

Ideally, the programming language best suited for the task at hand will be selected. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. 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. One approach popular for requirements analysis is Use Case analysis. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language. Code-breaking algorithms have also existed for centuries. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Allen Downey, in his book *How To Think Like A Computer Scientist*, writes: Many computer languages provide a mechanism to call functions provided by shared libraries. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). Scripting and breakpointing is also part of this process. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. Ideally, the programming language best suited for the task at hand will be selected. 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. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. It is very difficult to determine what are the most popular modern programming languages. 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. 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.