

James Gosling

The Father of Java.

James Gosling, the Canadian born mastermind, is known to many as the “Father of Java”. Having created the programming language that revolutionized our world, Gosling is regarded as world-class software engineer and an extraordinary innovator.

Born on the 19th of May 1956, James Gosling grew up in Calgary Alberta, Canada. He had a rather unremarkable upbringing. His father came from an agricultural background, while his mother’s side of the family were involved in the tourism industry (HS, 2017).

Gosling has always been host to an intellectually curious mind. He is known for his passion for proving “the unknown” and has stated that his favourite irrational number is $\sqrt{2}$. He even has a framed picture of the first 1000 digits of $\sqrt{2}$ in his office! His intellectual curiosity was evident from a young age. As a child, Gosling taught himself about electronics by playing with old relay racks that had been disposed of by local telephone switching centres (HS, 2017). Gosling first discovered computers at the age of thirteen, on a tour of the Computer Department at the University of Calgary. He described it as “love at first sight” (HS, 2017). Gosling was enthralled by the computers and began regularly sneaking into the University of Calgary to teach himself how to program. To him, the computers were simply toys that he loved to play with (HS, 2017).

As a teenager, Gosling was offered a job as a software engineer in the University of Calgary and worked there throughout his high school career (HS, 2017). During this time he furthered his programming skills and his love of computers flourished. After graduating from high school, Gosling chose to attend the University of Alberta, in pursuit of a degree in Computer Science (Galactics, 1998). Later, he obtained a Ph.D. in computer science at Carnegie-Mellon University, Pittsburgh and produced a doctoral thesis entitled “*The Manipulation of Algebraic Constraints*”, (Galactics, 1998).

While at Carnegie-Mellon University, Gosling wrote a version of Emacs, called Gosling Emacs (Gosmacs), and built several compilers and mail systems (The Centre for Computing History, n.d.). During this time Gosling was also hired by one of his thesis advisors to build a multi-processor version of Unix for a 16-way computer system (Edubilla, 2018). Side projects such as



this acted as ideal opportunities for Gosling to advance his expertise, and would shape his future career.

Gosling received his Ph.D. in 1983, and soon began working for Sun Microsystems Inc. While working for Sun Microsystems Inc., Gosling built numerous compilers (Galactics, 1998).

In the earlier stages of his career at Sun Microsystems Inc., Gosling was the lead engineer for the Network Extensible Windowing System (NeWS). NeWS is a multithreaded PostScript interpreter, with extensions to draw on the screen as well as handle input events (Anon., n.d.). Unfortunately for Sun Microsystems Inc., very few commercial products ever ran on



NeWS. Despite it being more powerful than the existing alternatives, it was considerably slower. Moreover, Sun Microsystems Inc. charged a fee to license the NeWS source code, unlike its competitor MIT X11, whose source code was free (Anon., 2017). These factors greatly dampened the popularity of NeWS.

In 1991, Sun Microsystems Inc. put together a small group of engineers with the purpose of developing a way of enabling communication between consumer electronic devices (Encyclopaedia Britannica, 2018). Led by Gosling, this group is now famously known as the Green Team. The team was comprised of Gosling, a programmer named Patrick Naughton and an engineer named Mike Sheridan (Bhagat, 2015).

At this time, existing programming languages, such as C++, placed enormous emphasis on speed, rather than reliability. However, in the case of consumer electronic devices, reliability has proven to be valued above all else (Bhagat, 2015). In the words of Gosling himself, “people were absolutely dedicated to making sure that their products were safe,” (HS, 2017). Gosling initially tried adapting C++ to fix these problems. As more and more problems cropped up, he quickly realized that developing a new programming language was a cleaner solution (HS, 2017). The new language, which was originally known as “Oak”, was similar to C++, but with improved simplicity (Bhagat, 2015).

In 1994, as the internet rapidly gained popularity, the team altered the focus of their work to an application that would work on any Web client. The team left Sun Microsystem executives amazed after building WebRunner, the first ever web-enabled browser (Anon., n.d.).

It was in May 1995 that Sun Microsystems Inc. formally announced the first public version of Java, Java 1.0 (Anon., n.d.). It was also announced that Netscape would license Java for its browser (Anon., n.d.).

What was revolutionary about Java, was its promise of “Write Once, Run Anywhere.”

This promise was delivered through the Java compiler. Compilers are used for converting the text of a programming language into binary code, and thus into a form that the computer can understand. In other languages, code is translated for a specific



type of computer. The Java compiler instead turns code into Bytecode, which is then interpreted by a ground breaking software called the Java Runtime Environment, or Java Virtual Machine (JRE). The JRE interprets the Bytecode and translates it for the host computer. Therefore, several types of computers can retrieve the same Web page, meaning that web browsers could be more than just static pages. (Encyclopaedia Britannica, 2018).

Gosling believes his approach in creating Java was greatly influenced by the work he did as a graduate student. As a graduate student, he created a p-code virtual machine for a DEC VAX computer, so that his professor could run programs written in UCSD Pascal. While developing Java, Gosling understood that architecture-neutral execution for widely distributed programs could be achieved by applying a similar idea: always program for the same virtual machine.

In recognition of developing Java, Gosling was elected to the National Academy of Engineering in the United States, as a Foreign Associate member (The Centre for Computing History, n.d.).

Today, Java permeates the Internet as well as powering an array of consumer devices, retail and financial computers and even the computers on NASA’s Mars exploration rovers (Encyclopaedia Britannica, 2018).

In April 2010, after twenty-six years of exceptional contributions to Sun Microsystems Inc., Gosling left the organisation. (Edubilla, 2018). Sun Microsystems Inc. had been recently acquired by Oracle, which prompted Gosling’s decision to move on (HS, 2017). Gosling was dissatisfied with “reductions in pay, status and decision-making ability” (Edubilla, 2018). Following the change in management, Gosling was quoted saying “he felt the hand of Larry Ellison [founder and former CEO of Oracle] in nearly all the decisions affecting Java” (Carey, 2014).

In 2011, Gosling spent a brief period working for one of Oracle’s main competitors, Google (Edubilla, 2018). After a fleeting five months, Bill Vass, a colleague of Gosling’s, introduced Gosling to a start-up called Liquid Robotics, the company behind the Wave Glider, the world’s first wave powered marine robot (Liquid Robotics, 2018). Gosling joined the company as Chief Software Architect and remained there until May 2017 (Liquid Robotics, 2011). Gosling is now working at Amazon Web Services, and has described it as a “very intellectually rigorous” organisation, which works on “really hard problems and with really creative solutions”, (HS, 2017).

In conclusion, it is clear that James Gosling has contributed immensely to the high-tech world we live in today. It is difficult to imagine a world without Java and the technology that has sprung from it. In recognition of his work, Gosling has been decorated with several awards and

honours. To name a few, he was awarded the IEEE John von Neumann Medal in 2015, he became a fellow of the Association for Computing Machinery in 2013 and in 2002 he was awarded *The Economist* Innovation Award. Without question, Gosling is a remarkable innovator who has changed the world of computing irreversibly.

References

- Anon., 2017. [Online]
Available at: <https://en.wikipedia.org/wiki/NeWS#Applications>
[Accessed 26 10 2018].
- Anon., 2018. *Up/Closed*. [Online]
Available at: <https://upclosed.com/people/james-gosling/>
[Accessed 30 10 2018].
- Anon., n.d. *NeWS - Network extensible Window System*. [Online]
Available at: <http://www.art.net/~hopkins/Don/lang/NeWS.html>
[Accessed 26 10 2018].
- Anon., n.d. *The Java Story: History and Background*. [Online]
Available at: http://cs.smu.ca/~porter/csc/465/notes/java_story_history.html
[Accessed 26 10 2018].
- Bhagat, M., 2015. *Why was Java Created?*. [Online]
Available at: <https://www.quora.com/Why-was-Java-created>
[Accessed 26 10 2018].
- Carey, L., 2014. *James Gosling: Oracle have done surprisingly well with Java*. [Online]
Available at: <https://jaxenter.com/james-gosling-oracle-have-done-surprisingly-well-with-java-107409.html>
[Accessed 26 10 2018].
- Edubilla, 2018. *James Gosling - Famous Inventor*. [Online]
Available at: <http://www.edubilla.com/inventor/james-gosling/>
[Accessed 26 10 2018].
- Encyclopaedia Britannica, 2018. *Java*. [Online]
Available at: <https://www.britannica.com/technology/Java-computer-programming-language>
[Accessed 26 10 2018].
- Galactics, 1998. *James Gosling, Computer Programmer*. [Online]
Available at: <http://www.collectionscanada.gc.ca/eppp-archive/100/205/301/ic/cdc/science/english/compsci/gosling.html>
[Accessed 25 10 2018].
- HS, P., 2017. *Mapping the Journey - Episode 3: Interview with James Gosling, Father of Java*. [Online]
Available at: <https://mappingthejourney.com/single-post/2017/06/29/episode-3-interview-with-james-gosling-father-of-java/>
[Accessed 25 10 2018].
- Liquid Robotics, 2011. *Press Releases*. [Online]
Available at: <https://www.liquid-robotics.com/press-releases/james-gosling-joins-liquid-robotics/>
[Accessed 26 10 2018].
- Liquid Robotics, 2018. *LinkedIn - Liquid Robotics*. [Online]
Available at: <https://ie.linkedin.com/company/liquid-robotics>
[Accessed 26 10 2018].

The Centre for Computing History, n.d. *James Gosling*. [Online]
Available at: <http://www.computinghistory.org.uk/det/1793/James-Gosling/>
[Accessed 25 10 2018].