

Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Programming languages are essential for software development. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. It is usually easier to code in "high-level" languages than in "low-level" ones. When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. 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. 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. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. 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. 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. It affects the aspects of quality above, including portability, usability and most importantly maintainability. Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Expert programmers are familiar with a variety of well-established algorithms and their respective complexities and use this knowledge to choose algorithms that are best suited to the circumstances. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Use of a static code analysis tool can help detect some possible problems. There are many approaches to the Software development process. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Many applications use a mix of several languages in their construction and use.