

Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research. 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. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. While these are sometimes considered programming, often the term software development is used for this larger overall process – with the terms programming, implementation, and coding reserved for the writing and editing of code per se. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. There are many approaches to the Software development process. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams. However, because an assembly language is little more than a different notation for a machine language, two machines with different instruction sets also have different assembly languages. Programs were mostly entered using punched cards or paper tape.