

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. Ideally, the programming language best suited for the task at hand will be selected. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Languages form an approximate spectrum from "low-level" to "high-level"; "low-level" languages are typically more machine-oriented and faster to execute, whereas "high-level" languages are more abstract and easier to use but execute less quickly. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Following a consistent programming style often helps readability. Computer programmers are those who write computer software. Integrated development environments (IDEs) aim to integrate all such help. 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. 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. 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. Scripting and breakpointing is also part of this process. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Different programming languages support different styles of programming (called programming paradigms). It affects the aspects of quality above, including portability, usability and most importantly maintainability. Programming languages are essential for software development. 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. It is very difficult to determine what are the most popular modern programming languages. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation).