It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages..  
Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic.  
Methods of measuring programming language popularity include: counting the number of job advertisements that mention the language, the number of books sold and courses teaching the language (this overestimates the importance of newer languages), and estimates of the number of existing lines of code written in the language (this underestimates the number of users of business languages such as COBOL).  
Scripting and breakpointing is also part of this process.  
Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process.  
Programming languages are essential for software development.  
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.  
For this purpose, algorithms are classified into orders using so-called Big O notation, which expresses resource use, such as execution time or memory consumption, in terms of the size of an input.  
However, Charles Babbage had already written his first program for the Analytical Engine in 1837.  
 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.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
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.  
 Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation.  
They are the building blocks for all software, from the simplest applications to the most sophisticated ones.