Biography of James Gosling

James Gosling is the software developer most prominently recognized as being the ‘father’ of Java. He was one of the first people to recognize the demand for a ‘Write Once, Run Anywhere’ style of programming language, and had previously experimented with writing an emulator to allow UCSD Pascal to run on an unsupported system. He has cited this as an inspiration for Java, which pioneered the principle of ‘Run Anywhere’ by having Java Virtual Machines supported on many different architectures. This allows the compiled Java code to run on any JVM with identical results and is the primary reason for the success and pervasiveness of Java in today’s world.

Born in 1956 outside of Calgary, Alberta, Canada, Gosling graduated the University in Calgary with a Bachelor of Science in Computer Science degree in 1977. He completed a PhD at Carnegie Mellon in 1983. During his studies his projects included ‘Gosmacs’ or ‘gmacs’, an implementation of Emacs in C. This was a noteworthy implementation because of Goslings dynamic programming algorithm for solving the string-to-string correction problem. This was notable enough to be initially included in the GNU emacs implementation by Richard Stallman, although now all of Goslings original code (released in 1981) has been replaced within GNU emacs.

In 1984 Gosling was recruited into Sun Microsystems, the original home of Java. Initially Gosling worked on projects such as SunDew, a windowing system ultimately eclipsed by X-Windows (or X11). It was only in 1991 that work originally commenced on Java, initially styled as ‘Oak’, and later ‘The Green Project’. The project effort was led by Sun co-worker Mike Sheridan, who wished for a language and environment for Sun Microsystems to replace C++. It was rebranded as Java to avoid trademark issues before being launched. Initially the commercial aspect of Java was being targeted for interactive television, however it proved too advanced for its time, and there wasn’t enough market interest. The initial commercial success turned out to be incorporation into the NetScape browser in 1995, with a focus specifically on web and web-adjacent applications. Spring-boarding off its incorporation into an internet technology, soon Java applets were being used by websites everywhere. Now Java is prolific, running on websites, desktops, most mobile devices, not to mention many appliances and other smart devices. An estimation of current devices running Java stands at 3 billion as of 2013, and this number is boastfully displayed when installing Oracle’s Java on a desktop.

On April 2nd, 2012 Gosling left Sun Microsystems after it had been bought out by Oracle, citing many significant issues concerning his pay, status, autonomy, and control within the organization. He later worked at Google for a period of 6 months, followed by a startup called Liquid Robotics. Upon Liquid Robotics being bought out by Boeing in 2016, Gosling moved to Amazon Web Services where he is currently working. Gosling also is involved with several other companies in advisory positions, most notably Lightbend. Lightbend is the maintainer of Scala, a language created by Lightbend CEO Martin Odersky. It is notable as Scala compiles to Java bytecode, which means it can be run on Java VMs. It aims to solve many criticisms of Java; while Scala is still object-oriented, it is a functional language, including features from Haskell (and other functional languages) such as currying, lazy evaluation, pattern matching, and more.

Since he left Sun/Oracle, Gosling has been very critical of their corporate culture, in particular how Oracle was particularly interested in purchasing Sun not only for access to the future of Java, but also the potential lawsuit against Google and its Android operating system. Although Google’s mobile OS, now the most popular mobile OS in the world, is based on the linux kernel and written somewhat in C (including many libraries and APIs). However, where Android came into conflict with Sun/Oracle was its use of Java for applications and several other major features of the Android OS. A lawsuit launched by Oracle in 2010 initially sought $6.1 billion in damages, with Gosling commenting "While I have differences with Oracle, in this case, they are on the right. Google totally slimed Sun. We were all really disturbed". Googles use of Java involved their own custom runtime and JVM at the time of the suit, and a judge ruled that API calls were not copyrightable. This was agreed with by Gosling despite his belief that Android unfairly profited off their use of Java.

For Goslings work on the Java compiler and virtual machine he has been elected to the United States National Academy of Engineering. He has also been made an Officer of the Order of Canada, the second highest honour for a Canadian civilian. Goslings creation of Java revolutionized the software engineering landscape by introducing a language that could be ran almost anywhere (provided someone had created a relevant JVM or alternative). It is widely used for teaching computer science as it introduces core concepts such as object-oriented programming, inheritance, automated garbage collection, and inclusion of both primitive and non-primitive types. It was also an easy language to move to when it was first introduced in the nineties – a language which was so similar to C allowed existing programmers to make use of new and improved features available in a number of different languages, all under one roof, all without needing to learn how to code again.

Features such as checked exceptions were first implemented in Java, increasing the ease of error handling in a way more traditional languages like C fails to do. What initially brought people to Java was the ability to run applets in a web browser, and although these were far from perfect (read: completely isolated from the websites other content), and have since been replaced by Flash, JavaScript, and HTML5, this initial superior feature-set of Java is what allowed it to become such a pervasive language. Although applets are few and far between today, Java is still used widely today despite the growing number of competitors.

All in all, James Goslings work all those years ago has been instrumental in changing the landscape of software engineering today. From introducing new features such as checked exceptions to better implementations of classics such as JUnit testing, Java set the stage for what a high-level portable language should be. It improved upon its predecessors in a variety of ways and has introduced several new generations of programmers to the world of computer science. The world likely would have been an entirely different environment for software engineers without Gosling’s work on Java.