Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation.  
Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability.  
Also, specific user environment and usage history can make it difficult to reproduce the problem.  
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Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists.  
Proficient programming thus usually requires expertise in several different subjects, including knowledge of the application domain, specialized algorithms, and formal logic.  
The source code of a program is written in one or more languages that are intelligible to programmers, rather than machine code, which is directly executed by the central processing unit.  
When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear.  
It affects the aspects of quality above, including portability, usability and most importantly maintainability.  
Also, specific user environment and usage history can make it difficult to reproduce the problem.  
Assembly languages were soon developed that let the programmer specify instruction in a text format (e.g., ADD X, TOTAL), with abbreviations for each operation code and meaningful names for specifying addresses.  
Methods of measuring programming language popularity include: counting the number of job advertisements that mention the language, the number of books sold and courses teaching the language (this overestimates the importance of newer languages), and estimates of the number of existing lines of code written in the language (this underestimates the number of users of business languages such as COBOL).  
One approach popular for requirements analysis is Use Case analysis.  
Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards.  
 These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics.