For this purpose, algorithms are classified into orders using so-called Big O notation, which expresses resource use, such as execution time or memory consumption, in terms of the size of an input. 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 first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Normally the first step in debugging is to attempt to reproduce the problem. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). 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. Different programming languages support different styles of programming (called programming paradigms). 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. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Following a consistent programming style often helps readability. 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. 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. Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. 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. Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks. 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. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.