

Following a consistent programming style often helps readability. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation). Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. However, readability is more than just programming style. There exist a lot of different approaches for each of those tasks. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. It is usually easier to code in "high-level" languages than in "low-level" ones. Some languages are more prone to some kinds of faults because their specification does not require compilers to perform as much checking as other languages. It is usually easier to code in "high-level" languages than in "low-level" ones. The academic field and the engineering practice of computer programming are both largely concerned with discovering and implementing the most efficient algorithms for a given class of problems. The first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Programmable devices have existed for centuries. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Programming languages are essential for software development.