" type="checkbox"/>	Grimstad, Ivar <input checked="" type="checkbox"/>	Hazelcast <input checked="" type="checkbox"/>
Hewlett Packard Enterprise <input checked="" type="checkbox"/>	IBM <input checked="" type="checkbox"/>	Intel Corp. <input checked="" type="checkbox"/>	Keil, Werner <input checked="" type="checkbox"/>
London Java Community <input checked="" type="checkbox"/>	MicroDoc <input checked="" type="checkbox"/>	NXP Semiconductors <input checked="" type="checkbox"/>	Oracle <input checked="" type="checkbox"/>
Red Hat <input checked="" type="checkbox"/>	SAP SE <input checked="" type="checkbox"/>	Software AG <input checked="" type="checkbox"/>	SouJava <input checked="" type="checkbox"/>
Tomitribe <input checked="" type="checkbox"/>	Twitter, Inc. <input checked="" type="checkbox"/>	V2COM <input checked="" type="checkbox"/>	

Icon Legend

Yes

No

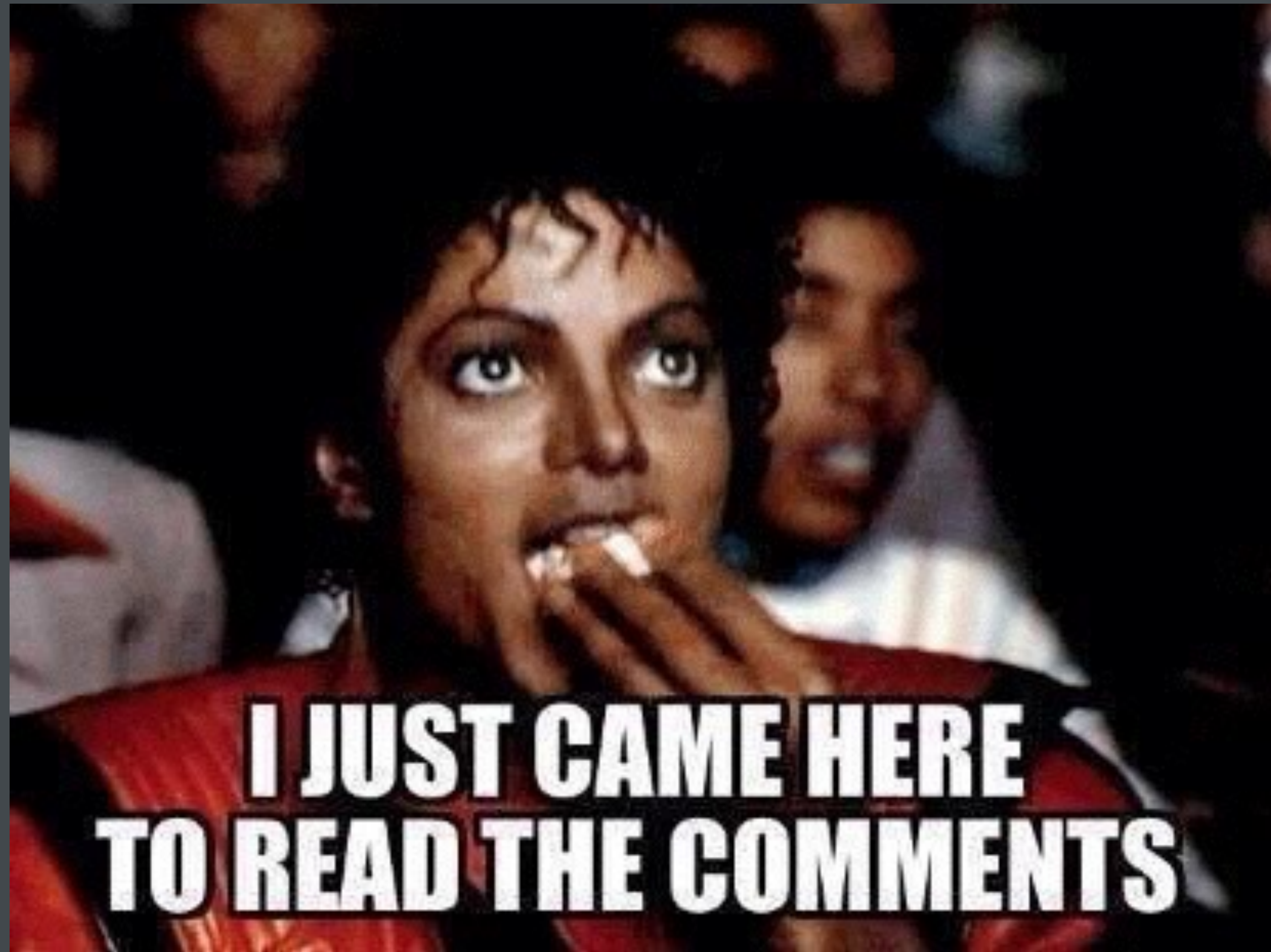
Abstain

Not voted

Drama

- <https://www.jcp.org/en/jsr/results?id=5959>
- <http://mail.openjdk.java.net/pipermail/jpms-spec-experts/2017-May/000695.html>

Drama



Want to know more?

- Go to <http://openjdk.java.net/projects/jdk9/>

Exam info

Prerequisite for the exam

- At least **6 points (total)** from **homeworks**

Exam times

- May 22nd - ICT-315, ICT-312 @12.00
- May 29th - ICT-A1 and ICT-A2 @12.00

Exam **format**

- **Written** part
 - **25 multiple choice questions** (choose one)
 - **45 minutes**
- **Oral** part
 - **2 questions**
 - **10-15 minutes** each

Course **grading**

- **Homeworks** give **50%** of the final grade.
 - Need **12 points out of 14** for maximum score
- **Exam** gives another **50%**
 - **60% multiple choice**
 - **40% oral**
- You will receive your **grade immediately**

Thank you for being awesome
(and taking this course ;))

Questions?

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