



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

School of Computer Science and Statistics

Biography of a Software Engineer

Dennis Ritchie

Introduction

Dennis MacAlistair Ritchie was an American software engineer renowned for creating C programming language used till this date. He is also known for creating the Unix operating system and B programming language alongside his colleague Ken Thompson

Early Life/ Background

Dennis Ritchie was born on 9th September 1941 in Bronxville, New York. He was the son of Alistair E. Ritchie and Jean McGee Ritchie. Ritchie's father "Alistair Ritchie" worked as a scientist at Bell Labs. He was also the co-author of "The Design of Switching Circuits". As a family, they moved to Summit, New Jersey. Ritchie was a bright student who earned his bachelor's degree in physics at Harvard University in 1963. After, he pursued a PhD in mathematics from Harvard University in 1968. His PhD thesis was on "Computational Complexity and Program Structure". Ritchie however after defending his thesis did not officially receive his PhD as he did not send a copy of his dissertation to Harvard Library. With the help of Ritchie's family, the Computer History Museum was able to find copy of his dissertation in 2020.

His work

Like his father, Ritchie started working for Bell Labs, Computer Sciences and Research Centre in 1967. After joining Bell Laboratories, Ritchie started working on the Multics operating system (Multiplexed Information and Computer Services) with Ken Thompson. Multics was a time-sharing operating system, managed by Bell Labs, Massachusetts Institute of Technology and Generic Electric. However due to the slow progression and complexity of the project, Bell Labs withdrew from participation in the project. Since Bells Labs left the project, Dennis Ritchie and Ken Thompson decided to use their knowledge from working on Multics to design and implement a new operating system which was on a smaller scale. This operating system was a single-tasking system as opposed to multiplexed like Multics, and hence received the name Unics(Uniplexed Information and Computing Service). Later this name was changed to "Unix".

Along with the development of UNIX, Ritchie helped Ken Thompson in the creation of B programming language in 1970. However, as the operating system was updated to a newer minicomputer in 1971, the issues with B became

prominent and this led to Ritchie creating the programming language C. Unix was originally written in Assembly language. Both Ritchie and Thompson rewrote Unix in C in 1973.

Dennis Ritchie developed C the programming language to build and update utilities running on Unix between 1972 and 1973. After Unix was rewritten in C, during the 1980s, C gained more popularity and became one of the popularly used programming languages. C is an imperative procedural programming language. It allowed code to be compiled in order to give low-level access to both memory and language construct. All this was able to be compiled with minimal runtime support. One of its advantages, despite the low-level ability, is that it encouraged cross-platform programming.

Impacts

Since Dennis Ritchie created the programming language C, it has now become one of the most powerful coding languages used in the modern era. It is what propels modern day software models, compiler design, databases, embedded systems. C has also allowed the development of other programming languages. For example, C++ is a derivative of C, where it has used the features of C and includes object-oriented programming. One example that shows the advantage of the development of C is MATLAB. MATLAB is used by a wide selection of professionals/students around the world today for a range of applications like machine learning, computational mathematics, computational finance etc. Google's file system and chromium browser were both developed using C/C++. MySQL, which is a database management system was written in C/C++. These are some examples of open-source projects that showcase the impact that C has brought to modern day applications and systems. C has not only passed the test of time, but it has also managed to influence and drive innovation in many applications and operating systems.

With the development of Unix operation system, it is now widely used in a range of computing systems such as laptops, desktops, and servers. Unix is designed to allow high performance computing. One of the many benefits is that it allows multitasking, many people can log into one machine from different locations. Unix has also impacted and influenced the development of other modern-day technologies. For example, the Linux operating system is based on Unix. Other popular varieties of Unix systems are Sun Solaris and the MacOS X. It is easily visible that Unix has brought many advancements to technologies today and

continues to be used to this day due to its portability, multitasking and multiuser capabilities.

I have been personally impacted by the work of Dennis Ritchie both as a computer science student and as a programmer. I use C as one of my main languages when coding. With C, one of the other tools that was developed was Matlab, which is a tool that I use for computational maths. This is a powerful software tool that has helped me to solve complex mathematical problems. The concept of Unix and its functionality has benefited me as well. The multiuser aspect of Unix is something that I find very useful, where I can access my machine from another machine.

Awards

Dennis Ritchie has received many awards for his innovative work. In 1983, he and Thompson received the Turing award for the creation of the Unix operating system. Both Ritchie and Thompson received the IEEE Richard W. Hamming Award for the development of the Unix operating system and the C programming language in 1990. By 1997 Ritchie was made Fellow of the Computer History Museum. In 2005, he received the Achievement Award by the Industrial Research Institute for his contribution to technology. Ritchie alongside Thompson was awarded the Japan Prize for Information and Communication for his work in the production of the Unix operating system in 2011.

Conclusion

Dennis Ritchie passed away on 12th October 2011 at the age of 70. Ritchie has played an important role in revolutionising technology. He will be known for inventing C and co-inventing Unix operating system that is embedded in nearly every single computer system that we use directly or indirectly. In conclusion, Dennis Ritchie is one of the most influential software engineers, and his work has influenced and benefitted society as well as sparked innovation in new technologies.

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Awards

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