

There are many approaches to the Software development process. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Use of a static code analysis tool can help detect some possible problems. 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. Code-breaking algorithms have also existed for centuries. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Code-breaking algorithms have also existed for centuries. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Ideally, the programming language best suited for the task at hand will be selected. Computer programmers are those who write computer software. 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. 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. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. 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. 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. Whatever the approach to development may be, the final program must satisfy some fundamental properties. 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.