

Many applications use a mix of several languages in their construction and use. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. It is usually easier to code in "high-level" languages than in "low-level" ones. Programmable devices have existed for centuries. 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. 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. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. Techniques like Code refactoring can enhance 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. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. 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. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Scripting and breakpointing is also part of this process. It affects the aspects of quality above, including portability, usability and most importantly maintainability. 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. 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. Programs were mostly entered using punched cards or paper tape. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic. Whatever the approach to development may be, the final program must satisfy some fundamental properties.