

However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Whatever the approach to development may be, the final program must satisfy some fundamental properties. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. 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. Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Use of a static code analysis tool can help detect some possible problems. However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory. 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. Use of a static code analysis tool can help detect some possible problems. 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. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. Normally the first step in debugging is to attempt to reproduce the problem. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. It affects the aspects of quality above, including portability, usability and most importantly maintainability. 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. Use of a static code analysis tool can help detect some possible problems. Whatever the approach to development may be, the final program must satisfy some fundamental properties. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation). Also, specific user environment and usage history can make it difficult to reproduce the problem.