

High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. 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. 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. 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. However, readability is more than just programming style. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Techniques like Code refactoring can enhance readability. Code-breaking algorithms have also existed for centuries. 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. 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. Techniques like Code refactoring can enhance readability. Different programming languages support different styles of programming (called programming paradigms). This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. 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. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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. For this purpose, algorithms are classified into orders using so-called Big O notation, which expresses resource use, such as execution time or memory consumption, in terms of the size of an input. It is very difficult to determine what are the most popular modern 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.