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..  
Ideally, the programming language best suited for the task at hand will be selected.  
Also, specific user environment and usage history can make it difficult to reproduce the problem.  
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.  
 It is very difficult to determine what are the most popular modern programming languages.  
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.  
 High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware.  
Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process.  
 Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation.  
Normally the first step in debugging is to attempt to reproduce the problem.  
It is usually easier to code in "high-level" languages than in "low-level" ones.  
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.  
Some of these factors include:  
 The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills.  
 Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users.  
In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages.