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..  
However, because an assembly language is little more than a different notation for a machine language, two machines with different instruction sets also have different assembly languages.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
 The first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine.  
Scripting and breakpointing is also part of this process.  
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.  
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.  
Unreadable code often leads to bugs, inefficiencies, and duplicated code.  
As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices.  
Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards.  
 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).  
 Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications.  
A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.  
 After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug.  
Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment.