

Ideally, the programming language best suited for the task at hand will be selected. 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Integrated development environments (IDEs) aim to integrate all such help. 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. Ideally, the programming language best suited for the task at hand will be selected. Computer programmers are those who write computer software. Many applications use a mix of several languages in their construction and use. 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. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Assembly languages were soon developed that let the programmer specify instruction in a text format (e.g., ADD X, TOTAL), with abbreviations for each operation code and meaningful names for specifying addresses. 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. Ideally, the programming language best suited for the task at hand will be selected. 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. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Assembly languages were soon developed that let the programmer specify instruction in a text format (e.g., ADD X, TOTAL), with abbreviations for each operation code and meaningful names for specifying addresses. Also, specific user environment and usage history can make it difficult to reproduce the problem. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. 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. Many applications use a mix of several languages in their construction and use. 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. 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. 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. 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.