Biography of James Gosling

James Gosling ‘the father of the Java programming language’

James Gosling, OC, PHD. is a computer scientist and software engineer, best known for developing the Java programming language. Gosling was born in May 19th, in the year 1955 near Calgary, Alberta, Canada.

Gosling graduated from University of Calgary with a Bachelor's’ degree of Science in Computer Science in 1977. In 1983 he earned a doctorate from Carnegie Mellon University, with his doctoral thesis ‘The Algebraic Manipulation if Constraints’. While Carnegie Mellon University he wrote a version of emacs which he called Gosling emacs (gosmacs) and designed a multiprocessor version of Unix. He also designed several compilers and mail systems. He then spent a short period at IBM.

In 1984 he joined Sun Microsystems Inc where he would go onto do his most famous and impactful work where he would go to lead to develop the Java programming language. In June 1991 along with Mike Sheridan and Patrick Naughton they began to develop the Java technology. The project originally grew from a Sun project in embedded control called Star seven (or *7). Gosling focused on the programming language ideas, Sheridan on the business aspect and Naughton on the graphics system. Java was originally named ‘Oak’ after an oak tree which lay in front of Gosling’s office but was changed to ‘Green’(as the project was code named ‘Project Green’) and later finally to ‘Java’ named after Java coffee. The language was originally designed to work for interactive television, but this was quickly realized as not viable with the technology of digital cable television at that time.

Gosling was responsible for the original design of how Java was designed where he implemented its original compiler and virtual machine. The programming language was designed on the principles which were realized to prioritize performance security and functionality. The principles were that the language had to be robust and secure, it must have high performance, portable and architecture-neutral, which means it can run on any combination of software and hardware, threaded interrupted and dynamic and it had to be object-oriented. These rules would be the basis in which Java was designed and would be key to its overwhelming adoption for use in general purpose and commercial use in the programming world. Java adopted the C/C++ syntax for its design.

Java would become to be extremely successful very quickly. With its Java Virtual Machine designed by Gosling allowed the language to be hardware independant and his philosophy of “Write Once, Run Anywhere(WORA)” was revolutionary as it essentially solved many portability issues which plagued the software development industry. Other features such as its Garbage Collection(if sometimes controversial) and object-oriented focus has made Java become popular with developers around the world. The provision of automated memory management and range checking on arrays reduced a huge burden on developers to spend less time on memory allocation and fixing subtle memory errors and writing safer code. While Java was not to first object-oriented language, its quick and popular adoption saw programming shift from procedural to more object-oriented for many fields in software engineering and computer science.

Java would go on to be a key influence on many other programming languages such as C#, Javascript/EMCAscript(which borrowed its namesake) and Python. Java’s

adaptability with the Java Virtual Machine has made it very compatible with a variety of different programming languages such as Scala, Groovy, Jython and Kotlin which all run compile into Java bytecode and can run on the JVM. A major benefit this would bring is that developers who would prefer these other languages for different strengths could still use Java's large back catalogue of useful libraries.

Other noted works Gosling worked on while at Sun include a build of satellite data acquisition systems, a multiprocessor version of unix, several compilers, mail systems and window manager. He also made constraint based drawing editor as well as a WYSIWYG text editor and he built on his work on Emacs for Unix systems. He stayed on as a contributor to the Real time specification for Java. He also worked as a researcher at Sun Labs where he primary researched software development tools. He would then be appointed the Chief Technology Officer for both Sun's Developer Products Group and Sun's Client Software Group. Gosling also invented the windowing system NeWS and co-wrote the 'bundle program.'

Gosling would stay as a VP and Fellow at Sun Microsystems until 2010 where he worked for 26 years until Sun Microsystems was acquired by the Oracle Corporation. Gosling would leave after he vocally cited issues with working under Oracle with reductions in pay, change of role, ethical concerns as well as reduced freedom in decision making ability under new management. In March 2011 he would go on to work for Google, unitil later in the year in August 2011 he would leave to join the startup Liquid Robotics as the chief software architect. The startup specialized in autonomous underwater vehicles. Gosling then left Liquid Robotics to work for Amazon Web services as a distinguished engineer, after in late 2016 th Liquid Robotics was acquired by Boeing. He continues to be an advisor for Lightbend who are behind the programming language Scala, a language which compiles into Java bytecode and therefore runs on the java virtual machine. He also has roles as an Independent Director at cloud services provider Jelastic, Strategic Advisor for cloud computing provider Eucalyptus, and is a member of the board of DIRTT Environmental Solutions.

The influence the Java programming language has had been immense. In educational fields it is one of the most widely taught and studied. It is one of the most popular 'first' programming languages to learn and has millions of programmers who use it on frequent basis. In commerce and business it is one of the most commonly used for its versatility, large user base and for being one of the most supported programming languages with an extensive list of libraries. A whole host of technologies pioneered for Java would also have huge impact on the industry. Applets(which are now considered many as a failure) were once seen as a possible future keystone in web development, did not become a mainstay in webdev, however its key ideas would be carried onto Javascript and HTML5 which would adopt these ideas and implement them in a manner that worked functionality better. Another key technology that came from Java was Junit. The testing framework helped drive a new era of test-driven development where it would become the standard method of software development in the 21st century.

James Gosling has been recognized through many awards titles for his contribution to the software engineering field for the near immeasurable impact his work has on in his field. Some of his most notable achievements include being elected as a Foreign Associate member at the National Academy of Engineering in the United States. In 2007 he was made

on Officer of Order of Canada for his work, the Order being the second highest civilian honour. In 2015 he was awarded the IEEE John von Neumann Medal.