

The following properties are among the most important: In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. Use of a static code analysis tool can help detect some possible problems. Computer programmers are those who write computer software. Many applications use a mix of several languages in their construction and use. 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. 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. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Code-breaking algorithms have also existed for centuries. 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. 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. 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. While these are sometimes considered programming, often the term software development is used for this larger overall process – with the terms programming, implementation, and coding reserved for the writing and editing of code per se. 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. 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. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. One approach popular for requirements analysis is Use Case analysis.