

Programs were mostly entered using punched cards or paper tape. 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. 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. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Many applications use a mix of several languages in their construction and use. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Integrated development environments (IDEs) aim to integrate all such help. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). 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. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Ideally, the programming language best suited for the task at hand will be selected. 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. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Many applications use a mix of several languages in their construction and use. 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. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Normally the first step in debugging is to attempt to reproduce the problem. Programmers typically use high-level programming languages that are more easily intelligible to humans than machine code, which is directly executed by the central processing unit. 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. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. 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.