

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. One approach popular for requirements analysis is Use Case analysis. 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. 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. One approach popular for requirements analysis is Use Case analysis. 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. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. 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. Computer programmers are those who write computer software. 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. 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. 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. Code-breaking algorithms have also existed for centuries. There exist a lot of different approaches for each of those tasks. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. 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. Code-breaking algorithms have also existed for centuries. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. Use of a static code analysis tool can help detect some possible problems. 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. 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 applications use a mix of several languages in their construction and use. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.