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James A. Gosling Biography

James A. Gosling is a famous software engineer and is best known as the father of the Java programming language.



Overview

James A. Gosling was born near Calgary, Alberta on May 19 1995. James had an interesting introduction to the programming world. At the age of 14 his father took him on a tour of the local Calgary University. Gosling reflects on thinking that the data centre in the university was the “coolest thing ever”. This visit captivated his interest in computer programming and he started to frequently visit the data centre. He bluffed his way through log in id's and began coding PDP-8's. He taught himself computer programming by spending endless hours in the data lab and reading about software in the library.

Education

In 1977 James received a Bachelor of Science from the University of Calgary. In 1983, he earned a Ph.D in Computer Science from Carnegie Mellon University, and his doctoral thesis was titled "The Algebraic Manipulation of Constraints". James was persistently working on different programs and software outside of the college curriculum. In fact, while at Carnegie Mellon University, he wrote a version of Emacs called Gosling Emacs. He also built a multi-processor version of Unix[1] as well as a number of compilers and mail systems.

Career

Upon leaving university, Gosling joined IBM, and just a year later he joined Sun Microsystems and remained with them from 1984-2010. It was at Sun Microsystems that he, along with his 'Green Team' developed the Java Programming Language in the early 1990s. However, he is generally credited as the inventor of the language. Gosling left Sun Microsystems on April 2 2010 after it was acquired by the Oracle Corporation. He explained his resignation on his personal blog by saying "Just about anything I could say that would be accurate and honest would do more harm than good." After leaving James took some time off and then recommenced work by starting at Google in March 2011. However, after a short 6 month stint at Google, James left and teamed up with his colleague Bill Vass to join a start-up called Liquid Robotics where he became the Chief Software Architect. In 2016 Liquid Robots was acquired by Boeing. Gosling has been working as a Distinguished Engineer at Amazon Web Services since May 2017.

Personal Life

Regarding his personal life, Gosling is married to his wife Judy and they have two daughters Kate and Kelsey. He enjoys cooking and lives in Redwood City, halfway between San Francisco and San Jose. Gosling is also famously known for his love of the number $\sqrt{2}$ and he has a framed photo of the first 1000 digits of $\sqrt{2}$ on his wall in his office.

Work and Impact

Gosling Emacs

Gosling influenced software engineering methodology with important contributions during the 1980s. In fact in 1981, 13 years before he wrote Java, he initially became known as the author of Gosling Emacs. This was the first Emacs-like editor to run on Unix. He wrote his Emacs in C and utilised MockLisp, a language similar to Lisp as its extension language. Gosling Emacs was especially impressive because of the effective redisplay code, which used a dynamic programming technique to solve the classical string-to-string correction problem. This was something new and staggering in the software industry at the time. It has since been adapted by a number of software engineers and developers.

NeWS

Gosling went on to make major contributions to several other software systems such as NeWS. NeWS is a windowing system which Gosling developed alongside S. H. Rosenthal at Sun Microsystems in the mid 1980's. The NeWS interpreter was based on PostScript, but it extended to allow interaction and multiple contexts to support windows. NeWS faced great competition and was mainly compared with X Window System. Unfortunately, there was issues with its speed and programs tended to be entirely written in PostScript, but a big contributor to its downfall was that Sun did not give it an open source license, while the X code was free of cost. The programme has been discontinued since. However, although it was discontinued the impact of Gosling's work on NeWS is not to be forgotten. One popular aspect of the NeWS was a program which drew a pair of eyes that followed a cursor as it moved around the screen. The eyeball programme was demonstrated at SIGGRAPH, a large computer graphics conference in 1988 and it has been since recognised as the inspiration behind the later well-known X application xeyes.

Java

Java is arguably one of the most influential programming languages over the past 25 years. Interestingly, Java wasn't always known as Java. It was originally called Oak in honour of the Oak tree outside Gosling's office. It was later changed to Green and finally to Java.

In 1991, a small group of Sun engineers called the 'Green Team' who were led by James Gosling had what has been described as a "group epiphany". They believed that the computer industry and Sun were missing out on the transition that was happening in the new digitalised world. They believed that the big issue was that the new digital age was dominated by electrical engineers who thought in terms of wires and chips and never in terms of software. Gosling describes the software some of these engineers developed as "grotesque".

Along with the Green Team, Gosling toured around Europe and Asia and collected a list of problems that these software companies were having. After the teams extensive research they returned to Sun and commenced work on an interactive, handheld home-entertainment controller. While building the device they began to run into issues with how C and C++ did things. Gosling was tasked with solving these software issues. This was to be his most important work to date because his solution to these issues grew and became Java. Gosling himself describes this progression by saying:

"It wasn't like I woke up one morning and thought I want to do a new programming language, it was in the context of this project that had a set of problems to solve"

Led by James Gosling, the 'Green team' worked around the clock and created Java - the programming language that would revolutionize our world. Luckily the internet was just

taking off around this time and this was the ideal market for Java. In 1995, the team announced that the Netscape Navigator Internet browser would incorporate Java technology and that is when James Gosling's Java started to impact our day to day lives!

Java changed the world of computer programming in 1995. Before Java, programs routinely dumped core due to pointer arithmetic errors or they ran out of memory due to leaks. Source code could barely be ported between different versions of Unix and running the same binary on different processors and operating systems was unimaginable, but Java changed all of this! However what really revolutionised the world was Java's applets, small programs running inside of Web pages that could interact with the user and do more than display static text, pictures, and forms. This doesn't sound like anything more than what we now consider standard, but in 1995, this was ground-breaking. In fact, this transformation of what we now consider standard alone highlights how Java has transformed and evolved the world we live in.

Today, Java is used by approximately 9 million developers. It not only permeates the Internet, but also is the invisible force behind many of the applications and devices that power our day-to-day lives. From mobile phones to handheld devices, games and navigation systems to chips embedded in credit cards, Java is everywhere, captivating how impactful the work of James Gosling has been!

Honours

- The Economist Innovation Award (2002)
- The Flame Award USENIX Lifetime Achievement Award (2002)
- Officer of the Order of Canada (2007)
- Fellow of the Association of Computing Machinery (2013)
- IEEE John von Neumann Medal (2015)

Sources

I consulted the following websites and videos to build my biography of James Gosling:

1. <http://www.computinghistory.org.uk/det/1793/James-Gosling/>
2. <https://www.cnet.com/news/java-co-creator-james-gosling-leaves-oracle/>
3. <http://nighthacks.com/jag/bio/index.html>
4. <https://twit.tv/shows/triangulation/episodes/245>
5. <https://www.emacswiki.org/emacs/EmacsHistory>
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