

This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Different programming languages support different styles of programming (called programming paradigms). This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. 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. 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. 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). Whatever the approach to development may be, the final program must satisfy some fundamental properties. 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. It is usually easier to code in "high-level" languages than in "low-level" ones. As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices. 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. For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only few lines from the original source file can be sufficient to reproduce the same crash. Ideally, the programming language best suited for the task at hand will be selected. There exist a lot of different approaches for each of those tasks. 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. Different programming languages support different styles of programming (called programming paradigms). The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices. Use of a static code analysis tool can help detect some possible problems. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process.