

Ideally, the programming language best suited for the task at hand will be selected. 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. It is usually easier to code in "high-level" languages than in "low-level" ones. 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. 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. For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only a few lines from the original source file can be sufficient to reproduce the same crash. 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. 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. One approach popular for requirements analysis is Use Case analysis. 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. Following a consistent programming style often helps readability. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Programmers typically use high-level programming languages that are more easily intelligible to humans than machine code, which is directly executed by the central processing unit. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Expert programmers are familiar with a variety of well-established algorithms and their respective complexities and use this knowledge to choose algorithms that are best suited to the circumstances. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. There exist a lot of different approaches for each of those tasks. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Expert programmers are familiar with a variety of well-established algorithms and their respective complexities and use this knowledge to choose algorithms that are best suited to the circumstances. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Computer programmers are those who write computer software. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Integrated development environments (IDEs) aim to integrate all such help. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Readability is important because programmers spend the majority of their time reading, trying to understand, reusing and modifying existing source code, rather than writing new source code.