

Use of a static code analysis tool can help detect some possible problems. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. There exist a lot of different approaches for each of those tasks. 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. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. 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. 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. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. Code-breaking algorithms have also existed for centuries. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. Following a consistent programming style often helps readability. There are many approaches to the Software development process. Code-breaking algorithms have also existed for centuries. 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. Many applications use a mix of several languages in their construction and use. It is usually easier to code in "high-level" languages than in "low-level" ones. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). It affects the aspects of quality above, including portability, usability and most importantly maintainability. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling).