

Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Ideally, the programming language best suited for the task at hand will be selected. 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 factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. 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. 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. However, because an assembly language is little more than a different notation for a machine language, two machines with different instruction sets also have different assembly languages. 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. 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. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Integrated development environments (IDEs) aim to integrate all such help. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language. It affects the aspects of quality above, including portability, usability and most importantly maintainability. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). It affects the aspects of quality above, including portability, usability and most importantly maintainability. 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. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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. Programs were mostly entered using punched cards or paper tape. 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. 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. 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.