

There exist a lot of different approaches for each of those tasks. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. There exist a lot of different approaches for each of those tasks. Unreadable code often leads to bugs, inefficiencies, and duplicated code. However, readability is more than just programming style. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Languages form an approximate spectrum from "low-level" to "high-level"; "low-level" languages are typically more machine-oriented and faster to execute, whereas "high-level" languages are more abstract and easier to use but execute less quickly. In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. 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. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation). Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. Many applications use a mix of several languages in their construction and use. There are many approaches to the Software development process. It is very difficult to determine what are the most popular modern programming languages. It is usually easier to code in "high-level" languages than in "low-level" ones. For example, COBOL is still strong in corporate data centers often on large mainframe computers, Fortran in engineering applications, scripting languages in Web development, and C in embedded software. 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.