

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. It is usually easier to code in "high-level" languages than in "low-level" ones. Programmable devices have existed for centuries. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. It is usually easier to code in "high-level" languages than in "low-level" ones. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Different programming languages support different styles of programming (called programming paradigms). Following a consistent programming style often helps readability. Scripting and breakpointing is also part of this process. 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. Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. 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. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Integrated development environments (IDEs) aim to integrate all such help. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process.