After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug..  
Techniques like Code refactoring can enhance readability.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
Integrated development environments (IDEs) aim to integrate all such help.  
 New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation).  
 Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA).  
Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability.  
Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute.  
Unreadable code often leads to bugs, inefficiencies, and duplicated code.  
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.  
 Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation.  
Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language.  
  
 Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks.  
 In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form.  
However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory.