Expert programmers are familiar with a variety of well-established algorithms and their respective complexities and use this knowledge to choose algorithms that are best suited to the circumstances.  
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.  
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.  
This can be a non-trivial task, for example as with parallel processes or some unusual software bugs.  
Proficient programming thus usually requires expertise in several different subjects, including knowledge of the application domain, specialized algorithms, and formal logic.  
Techniques like Code refactoring can enhance readability.  
Compiling takes the source code from a low-level programming language and converts it into machine code.  
Programming languages are essential for software development.  
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 Unified Modeling Language (UML) is a notation used for both the OOAD and MDA.  
The following properties are among the most important:  
  
 In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code.  
 Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation.  
 Different programming languages support different styles of programming (called programming paradigms).  
However, readability is more than just programming style.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.