

Also, specific user environment and usage history can make it difficult to reproduce the problem. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. 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. 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. 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. Normally the first step in debugging is to attempt to reproduce the problem. Scripting and breakpointing is also part of this process. 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. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Normally the first step in debugging is to attempt to reproduce the problem. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. There exist a lot of different approaches for each of those tasks. 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. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Allen Downey, in his book *How To Think Like A Computer Scientist*, writes: Many computer languages provide a mechanism to call functions provided by shared libraries. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. It is very difficult to determine what are the most popular modern programming languages. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Programs were mostly entered using punched cards or paper tape. Following a consistent programming style often helps readability.