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. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation). 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. Programs were mostly entered using punched cards or paper tape.

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. It is very difficult to determine what are the most popular modern programming languages. 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. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). It affects the aspects of quality above, including portability, usability and most importantly maintainability. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. Code-breaking algorithms have also existed for centuries. Auxiliary tasks accompanying and related to programming include analyzing requirements, testing, debugging (investigating and fixing problems), implementation of build systems, and management of derived artifacts, such as programs' machine code. Readability is important because programmers spend the majority of their time reading, trying to understand, reusing and modifying existing source code, rather than writing new source code. Use of a static code analysis tool can help detect some possible problems. Also, specific user environment and usage history can make it difficult to reproduce the problem. 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. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. The first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. However, readability is more than just programming style. Code-breaking algorithms have also existed for centuries. Programmable devices have existed for centuries. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. There are many approaches to the Software development process. It affects the aspects of quality above, including portability, usability and most importantly maintainability.