Ada Lovelace

1815-1852

The computer programmer with ideas long before there were computers

Ada was the daughter of the extravagant and notorious romantic poet Lord Byron and his young wife, Annabella Milbank, whom Byron called the 'Princess of Parallelograms'. Annabella gave Ada a deep education and, notably, a love of mathematics and science. At 17, Ada met mathematician and inventor Charles Babbage (1791-1871). She was fascinated by his Difference Engine, an early large-scale calculator designed to generate mathematical tables. Babbage became her mentor and friend. Shortly after, he designed a more flexible calculator that was programmable by punched cards, called the Analytic Engine. In 1843, Ada published a large set of notes on programming the Analytic Engine. It included a detailed study of a program and its execution. She also speculated on the scope of the machine, that it could do more than calculate with numbers, and compute with algebraic symbols. She cautioned that: 'The Analytical Engine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform.' Hers is the first explanation of computer programming and, because of her abstract way of thinking, she is often considered the first computer programmer. Ada died of cancer aged 36.
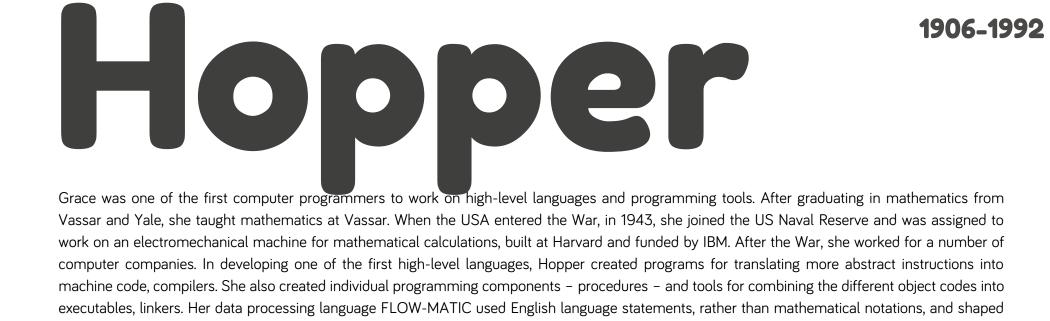
Alan Turing

1912-1954

An amazing mathematician whose code-cracking skills saved thousands of lives

Turing was born on 23 June, 1912 in Paddington, London. After Sherborne School he studied mathematics at Cambridge where he was introduced to mathematical logic. After graduating he pursued a life of research and, at the age of 24, developed the first of a series of major scientific ideas. Motivated by problems of logic and the limits of our mathematical knowledge, he developed a mathematical model of a computing machine which could be programmed to simulate any other machine and proved that there were problems that the machine could not solve. This mathematics laid the foundations for modern computing. As soon as World War II began in September 1939, Alan joined the British Government's top-secret code-breaking school at Bletchley Park, near Milton Keynes. Alan and fellow mathematician Gordon Welchman designed a new machine, called the Bombe, that proved vital in helping code breakers crack German communications using the Enigma code. After the War, Alan designed a high-performance computer called the ACE, studied the practical problems of large-scale numerical computation, explored the logical problems involved in proving programs are correct, and set AI standards for machines to be compared with people. Turing died by his own hand at age 41.

James Gosling

1955-Present

Founder and lead designer behind the Java programming language

James Gosling is a Canadian computer scientist. Graduating from his local University of Calgary with a BSc degree in 1977, he went to Carnegie Mellon University, Pittsburgh, where he worked on Unix tools and was awarded a PhD in 1983. While at Carnegie Mellon he wrote an emulator in order to port a Pascal program from a PERQ workstation to a DEC VAX machine. A year later he joined SUN Microsystems, a company commercially pioneering Unix based workstations. While at SUN, starting in 1991, Gosling led the development of a new language designed to program a diverse range of digital devices. This language became Java, currently one of the most popular programming languages in the world. Gosling's early PERQ emulator was the inspiration for The Java Virtual Machine (JVM), which allows developers to write programs – bytecode – for a common abstract machine that can run on all sorts of different operating systems and machines. Thus, Java is a platform-independent language, thanks to the JVM not being platform-dependent.

Grace Hopper

1906-1992

Helped to create the first commercial electronic computer

Grace was one of the first computer programmers to work on high-level languages and programming tools. After graduating in mathematics from Vassar and Yale, she taught mathematics at Vassar. When the USA entered the War, in 1943, she joined the US Naval Reserve and was assigned to work on an electromechanical machine for mathematical calculations, built at Harvard and funded by IBM. After the War, she worked for a number of computer companies, compilers. In developing one of the first high-level languages, Hopper created programs for translating more abstract instructions into machine code, compilers. She also created individual programming components – procedures – and tools for combining the different object codes into executables, linkers. Her data processing language FLOW-MATIC used English language statements, rather than mathematical notations, and shaped the creation of the business language COBOL, an early high-level programming language very much in use today. Hopper was a Commander when she retired from the U.S. Navy in 1966. However, she returned the following year and remained in service until the age of 79, retiring as a rear admiral and the oldest serving officer in the U.S. Armed Forces. In 1996, the navy named a destroyer after her.

Steve Jobs

1955-2011

Pioneer of the personal computer revolution

Steve Jobs was a pioneer and visionary of personal computing. With Steve Wozniak, Jobs founded Apple Inc. in 1976 and quickly transformed the company into a world leader in personal computing. Widely considered an industrial genius, he oversaw the launch of revolutionary personal computers such as the Apple II in 1977 and MacIntosh in 1984. Steve was the child of two university students, who gave him up for adoption into the Jobs family. He was smart and charismatic but dropped out of college and tried different paths before co-founding Apple. Jobs left the company in 1985, launching NeXT, a company making Unix based workstations, and Pixar Animation Studios. Returning to Apple more than a decade later he oversaw the creation of further revolutionary products such as the iMac, iPod, iPad and iPhone and iWatch, along with associated digital services iTunes, AppStore, Apple TV, iCloud. Apple is also famed for its innovative advertising campaigns and retail stores. Jobs died following a long battle with pancreatic cancer aged 56.

Tim Berners-Lee

1955-Present

The inventor of the World Wide Web

Tim Berners-Lee was born in London. His parents worked on the early commercial computer Ferranti Mark I. Growing up, Berners-Lee enjoyed mathematics and electronics, and went on to Oxford University, graduating with a degree in Physics in 1976. Berners-Lee began as a computer software developer and held various positions in the computer industry. He worked at CERN, the international particle physics laboratory near Geneva, Switzerland, briefly in 1980 and again in 1984 where he was focussed on enabling networks to collect and share data online. At CERN, in 1989, Berners-Lee proposed a system for sharing and updating distributed information, using files containing links to other files called hypertext. The software he created during 1990-91, including a server, browser and editor became known as the World Wide Web. In 1994, in the USA, Berners-Lee formed the World Wide Web Consortium (W3C) to oversee and develop standards for the Web. In the United Kingdom, he was knighted in 2004 and appointed to the elite Order of Merit in 2007.