

Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. One approach popular for requirements analysis is Use Case analysis. 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. Computer programmers are those who write computer software. 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. 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. 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. 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. While these are sometimes considered programming, often the term software development is used for this larger overall process – with the terms programming, implementation, and coding reserved for the writing and editing of code per se. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. Programs were mostly entered using punched cards or paper tape. 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. There are many approaches to the Software development process. It is very difficult to determine what are the most popular modern programming languages. 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. Many applications use a mix of several languages in their construction and use. Integrated development environments (IDEs) aim to integrate all such help. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. When debugging the problem in a GUI, the programmer can try to skip some user interaction from the original problem description and check if remaining actions are sufficient for bugs to appear. It is very difficult to determine what are the most popular modern programming languages. Integrated development environments (IDEs) aim to integrate all such help.