

Techniques like Code refactoring can enhance readability. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Whatever the approach to development may be, the final program must satisfy some fundamental properties. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Various visual programming languages have also been developed with the intent to resolve readability concerns by adopting non-traditional approaches to code structure and display. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Normally the first step in debugging is to attempt to reproduce the problem. 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. Scripting and breakpointing is also part of this process. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Techniques like Code refactoring can enhance readability. Techniques like Code refactoring can enhance readability. 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. Programs were mostly entered using punched cards or paper tape. 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. 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. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. Many applications use a mix of several languages in their construction and use. Programs were mostly entered using punched cards or paper tape. 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. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.