

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. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. It is usually easier to code in "high-level" languages than in "low-level" ones. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams. 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 involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Later a control panel (plug board) added to his 1906 Type I Tabulator allowed it to be programmed for different jobs, and by the late 1940s, unit record equipment such as the IBM 602 and IBM 604, were programmed by control panels in a similar way, as were the first electronic computers. 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. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. There are many approaches to the Software development process. Use of a static code analysis tool can help detect some possible problems. Programmable devices have existed for centuries. There exist a lot of different approaches for each of those tasks. Many applications use a mix of several languages in their construction and use. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Many applications use a mix of several languages in their construction and use. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Programming languages are essential for software development.