



CSU33012: Biography of Linus Torvalds

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Linus Benedict Torvalds is a Finnish-American software engineer. He is best known for his creation of Linux, a Unix-like operating system, which completely revolutionized the computing industry. He is also the creator of Git, the widely-used distributed version control system. His work, without a doubt, has been incredibly influential in the industry.

1. Early Life

Linus Benedict Torvalds was born on the 28th of December 1969 in Helsinki, Finland. He was born into a very talented family, he is the son of Ole and Nils Torvalds, who are both successful journalists. He is also the grandson of Ole Torvalds, the Finnish-Swedish journalist and poet, and statistician Leo Töenqvist.

In 1981, when Linus was only 11 years old, he started to play on his grandfather's computer, the Commodore VIC-20. This began his interest in computing. He quickly lost interest in the few programs that were on the machine, and decided to create new ones. He began coding in the BASIC programming language. In 1987, he bought a new computer for himself, the Sinclair QL, which he heavily modified, especially its operating system.

From 1988 to 1996, Torvalds studied computer science at the University of Helsinki, where he graduated with a master's degree. The title of his MSc thesis was "Linux: A Portable Operating System".

In 1991 he bought an IBM-compatible personal computer, which contained an Intel 386 processor, which boasted a whopping 4MB of memory. As impressed as he was by the hardware, he was disappointed with the operating system the PC came with, MS-DOS. He much preferred the UNIX operating system, since it was much more stable and powerful, and it's what he became used to during his studies. Unfortunately for Torvalds, he was unable to find a version of UNIX for his computer for anything less than \$5,000 USD. While it had some disadvantages, such as its lack of public source code, Torvalds decided to settle on the MINIX operating system. Because of his dissatisfaction regarding the operating systems available, he decided to create a new operating system from scratch. This operating system was based on both MINIX and UNIX. I think it's safe to say that at the time, he underestimated the amount of work that would be involved. Because of this, he decided to take a break from University to focus solely on his project. This marked the beginning of Linux's creation.

2. The Beginning of Linux

On the 17th of September of 1991, after his hard work, he completed the very rudimentary version (v.0.01) of his operating system. And only a few weeks later, on October 5th, he released the first official version, v.0.02. Which ran the bash shell, and the GCC compiler, two utilities that are still used in Linux today. Unbeknownst to him, his creation would become one of the largest collaborative projects.

Torvald's friend, Ari Lemmke, encouraged him to upload the source code files to a network, to make it available to other developers to study and refine the code, which was (and still is) a common practice in software development. He had originally named the project "Linux", a shortened version of "Linus' MINIX". However, he thought that the name was too self-centered, and decided to rename it "Freax", which was a combination of the words "free", "freak", and "MINIX". However, Lemmke named the directory "linux" on his FTP server, which hosted the source code. Because of this, Linux became the system's name.

One of Torvald's best decisions was to release the Linux kernel under Richard Stallman's GNU General Public License (GPLv2), which allowed anyone to study, use, modify and redistribute the software, so long as the source code had been made available for any modified versions. The biggest consequence of this licensing, many different programmers became interested in helping Torvalds develop his still quite rudimentary operating system. Because of this, the performance and development of Linux began improving at a very fast rate.

Torvalds mainly focused on the development of the kernel, which is only one part of a usable operating system. Stallman has been working on a number of free programs such as bash, and GCC, which became key components in nearly every Linux distribution. Other components of Linux distributions came from a version of UNIX, called the Berkeley UNIX Distribution (BSD) which was developed at the UCB (the University of California at Berkeley). The X Windows System, which was a system for managing Graphical User Interfaces (GUIs), was also a key system on Linux. This came from the Massachusetts Institute of Technology (MIT).

3. The Success of Linux

As more and more developers worked on Linux, the performance of Linux kept improving at a very rapid rate. Because of his skills, along with his accomplishments, Torvalds was invited to be an instructor at the University of Helsinki. This position allowed him to keep working on Linux while teaching. One of the first assignments that he gave his class was to send him an email. One student, named Tove Minni, who is a Finnish karate champion, sent him an email asking him out on a date. Linus accepted the invitation, and today they are happily married with three daughters.

In 1997, Torvalds accepted a position at the start-up company Transmeta, and he moved to Silicon Valley, California. Torvalds was often compared to Bill Gates, since they were both avid computer programmers in the industry. Gates had become extremely wealthy, and Torvalds was barely making any money from his free software. Torvalds wasn't super interested in gaining

insane wealth, or status, and he lived quite a modest life, and he considered programming as more of a hobby. This drastically changed in 1999, where both Red Hat and VA Linux (now known as VA Software) presented him with stock options as their gratitude for his work. Torvalds net worth skyrocketed to \$20 million USD when VA Linux went public in that same year.

What also makes Linux so impressive is it's growth in embedded systems, which are single circuit boards which contain basic versions of Linux, and which can be found in every application from robots to mobile phones.

Nowadays, Linux is finally reaching the point where it can be used as a low-cost alternative on ordinary people's personal computers, who have little experience with computers.

The extraordinary success of Linux is due to Torvalds' hard work and dedication.

4. Today

Nowadays, Torvalds is working full time on the Linux kernel for Open Source Development Lab (OSDL), which is located in Oregon. OSDL is supported by many large companies including IBM.

Currently roughly 2% of the Linux kernel was written by Linus himself, which doesn't sound like a lot, however considering the size and complexity of the kernel, it's very impressive. He still makes the final decisions on what modifications and additions are to be added into the kernel. Torvalds is also the holder of the Linux trademark, and is in charge of monitoring its use.

He has won many awards for his work, including the EFF Pioneer Award in 1988, and the IEEE Computer Pioneer Award in 2014.

In the early 2000s, Torvalds gained an interest in scuba diving, which lead him to create the "Subsurface" project. Subsurface is a software that logs and plans scuba dives. Subsurface is also free and open-source, and released under the same GNU license as Linux.

It is very clear that Torvalds has had a huge impact on the computing industry. The fact that is such an advocate for open-source development really allowed Torvalds' projects to grow exponentially.