

After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. There exist a lot of different approaches for each of those tasks. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. 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. Normally the first step in debugging is to attempt to reproduce the problem. For this purpose, algorithms are classified into orders using so-called Big O notation, which expresses resource use, such as execution time or memory consumption, in terms of the size of an input. 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. Many applications use a mix of several languages in their construction and use. Whatever the approach to development may be, the final program must satisfy some fundamental properties. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Programs were mostly entered using punched cards or paper tape. One approach popular for requirements analysis is Use Case analysis. Following a consistent programming style often helps readability. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Computer programmers are those who write computer software. Techniques like Code refactoring can enhance 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. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Many applications use a mix of several languages in their construction and use. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. There are many approaches to the Software development process. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Later a control panel (plug board) added to his 1906 Type I Tabulator allowed it to be programmed for different jobs, and by the late 1940s, unit record equipment such as the IBM 602 and IBM 604, were programmed by control panels in a similar way, as were the first electronic computers.