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CSU33012 - Biography of a Software Engineer

Biography of a Software Engineer: Linus Torvalds

Linus Torvalds is best known for his role in the development of the Linux kernel, a free and open source operating system kernel. This

PERSONAL LIFE

Linus Benedict Torvalds was born on December 28, 1969 in Finland. He was named after Linus Pauling, winner of the 1954 Peace Prize. He got interested in programming from an early age, learning to program in BASIC using his grandfather's computer but later moving onto using assembly language when he grew bored of BASIC. His grandfather, Leo Toernqvist, a professor of statistics in the University of Helsinki was a large influence in Linus' interest in the field of computers. In 1987, Linus would buy his own computer, a Sinclair QL and by the next year he had enrolled in the University of Helsinki, majoring in Computer Science. He started programming in C in 1990 which would serve as the foundation for the most ambitious project of his life, the Linux kernel.

LINUX

Linux first started as a much smaller personal project that rose out of necessity. In 1991, Linus Torvalds was disappointed with the MS-DOS operating system available on his computer, as he felt the operating system did not take advantage of the 33MHz 386 processor and 4MB of memory that his newly purchased personal computer had. He had grown used to the UNIX

operating system available on his university's computers however the cost of obtaining UNIX or even the cheaper yet slightly less powerful MINIX was personally too much for Linus to afford. Coupled with this, neither UNIX or MINIX were open source. These factors lead Linus to designing his own open source software that would be based on the same structure used by MINIX and UNIX. Although self-admittedly unaware of the effort this would take, Linus took a break from his university education to focus on this personal project.

Linus started work on his operating system in April of 1991 and on August 25th of 1991, he revealed his project to the public in a poll on an online MINIX enthusiast newsgroup. In this initial poll, he asked for features to include in an operating system. At the time describing his new project as a “hobby” that wouldn't be “big and professional”. By September, he had created a working prototype and over the course of a month, the first official version would be completed and released to the public. The name “Linux” was initially just a working title for his project, a portmanteau of his own name and MINIX but the name was solidified when Ari Lemmke, the admin of the file transfer protocol server the first hosted the operating system, named the director it was in “linux”. Linux was initially released under the GNU General Public License, which made it particularly popular among other programmers as this allowed other developers to modify and redistribute software under the agreement that the source code they created was published. Over the course of the years, Linux would release its first official version in 1994.

Linux is still regularly maintained to this day, serving as the basis for a countless number of operating systems commonly known as Linux distros, such as ArchLinux and Ubuntu. Some are maintained by publishers like Canonical while others are entirely community-orientated

projects. The open-source nature of the Linux kernel even enables the creation of novelty distributions, like Hannah Montana Linux, an operating system based on Kubuntu inspired by the eponymous 2006 Disney Channel teen sitcom.

GIT

Git, is a version control system for tracking changes that are made to source code during the development of software. Linus Torvalds initially created Git in 2004 for the purpose of making developing Linux easier as he was unsatisfied with the other version control systems on the market at the time. It was created as a free alternative to Bitkeeper, that would be fast, resistant to vandalism and avoid what Concurrent Version Systems did as he personally disliked their design. Unlike Linux, which Linus still plays a role of authority in, he turned over maintenance of Git to one of its main contributors, Junio Hamano in 2005.

THE INFLUENCE OF LINUS TORVALDS' WORK

While Linus Torvalds might not have the mainstream attention or celebrity that other software engineers have, in my opinion he is one of the most influential software engineers in recent history. Linux based operating systems, while nowhere near as popular as Windows and OSX in the commercial desktop market dominate the smartphone market, with the Linux-based Android OS making up 85% of smartphones in 2018. Linux is a popular choice for hosting, with only two of the twenty-five top domains (as determined by Alexa.com) do not run on some form of Linux. It's hard to estimate just how far Linux reaches due to its open source, collaborative nature but it remains the poster child for open-source projects.

Git is the most used form of source control today. Github, the largest platform for projects using Git as of January 2020, has over 40 million users and 190 million public

repositories. Both Linux and Git have become popular tools in the toolbelt of the modern day software engineer and without either of them, the field of software engineering would be very different.

Research Materials

The Encyclopedia Britannica biography on Linus Torvalds -

<https://www.britannica.com/biography/Linus-Torvalds>

Computer History Museum Profile on Linus Torvalds -

<https://computerhistory.org/profile/linus-torvalds/#:~:text=Linus%20Torvalds%20created%20the%20Linux,His%20M.Sc.>

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<https://www.oreilly.com/library/view/running-linux-third/156592469X/ch01s02.html>

Pro Git 2nd Edition by Scott Chacon and Ben Straub, 2014

<https://git-scm.com/book/en/v2/Getting-Started-A-Short-History-of-Git>

The History of Git: The Road to Domination in Software Version Control by Andy Favell,

February 2020 - <https://www.welcometothejungle.com/en/articles/btc-history-git>

“Google Tech Talk: Linus Torvalds on git”, May 2008 - <https://youtu.be/4XpnKHJAok8>

Aalto Talk with Linus Torvalds, June 2012 - <https://youtu.be/MShbP3OpASA>

Hannah Montana Linux - <http://hannahmontana.sourceforge.net/about.html>

The Linux Kernel Archives- <https://www.kernel.org/>

“The True Market Shares of Windows vs. Linux Compared” by Dan Price, March 2018 -

<https://www.makeuseof.com/tag/linux-market-share/>