

FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research. Following a consistent programming style often helps readability. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Code-breaking algorithms have also existed for centuries. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). 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. 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. 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. Computer programmers are those who write computer software. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. 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. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. 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. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). Programming languages are essential for software development. 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. 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. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research. It is usually easier to code in "high-level" languages than in "low-level" ones.