Also, those involved with software development may at times engage in reverse engineering, which is the practice of seeking to understand an existing program so as to re-implement its function in some way.  
Transpiling on the other hand, takes the source-code from a high-level programming language and converts it into bytecode.  
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.  
Proficient programming thus usually requires expertise in several different subjects, including knowledge of the application domain, specialized algorithms, and formal logic.  
Integrated development environments (IDEs) aim to integrate all such help.  
It affects the aspects of quality above, including portability, usability and most importantly maintainability.  
Relatedly, software engineering combines engineering techniques and principles with software development.  
This can be a non-trivial task, for example as with parallel processes or some unusual software bugs.  
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.  
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.  
A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.  
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.  
Unreadable code often leads to bugs, inefficiencies, and duplicated code.  
Normally the first step in debugging is to attempt to reproduce the problem.