

Programs were mostly entered using punched cards or paper tape. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. 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. Also, specific user environment and usage history can make it difficult to reproduce the problem. Programming languages are essential for software development. Integrated development environments (IDEs) aim to integrate all such help. It is very difficult to determine what are the most popular modern programming languages. 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. It is usually easier to code in "high-level" languages than in "low-level" ones. 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. 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. Programming languages are essential for software development. Techniques like Code refactoring can enhance readability. Many applications use a mix of several languages in their construction and use. There exist a lot of different approaches for each of those tasks. 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. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware.

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. Different programming languages support different styles of programming (called programming paradigms). By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. 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.