

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. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. There are many approaches to the Software development process. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. Code-breaking algorithms have also existed for centuries. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. The following properties are among the most important: In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Whatever the approach to development may be, the final program must satisfy some fundamental properties. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Also, specific user environment and usage history can make it difficult to reproduce the problem. They are the building blocks for all software, from the simplest applications to the most sophisticated ones.