# BIOGRAPHY OF SOFTWARE ENGINEER

Introduction

The software engineer that I chose to write about is Dennis Ritchie, the creator of the C programming language and the co-creator of the UNIX operating system. He once told Investor’s Business daily that “It's not the actual programming that's interesting. But it's what you can accomplish with the end results that are important." And if that’s really the case then Dennis Ritchie has certainly left his mark in the world of Programming and Computer Science.

Early Life

Dennis Ritchie was born on September 9, 1941, in Bronxville, New York to father Alistair Ritchie who was a switching systems engineer for Bell laboratories and Mother Jean McGee, a homemaker. As a child, Ritchie moved with his family to Summit, New Jersey, where he graduated from Summit High School. He did well there academically and later attended Harvard University where he acquired a bachelor’s degree in Physics. While still in school Ritchie came to know about Harvard’s Computer system, the Univac I through a lecture that he attended. That got him to go outside his discipline at Harvard to study computers more thoroughly, especially how they were programmed. Therefore, while still at Harvard, Ritchie got a job at Massachusetts Institute of Technology (MIT) to develop, alongside other scientists, more advanced computer systems and software.

Development of UNIX

In the 1960s, Ritchie began working at the Bell Computing Sciences Research Center and with Ken Thompson worked on the Multics Operating system. The aim of “Multics”, which stands for Multiplexed Information and Computing Service, was to develop a general-purpose computer operating system. Most computer at the time took up entire rooms and had limited dial-in access. However, that was beginning to change with the growth in popularity of minicomputers that were being developed at the time. This warranted the development of a new general-purpose operating system because the previous ones were not easy to use, were incompatible with one another and were designed for a singular purpose. Therefore, Massachusetts Institute of Technology (MIT), AT&T Bell Labs, and General Electric started jointly an experimental time-sharing operating system called Multics for the GE-645 mainframe. However, Bell labs had to pull the plug on this project owing to its large size and complexity despite liking the idea behind it. Ken Thompson and Dennis Ritchie alongside other researchers who were working on this project therefore decided to redo the work on a much smaller scale and this led to the creation of a new operating system that in 1970 was named by Brian Kernighan as “Unix”. In 1979, Dennis Ritchie described Unix as

“What we wanted to preserve was not just a good environment in which to do programming, but a system around which a fellowship could form. We knew from experience that the essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication.”

Development of C

Unix was originally written in B programming language which had portability issues and was unsuitable for multitasking. Therefore, early in the development of Unix, Ritchie began modifying B, adding data and syntax features that turned B into the well-known C programming language in 1972. Unix was originally written in B but after the advent of C, it was rewritten in this new language to make it portable and avoid the unnecessary need of manually translating the entire OS for each new assembly language. What also lead to C’s rise in popularity was that it was a high-level language that was relatively easy to learn for a programmer as it had very little syntax and few instructions but was extremely structured and modular. Moreover, the C standard library enabled programmers to write programs without having to start from scratch, making it faster and easier to implement. By 1980s C had become the most popular programming languages in the world.

Awards

In 1983, Ritchie and Thompson received the Turing award “for their development of generic operating system theory and specially for implementation of the UNIX operating system. In 1990, both Ritchie and Thompson together received the IEEE Richard W. Hamming Medal from the Institute of Electrical and Electronics Engineers (IEEE)., “for the organization of the UNIX operating system and the C programming language.” On April 21, 1999, Thompson and Ritchie jointly received the National Medal of Technology from the then US president Bill Clinton for co-inventing the UNIX operating system and the C programming language which, according to the citation for the medal, "led to enormous advances in computer hardware, software, and networking systems and stimulated growth of an entire industry, thereby enhancing American leadership in the Information Age".

Impact

Following Ritchie’s death, computer historian Paul E. Ceruzzi stated that

“Ritchie was under the radar. His name was not a household name at all, but... if you had a microscope and could look in a computer, you'd see his work everywhere inside.”

C and UNIX are two pieces of technology that serves as the bedrock of most of the technology that we use today in one form or another. Doug McIlroy wrote, "The names of Ritchie and Thompson may safely be assumed to be attached to almost everything not otherwise attributed.". C is still widely used in application and is the dominant programming language when it comes to operating system and embedded system development. C has also been influential in the development of most modern programming languages. Programming languages such as C++, Objective C used by Apple as well as C# used by Microsoft had C to serve as its base. C also served as the basis of programming languages such as Java and JavaScript and is also used by Android. On the other hand, UNIX and UNIX-like operating systems such as BSD, Linux and Mac OS X are widely used in computers today.