

Programmable devices have existed for centuries. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Programmable devices have existed for centuries. Programming languages are essential for software development. Techniques like Code refactoring can enhance readability. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Some languages are more prone to some kinds of faults because their specification does not require compilers to perform as much checking as other languages. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. However, readability is more than just programming style. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. However, because an assembly language is little more than a different notation for a machine language, two machines with different instruction sets also have different assembly languages. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Techniques like Code refactoring can enhance readability. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). Many applications use a mix of several languages in their construction and use. 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. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment.