

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. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. While these are sometimes considered programming, often the term software development is used for this larger overall process – with the terms programming, implementation, and coding reserved for the writing and editing of code per se. Code-breaking algorithms have also existed for centuries. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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 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. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Auxiliary tasks accompanying and related to programming include analyzing requirements, testing, debugging (investigating and fixing problems), implementation of build systems, and management of derived artifacts, such as programs' machine code. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. 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. 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. 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. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. 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. Integrated development environments (IDEs) aim to integrate all such help. Some languages are more prone to some kinds of faults because their specification does not require compilers to perform as much checking as other languages. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.