

Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. It is usually easier to code in "high-level" languages than in "low-level" ones. Programmable devices have existed for centuries. 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. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. 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. For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only few lines from the original source file can be sufficient to reproduce the same crash. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. 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 very difficult to determine what are the most popular modern programming languages. Integrated development environments (IDEs) aim to integrate all such help. For example, COBOL is still strong in corporate data centers often on large mainframe computers, Fortran in engineering applications, scripting languages in Web development, and C in embedded software. 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. For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only few lines from the original source file can be sufficient to reproduce the same crash. 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. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Normally the first step in debugging is to attempt to reproduce the problem. However, readability is more than just programming style. 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. 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. 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. 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. However, readability is more than just programming style.