

He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Scripting and breakpointing is also part of this process. There are many approaches to the Software development process. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Methods of measuring programming language popularity include: counting the number of job advertisements that mention the language, the number of books sold and courses teaching the language (this overestimates the importance of newer languages), and estimates of the number of existing lines of code written in the language (this underestimates the number of users of business languages such as COBOL). Following a consistent programming style often helps readability. 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. 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. 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. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. 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. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. 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. 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. There are many approaches to the Software development process. Also, specific user environment and usage history can make it difficult to reproduce the problem. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. There exist a lot of different approaches for each of those tasks. However, Charles Babbage had already written his first program for the Analytical Engine in 1837.