

It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. 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. 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). Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. Many applications use a mix of several languages in their construction and use. 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. 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. The academic field and the engineering practice of computer programming are both largely concerned with discovering and implementing the most efficient algorithms for a given class of problems. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. 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. 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. 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. However, readability is more than just programming style. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Many applications use a mix of several languages in their construction and use. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Different programming languages support different styles of programming (called programming paradigms). 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. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation.