

A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. 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. Ideally, the programming language best suited for the task at hand will be selected. Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language. There exist a lot of different approaches for each of those tasks. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Following a consistent programming style often helps readability. Use of a static code analysis tool can help detect some possible problems. Many applications use a mix of several languages in their construction and use. 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. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Different programming languages support different styles of programming (called programming paradigms). Many applications use a mix of several languages in their construction and use. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. 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. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Use of a static code analysis tool can help detect some possible problems. Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Techniques like Code refactoring can enhance readability. There exist a lot of different approaches for each of those tasks.