

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. 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. The first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. Later a control panel (plug board) added to his 1906 Type I Tabulator allowed it to be programmed for different jobs, and by the late 1940s, unit record equipment such as the IBM 602 and IBM 604, were programmed by control panels in a similar way, as were the first electronic computers. Following a consistent programming style often helps readability. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. However, readability is more than just programming style. 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 very difficult to determine what are the most popular modern programming languages. Scripting and breakpointing is also part of this process. Normally the first step in debugging is to attempt to reproduce the problem. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Techniques like Code refactoring can enhance readability. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Programmable devices have existed for centuries. Unreadable code often leads to bugs, inefficiencies, and duplicated code. 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). The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. There exist a lot of different approaches for each of those tasks. Programming languages are essential for software development. Scripting and breakpointing is also part of this process.