After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug..  
Programmers typically use high-level programming languages that are more easily intelligible to humans than machine code, which is directly executed by the central processing unit.  
Use of a static code analysis tool can help detect some possible problems.  
It affects the aspects of quality above, including portability, usability and most importantly maintainability.  
However, Charles Babbage had already written his first program for the Analytical Engine in 1837.  
This can be a non-trivial task, for example as with parallel processes or some unusual software bugs.  
 The academic field and the engineering practice of computer programming are both largely concerned with discovering and implementing the most efficient algorithms for a given class of problems.  
 Whatever the approach to development may be, the final program must satisfy some fundamental properties.  
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.  
FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research.  
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.  
For example, COBOL is still strong in corporate data centers often on large mainframe computers, Fortran in engineering applications, scripting languages in Web development, and C in embedded software.  
 A similar technique used for database design is Entity-Relationship Modeling (ER Modeling).  
Programming languages are essential for software development.  
 In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form.