

Whatever the approach to development may be, the final program must satisfy some fundamental properties. Programs were mostly entered using punched cards or paper tape. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. One approach popular for requirements analysis is Use Case analysis. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. It is very difficult to determine what are the most popular modern programming languages. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Various visual programming languages have also been developed with the intent to resolve readability concerns by adopting non-traditional approaches to code structure and display. Use of a static code analysis tool can help detect some possible problems. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. Techniques like Code refactoring can enhance readability. 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. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. 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 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. 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. Auxiliary tasks accompanying and related to programming include analyzing requirements, testing, debugging (investigating and fixing problems), implementation of build systems, and management of derived artifacts, such as programs' machine code.