

For example, COBOL is still strong in corporate data centers often on large mainframe computers, Fortran in engineering applications, scripting languages in Web development, and C in embedded software. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Also, specific user environment and usage history can make it difficult to reproduce the problem. Programmable devices have existed for centuries. Various visual programming languages have also been developed with the intent to resolve readability concerns by adopting non-traditional approaches to code structure and display. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. Programs were mostly entered using punched cards or paper tape. Different programming languages support different styles of programming (called programming paradigms). He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. 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. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Scripting and breakpointing is also part of this process. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. They are the building blocks for all software, from the simplest applications to the most sophisticated ones.