# Linus Torvalds

## *An Introduction:*

Linus Torvalds, acknowledged not only just as one of the most influential software engineers of all time but as one of the most influential people in the world. Torvalds is arguably the relevant and dominant force in the modern age of software engineering. He is a brilliant innovator seen as a pioneer in the industry. As a frequent user of his creations such as Git, I knew it would be fascinating to gain an insight into the man behind the code.

## *Early Life:*

Linus Torvalds was born on the 28th of December 1969 in Helsinki, Finland to the radically inclined couple of Anna and Nils Torvalds. Both of his parents were campus radicals at the University of Helsinki in the 1960s. His parents have remained politically active right to this day with Nils currently serving as a Member of European Parliament (MEP) for Finland. Torvalds was named after the Nobel Prize-winning American chemist, Linus Pauling. From a young age, Torvalds expressed an interest in computer science, initially programming with BASIC, at the age of 11. He continued to write and play with software through his teenage years, programming assembly language, text editors and a few games. Eventually Torvalds attended the University of Helsinki, graduating with a master's degree in computer science. He took his first programming classes in C, which became the language he would use to write the Linux kernel. Torvalds also participated in Finland's mandatory military service, briefly interrupting his studies. He held the rank of Second Lieutenant, with the role of a ballistic calculation officer for 11 months.

## *Initial Successes:*

It's been clear throughout my research that while others look to Torvalds as a visionary, he has his head firmly rooted in reality. He views himself as a practical engineer, merely solving the problems he encounters in as efficiently a manner as he can. I watched his TED talk and one quote stood out to be that summed up his mindset when approaching software engineering.

*"I'm perfectly happy with all the people who are walking around just staring at the clouds…. But I'm looking at the ground, and I want to fix the potholes that are right in front of me before I fall in."*

In 1991, Torvalds acquired an IBM compatible computer far more powerful that what he had ever previously used. It had an Intel 386 processor and a 4MB memory, massive for the time. Even with the newfound power he became increasingly unhappy with the operating system. Torvalds wanted to buy a powerful UNIX system. Unfortunately for him and luckily for us, he didn't have enough money as it cost thousands of dollars at the time. So instead he set to work and made his own clone of UNIX from scratch. So, became Linux, an amalgamation of his first name 'Linus' and the operating system 'UNIX'. Initially, Torvalds found the name Linux to be too egotistical and briefly considered changing the name to Freax (Free, freak and UNIX) but he had already created a directory called Linux on his server, so the name stuck.

## *Linux:*

Torvalds is sole the founder and creator of the operating system 'Linux'. He released the first version in October 1991. This Linux kernel is probably the most significant free and open source software. He uploaded the source code to a public network allowing anyone to modify and improve Linux. This was done via the recommendation of a friend, Ari Lemmke. Torvalds released Linux under a General Public License (GNU), which is a free software license that allows anyone to study, use, modify, extend and redistribute the software if the source code for the modified versions are also made freely available. This encouraged countless software engineers to become part of the Linux community, all helping and improving upon each other works. Linus turned his focus towards further developing the Linux kernel while others worked on the components allowing Linux to become a more viable and usable operating system.

Linux can be found in almost all digital life these days. Tiny machines to giant supercomputers are powered by Linux. It is everywhere even at places where we would never think. From washing machines to tablets to deep water submarines you are likely to find some Linux involvement. The Android system is used in over a billion devices worldwide. Android uses the Linux kernel as its base. Google, Amazon, Twitter, Facebook and many other massive companies run their devices and other computing software through Linux.

Torvalds continues to maintain the Linux Kernel Repository but has largely ceased creating new code. Most of the code in the Linux Kernel is by contributors from around the world. He ensures that things go smooth in each release with the help of a dedicated team of kernel maintainers.

## *Git:*

While most people know Torvalds for creating the Linux kernel, another one of his creations has proven wildly successful. Git is a version control system that is extensively used in software development worldwide. Git tracks changes in computer files and allows for coordination of work on those files among multiple people. Torvalds quipped the name "git" which is British slang for a stupid or unpleasant person is eponymous: "I'm an [egotist]… and I name all my projects after myself. First Linux, now git." Gits ease of use has ensured Git has remained extremely popular since its inception and continues to grow in both contributor and viewership day on day.

## *Legacy:*

His influence over the industry is unquestionable, what distinguished Torvalds from many other influential software engineers is his significance to those outside the industry. Time magazine placed Torvalds 17$^{th}$ in the 'Time 100: The Most Important People of the Century'. Time magazine also recognised Torvalds as one of the most influential people of 2004. He was one of the inaugural inductees into the Internet Hall of Fame alongside other famous name such as Tim Berners-Lee and Elizabeth Feinler. Torvalds will leave a legacy of the success, open source and collaborative software engineering can bring. He has also received many academic awards such as IEEE Computer Pioneer Award, awarded in 2014 and the Millennium Technology Prize awarded in 2012.

70 – 80% of internet servers run Linux. This fact alone shows Torvalds ubiquitous influence in the digital world.

*"Talk is cheap, show me the code."*

## *Future:*

Torvalds is notorious for his blunt and biting criticism of those who work for him and around him. It was accepted every few months we were in for another expletive filled Torvalds eruption. While publicly this seemed to be accepted as part of Torvalds character, privately bad blood had been building for decades. Torvalds admitted*, "I am not an emotionally empathetic kind of person. I've…. contributed to an unprofessional environment."* Due to his newfound self-awareness Torvalds has accepted he needs some time to revaluate how he can most effectively contribute to Linus' future success. While the future is somewhat unclear for Torvalds, he has maintained when the time is right he does want to return to the core development team at Linux.

## *Closing:*

Torvalds was fascinating to research. I will continue to follow Torvalds in wherever and whatever the future holds for him. It is difficult to comprehend the true level of influence Torvalds creations play in our day to day lives. Linux is an omnipresent force of nature in the world of software engineering. Without question, he is a remarkably talented man who has changed the world irrevocably.

## *Bibliography:*

*Other Biographies:*
http://www.linfo.org/linus.html
https://www.britannica.com/biography/Linus-Torvalds
http://www.computerhistory.org/fellowawards/hall/linus-torvalds/

*TED Talk:*
https://www.youtube.com/watch?v=o8NPllzkFhE

*Time Article:*
http://content.time.com/time/specials/packages/article/0,28804.html
http://content.time.com/time/magazine/article/0,9171,1549804,00.html

*Interviews with Torvalds:*
https://www.youtube.com/watch?v=EaiL3NwkGbc
https://www.youtube.com/watch?v=actgZVvs_Jk