

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. 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. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Different programming languages support different styles of programming (called programming paradigms). 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. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices. 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. Programming languages are essential for software development. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). Readability is important because programmers spend the majority of their time reading, trying to understand, reusing and modifying existing source code, rather than writing new source code. 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. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Many applications use a mix of several languages in their construction and use. 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. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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.