How to Grow your Career as a Java Developer and Participate in the Future of Java

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Director & Chair, JCP Program
@heathervc
April 2018
The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Heather VanCura

- Chairperson & Director of the JCP Program
- Leader of Global Java Adopt-a-JSR Programs
- Open Source Fan
- Californian - from San Diego
- Personal Interests: Travel, Fitness, Music, Fun
Technology Demand

1.4m TECH JOBS by 2020

LESS computer science grads
In-demand skills

- Not easy to acquire
- Require practice
- Human interactions
- Complex thinker, relationships, emotional intelligence = practice with others
First Computer Programmer

• Today we need more diversity in tech
  • Solve problems of entire society
  • ➔ Intelligence, Innovation, Profit
• And we see a shift...
  • From the one with the best technical skills wins
  • To the one with the best people skills wins
In 2018 ... 50% of tech jobs = Technical skills

- Top five key soft skills that engineers and other professionals should develop for career success:
  - Communication
  - Creativity/Critical Thinking
  - Adaptability/Flexibility
  - Collaboration/Teamwork
  - Leadership
Again, how do you acquire? Practice!

- Engage in Community events
- User Group Meetings
- Conferences
- Open Source Projects
- Java Community Process (JCP), OpenJDK
- Hack days &/or Hackergartens
- Mentor, Kids coding workshops
- Author/Social Media
TIOBE Programming Community Index
Source: www.tiobe.com
Continued growth

• #1 Development Platform, Now in the Cloud
• 10 Million Java Developers Worldwide
• #1 Choice For Developers
• 13 Billion Devices Run Java
• 200 Million Medical Devices Run Java
• 1 Billion Automotive Devices Run Java
• 97% of Enterprise Desktops Run Java
Java Philosophies

- Platform Completeness
- Quality and Security
- Modernization and Innovation
- Open and Transparent Evolution
- Developer Productivity & Compatibility
- Active Ecosystem Involvement
Open Evolution

• 1995: Sun Microsystems develops Java.
• 1998: Sun opens up the development process to its competitors, creating the Java Community Process.
• 2006: Sun open-sources Java SE and Java EE.
• 2007: Sun goes into financial decline; Java stagnates.
• 2010: Oracle acquires Sun and becomes the steward of Java.
• 2017—: Introduce Faster OpenJDK Release Cycle.
Java Stewardship

• Oracle recognizes the great value of Java - to itself as well as to its allies and competitors.
• The value is derived from the open, collaborative, standards-based process through which Java is developed and the vibrant developer community that this process fosters.
  – A proprietary platform could not have succeeded as Java has
  – Java is everywhere
• Oracle’s support and promotion of Java benefits everyone.
Why Should Developers Participate?

- Knowledge
- Skills
- Visibility
- Altruism
- Advance Career
- Fun
Membership Quotes

• “Joining the JCP, especially being a member of several expert groups, has had a big impact on my career. Mostly by making it visible for the leadership and managers in my company that I am actually a part of forming the future of the platform. I also think, or hope, that it is an inspiration for my colleagues.”
  - Ivar Grimstad

• “Joining the JCP is like being a Java citizen.”- Heinz Kabutz
Organization

JSR PARTICIPATION

- Specification Lead
- Expert Group Members
- Contributors
- JCP Members
- Specification Lead
- Expert Group Members
- Contributors
Collaborative Development - How does it work?

• Java Specification Requests (JSRs)
  – A JSR is a single version of a Java specification.

• JSRs are led by a community member (the Spec Lead), with a group of interested members (the Expert Group) helping with the day-to-day decisions and work.
  – Any JCP member can submit and lead a JSR.

• Each Expert Group must deliver:
  – The Specification
  – A Reference Implementation (RI)
  – A Technology Compatibility Kit (TCK)
The JSR Development Cycle

- Includes formal public reviews and votes by the Executive Committee.
- Full Members can submit & lead JSRs, serve on JSR Expert Groups.
Compatibility Triangle

- IS THE SPECIFICATION UNAMBIGUOUS?
- CAN YOU BUILD AN IMPLEMENTATION?
- IS THE TCK CORRECT?
- DOES THE RI CONFORM?
Who Are The Members?

- Corporations
- Non-Profit & OpenSource
- Java User Groups (JUG)
- Individual Developers
The Executive Committee

- Corporations
- Non-Profits/Open Source
- Java User Groups
- Individual Developers
An International Effort
How: Open Standards & Open Source

• We need both!
Complimentary

- Open source important requirement. So are Standards.
- Coop-edition. Agree on what to standardize (cooperation) & what to compete on (implementations).
- Open standards implemented in open source = easier to implement standard & for developers to understand technology.
- Results in more implementations and greater adoption of the standard.
- An effective way to develop a standard-start with an open source project that has demonstrated the need for standardization.
Open Source Implementations

• The Reference Implementations of the Java platform is developed collaboratively and released under open-source license
• Java SE: OpenJDK
Organization Focus

- New revisions of each of platform.
- “JCP.Next” reforms
- Increased participation from Community.
The Vibrant Java EE Community

Publications

Java EE Developers

Career Opportunity

Java EE Compatible Application Servers

User Groups
## Java EE 8 Overview

<table>
<thead>
<tr>
<th>Batch</th>
<th>Dependency Injection</th>
<th>JACC</th>
<th>JAXR</th>
<th>JSTL</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean Validation 2.0</td>
<td>Deployment</td>
<td></td>
<td></td>
<td></td>
<td>Servlet 4.0</td>
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<tr>
<td>CDI 2.0</td>
<td>EJB</td>
<td></td>
<td></td>
<td></td>
<td>Web Services</td>
</tr>
<tr>
<td>Common Annotations</td>
<td>EL</td>
<td>JAX-RPC</td>
<td>JSF 2.3</td>
<td>JPA</td>
<td>Managed Beans</td>
</tr>
<tr>
<td>Concurrency EE</td>
<td>Interceptors</td>
<td>JAX-RS 2.1</td>
<td>JSON-P 1.1</td>
<td>JavaMail</td>
<td>WebSockets</td>
</tr>
<tr>
<td>Connector</td>
<td>JSP Debugging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JSON-B 1.0</td>
<td>Security 1.0</td>
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Today - Java EE 8

• Released September 2017!
• GlassFish 5 - Open Source RI
  – https://javaee.github.io/glassfish/
  – https://hub.docker.com/r/oracle/glassfish/
• Open
  – https://github.com/javaee/
  – https://javaee.groups.io/
Java EE 8 - September 2017

• Modernize Java EE for Cloud and Microservices
• Retarget Java EE to address these trends - 15+ JSRs
• Goals:
  – Migration path to cloud development and deployment models for Java EE customers
  – Migration path to microservices-based architecture for Java EE applications
  – Backwards compatibility with Java EE
Tomorrow - Eclipse Enterprise for Java
Moving Java EE to Eclipse Foundation

EE4J (Jakarta EE)
✓ Nimble
✓ Flexible
✓ Open
✓ Compatible

https://projects.eclipse.org/projects/ee4j/
Java SE 9 - September 2017

• Important Features:
  – JEP 261: Module System
  – JEP 200: The Modular JDK
  – JEP 222: jShell
  – JEP 260: Encapsulate Internal APIs
  – JEP 282: jlink: The Java Linker
  – JEP 295: Ahead of Time Compilation (AOT)
New JDK Release Model - Starting with JDK 9

JDK 6
JDK 7
JDK 8
JDK 9
JDK 10
JDK 11 (18.9 LTS)
JDK 12
JDK 13
JDK 14
JDK 15
JDK 16
JDK 17 (21.9 LTS)
Java SE 10 - March 2018

OpenJDK 10 General-Availability Release

This page provides production-ready open-source builds of the Java Development Kit, version 10, an implementation of the Java SE 10 Platform under the GNU General Public License, version 2, with the Classpath Exception.

Commercial builds of JDK 10 from Oracle under a non-open-source license, for a wider range of platforms, can be found at the Oracle Technology Network UD.

Documentation
- Features
- Installation UD
- Release Notes
- API Javadoc
- Tool & command reference UD
- Supported Platforms

Downloads

<table>
<thead>
<tr>
<th>Platform</th>
<th>Architecture</th>
<th>Size</th>
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<tbody>
<tr>
<td>Windows</td>
<td>64-bit</td>
<td>tar.gz (unzip) 190 MB</td>
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<tr>
<td>macOS</td>
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<td>Linux</td>
<td>64-bit</td>
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Notes
- If you have difficulty downloading any of these files please contact jdk-download-help_sw@oracle.com.
- To obtain the source code for these builds, clone the JDK 10 Mercurial repository: http://hg.openjdk.java.net/jdk/jdk10/. Once the repository is cloned, instructions to build can be found on ./.your-local-cloned-directory/jdk10/README

Feedback
If you have suggestions or encounter bugs, please submit them using the usual Java SE bug-reporting channel. Be sure to include complete version information from the output of the java --version command.

International use restrictions
Due to limited intellectual property protection and enforcement in certain countries, the JDK source code may only be distributed to an authorized list of countries. You will not be able to access the source code if you are downloading from a country that is not on this list. We are continuously reviewing this list for addition of other countries.
JDK 10 - Mar 2018
• First time-bound release
• Train model
• 12 JEPs (Java Enhancement Proposals)
JEP 286: Local-Variable Type Inference

specification / language

- Enhance the Java Language to extend type inference to declarations of local variables with initializers
- Restricted to local variables with initializers, indexes in the enhanced for-loop, and locals declared in a traditional for-loop
- Not available for method formals, constructor formals, method return types, fields, catch formals, or any other kind of variable declaration

```java
ArrayList<String> list = new ArrayList<String>();
Stream<String> stream = list.stream();
```
JEP 310: Application Class-Data Sharing

hotspot / runtime

- Extend the existing Class-Data Sharing ("CDS") feature to allow application classes to be placed in the shared archive
- Reduce footprint by sharing common class metadata across different Java processes.
- Improve startup time.

First Oracle JDK commercial feature Open Sourced!
JEP 319: [Open Source] Root Certificates

Security-libs / java.security

• Provide a default set of root Certification Authority (CA) certificates for the JDK

• Secured re-distribution rights for 80 Root Certificates from 17 Certificate Authorities

• OpenJDK binaries can now connect to many TLS servers out-of-the-box
Also opened since JavaOne 2017

• Project ZGC
  – Scalable low latency garbage collector capable of handling heaps ranging from gigabytes to terabytes in size, with GC pause times not exceeding 10ms

• OpenJDK Early Access binaries under GPL
  – Feature releases (e.g. JDK 9, JDK 10, JDK 11)
  – Project-specific binaries e.g. Project Valhalla
And Beyond to Java 11, 12…

• Project Valhalla
  – Value Types
  – Specialized Generics
  – Var Handles

• Project Panama
  – Foreign Function Interface
  – Date Layout Control
  – Arrays 2.0

http://openjdk.java.net
Get Involved

Follow on Twitter

@OpenJDK

Join and become an OpenJDK contributor

https://openjdk.java.net
Java Remains Number One

‘Java First…Java Always’

- Faster Release Cycles
- Open Source Commercial Features
- Migrate Java EE to Foundation ‘Jakarta EE’
- Continue to streamline JCP Program processes (JCP.Next)
- Continue to increase developer participation and collaboration
JCP.next: Changing the Constitution

We the People

of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common Defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this CONSTITUTION for the United States of America.

Article I.

SECTION 1. All legislative Powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

SECTION 2. The House of Representatives shall be composed of Members chosen every Second Year by the People of the several States, and the Electors in each State shall have the Qualifications requisite for Electors of the most numerous Branch of the State Legislature.

No Person shall be a Representative who shall not have attained to the Age of twenty-five Years, and been seven Years a Citizen of the United States, and who shall not, when elected, be an Inhabitant of that State in which he shall be chosen.

Representatives and direct Taxes shall be apportioned among the several States which may be included within this Union, according to their respective Numbers, which shall be determined by adding to the whole Number of free Persons, including those bound to Service for a Term of Years, and excluding Indians not taxed, three fifths of all other Persons. The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and in every subsequent Term of ten Years, in such Manner as they shall by Law direct. The Number of Representatives shall not exceed one for every thirty Thousand, but each State shall have at Least one Representative; and until such Enumeration shall be made, the State of New Hampshire shall be entitled to chuse three, Massachusetts eight, Rhode-Island and Providence Plantations one, Connecticut five, New-York six, New Jersey four, Pennsylvania eight, Delaware one, Maryland six, Virginia ten, North Carolina five, South Carolina five, and Georgia three.

When Vacancies happen in the Representation from any State, the Executive Authority thereof shall issue Writs of Election to fill such Vacancies.

The House of Representatives shall choose their Speaker and other Officers; and shall have the sole Power of Impeachment.

SECTION 3. The Senate of the United States shall be composed of two Senators from each State, chosen by the Legislature thereof, for six Years; and each Senator shall have one Vote.

Immediately after they shall be assembled in Consequence of the first Election, they shall be divided as equally as may be into three Classes. The Seats of the Senators of the first Class shall be vacated at the Expiration of the second Year, of the second Class at the Expiration of the fourth Year, and of the third Class at the Expiration of the sixth Year, so that one-third may be chosen every second Year; and if Vacancies happen by Resignation, or otherwise, during the Recess of the Legislature of any State, the Executive thereof may make temporary Appointments until the next Meeting of the Legislature, which shall then fill such Vacancies.

No Person shall be a Senator who shall not have attained to the Age of thirty Years, and been nine Years a Citizen of the United States, and who shall not, when elected, be an Inhabitant of that State for which he shall be chosen.

The Vice President of the United States shall be President of the Senate, but shall have no Vote, unless they be equally divided.

The Senate shall choose their other Officers, and also a President pro tempore, in the absence of the Vice President, or when he shall exercise the Office of President of the United States.

The Senate shall have the sole Power to try all Impeachments. When sitting for that Purpose, they shall be on Oath or Affirmation. When the President of the United States is tried, the Chief Justice shall preside: and no Person shall be convicted without the Concurrence of two thirds of the Members present.

Judgments in Cases of Impeachment shall not extend further than to removal from Office, and disqualification to hold and enjoy any Office of honor, Trust or Profit under the United States; but the Party convicted shall nevertheless be liable and subject to Indictment, Trial, Judgment and Punishment, according to Law.
JCP.next.1 (JSR 348) - Transparency
JCP.next (JSR 355) - Merged the EC

- One Java, One EC
Participation
Move Faster

JCP.next.4 (JSR 364)
Broadening JCP Membership

- Eliminate Barriers to participation.
- Introduce new Membership levels.
- No Membership Fees.
- Electronic Signatures.
- Add Contributors for JSR Expert Groups.
- Add Associate Seats on Executive Committee.
Membership Levels

• Associate Members are individuals who can be listed as contributors to JSRs and vote for the Executive Committee.

• Partner Members are Java User Groups and other non-profit organizations that can serve on and vote for the Executive Committee.

• Full Members can serve on Expert Groups, lead JSRs, serve on and vote for the Executive Committee
Evolution Continues...What’s Next?

- OpenJDK Working Group
- Java ME Working Group
- JCP.Next Working Group
- Follow the EC Summaries and discussion:
  - https://jcp.org/en/resources/EC_summaries
The JCP is More Open Than Before
How to Participate?
How will you Participate?

• As an Individual - OK
• As part of a team - better
• Work through JUG or employer
• Help each other
• Teach other
• Work with each other
Working Together - We Achieve More
<table>
<thead>
<tr>
<th>JUG Members &amp; Adopt-a-JSR Global Adoption Efforts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdijan JUG (Ivory Coast)</td>
</tr>
<tr>
<td>Alpes JUG (France)</td>
</tr>
<tr>
<td>Austin JUG (USA)</td>
</tr>
<tr>
<td>BeJUG (Belgium)</td>
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<tr>
<td>BreizhJUG (Brittany)</td>
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<tr>
<td>CEJUG (Brazil)</td>
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<tr>
<td>Central Ohio JUG (USA)</td>
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<tr>
<td>Chicago JUG</td>
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<tr>
<td>ChinaNanjingJUG</td>
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<td>Connecticut JUG (USA)</td>
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JUGs around the World - Driving Adoption
1) Pick JSR - New JSRs

• Recently Submitted:  
  – MVC 1.0 (JSR 371)  
  – Visual Rec (JSR 381)  
  – Configuration API (JSR 382)  
  – Java 11 (JSR 384)  
  – Desktop Application API (JSR 377)  
  – Portlet 3.0 Bridge for JSF 2.2 (JSR 378)

https://jcp.org/en/jsr/stage?listBy=active
List of Active JSRs (posting in last 12 months):  
http://jcp.org/en/jsr/all?status=Active&activeMonths=12
2) Communication: Two Way Street
3) Decide on Steps: Take Action

- Share ideas and feedback, comment on list and public issue trackers.
- Read early versions and share feedback on specifications and Javadocs.
- Download and provide feedback on early access reference implementation.
- Try writing sample applications using early builds of reference implementation.
- Write or speak about the technology and encourage others to participate. Translate into your native language.
- Evangelize the JSR - social media, blogging or lightning talks.
- Help with documentation.
4) Follow Public Discussions & Comment - Issue Tracker
5) Participate in Hack Days - Have Fun!
Get Involved!
Virtual JUG Hack Days
Java Hack Days

• All JUGs can participate!
  – November 2016 Iceland
  – April 2017 London, Java 9
  – August 2017 Atlanta Java 9
  – June 2018 London 10,11 & Beyond

https://www.meetup.com/virtualJUG/events/240545774/
Jozi JUG
South Africa

• Women’s Unconference and Java 9 Hack Day
• Participated in the vJUG April Java 9 Hack Day
• Hack Day and Women’s Unconference II

https://www.meetup.com/virtualJUG/events/240545774/
India
Madras JUG - Java EE and Java SE

- JSR 367, Java API for JSON Binding
- Plan to participate in Java SE Hack Days
Bucharest JUG

- Java EE & Java SE
  - JSR 374, JSON P 1.1 Hack Day
  - vJUG August Java 9 Hack Day 2017

https://github.com/Adopt-a-JSR/JSONP1.1-DEMO
BJUG
Bulgarian JUG - Java EE

• JSR 365, CDI 2.0
  – Full Day hack event with Spec Lead of CDI, Antoine Sabot-Durand
  – March 2017
  – Collaboration/mentorship with Coimbra JUG in Portugal - June 2017
Working Together
NL JUG & Chicago JUG

- JSR 375 Security JSR, CDI 2.0
- Hack Day event
- Java 9 Hack Day - collaboration

https://github.com/EelcoMeuter/JSR-375-examples
France
Paris JUG - Java SE

• JDK 9 Hack Day
• Full Day (sold out) hack event
• More events planned
Belgium
BeJUG - Java EE

• JSR 356, Java API for WebSocket
• Hack day (s).
• Developed Tic-Tac-Toe game Included in Java EE 7 SDK.
LJC
London Java Community - Java SE

• Java 9/Jigsaw: Myriad hack days, talks and events organized
• More planned in 2018
Brazil
SouJava

- Java EE JSRs
- JDK 9 participation in hack days
- Many talks, books, articles, classes, code dojos (hack days), translations
Constantin Drabo
JUG Leader, Burkina Faso

• Faso JUG
Mercedes Wyss
JUG Leader, Guatemala

• Lead Spanish Java Hack Day
• XINA JUG
• XELA JUG
• JDuchess
Java Opportunities in Bangalore

• Bangalore Java User Group (JUG) - I’m speaking tonight!

• Java Platform Development Group in Bangalore Oracle Prestige Park location

• Oracle Startup Cloud Accelerator in Bangalore - looking for Java startups in India
Participate in OpenJDK

• Adoption Group & Quality Outreach
• Join mail list prior to sending feedback: http://mail.openjdk.java.net/mailman/listinfo/adooption-discuss
• https://wiki.openjdk.java.net/display/quality/Quality+Outreach
We need you!

- Follow the JCP online: [http://JCP.org](http://JCP.org)
- Join the JCP: [https://jcp.org/en/participation/membership](https://jcp.org/en/participation/membership)
- Twitter @jcp_org #JCP, @heathervc
- blogs.oracle.com/jcp
- Facebook: Java Community Process
Oracle Code One

- JavaOne expansion and renaming - more Tracks, Languages and Communities - adding Go, Rust, Python, JavaScript, and R in addition to Java
- October 22-25 2018 San Francisco CA USA
- Call for papers is OPEN!
- https://www.oracle.com/code-one/index.html
thank you, ευχαριστώ, shukriya, dziekuje , இன்று, tak, tack, grazie, gracias, danke, Благодаря, merci, obrigado, bedankt, kiitos, xie xie,ありがとう.

Questions?
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email: heather at jcp dot org