In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages..  
 Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line.  
 Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users.  
 Different programming languages support different styles of programming (called programming paradigms).  
 After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug.  
Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
Unreadable code often leads to bugs, inefficiencies, and duplicated code.  
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.  
One approach popular for requirements analysis is Use Case analysis.  
Languages form an approximate spectrum from "low-level" to "high-level"; "low-level" languages are typically more machine-oriented and faster to execute, whereas "high-level" languages are more abstract and easier to use but execute less quickly.  
 In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form.  
Integrated development environments (IDEs) aim to integrate all such help.  
 Readability is important because programmers spend the majority of their time reading, trying to understand, reusing and modifying existing source code, rather than writing new source code.  
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.