

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. However, readability is more than just programming style. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. Different programming languages support different styles of programming (called programming paradigms). However, readability is more than just programming style. Programmable devices have existed for centuries. 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. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Following a consistent programming style often helps readability. 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. Programs were mostly entered using punched cards or paper tape. When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear. Computer programmers are those who write computer software. 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. 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. One approach popular for requirements analysis is Use Case analysis. It is very difficult to determine what are the most popular modern programming languages. 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. 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. 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. Auxiliary tasks accompanying and related to programming include analyzing requirements, testing, debugging (investigating and fixing problems), implementation of build systems, and management of derived artifacts, such as programs' machine code. 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. Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line.