

Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. 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. The following properties are among the most important: In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code. 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. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. There exist a lot of different approaches for each of those tasks. 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. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). There exist a lot of different approaches for each of those tasks. 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. Techniques like Code refactoring can enhance readability. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory. 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. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). 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. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling).