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.  
To produce machine code, the source code must either be compiled or transpiled.  
Many applications use a mix of several languages in their construction and use.  
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.  
Transpiling on the other hand, takes the source-code from a high-level programming language and converts it into bytecode.  
In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages.  
Normally the first step in debugging is to attempt to reproduce the problem.  
Their jobs usually involve:  
 Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language.  
Use of a static code analysis tool can help detect some possible problems.  
Scripting and breakpointing is also part of this process.  
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.  
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.  
 High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware.  
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.  
The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA.