

Programming languages are essential for software development. 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. One approach popular for requirements analysis is Use Case analysis. There are many approaches to the Software development process. It affects the aspects of quality above, including portability, usability and most importantly maintainability. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages.

Programmable devices have existed for centuries. When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear. Ideally, the programming language best suited for the task at hand will be selected. 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. 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. There exist a lot of different approaches for each of those tasks. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams. There exist a lot of different approaches for each of those tasks. 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. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Scripting and breakpointing is also part of this process. Techniques like Code refactoring can enhance readability. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Use of a static code analysis tool can help detect some possible problems.