

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. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Many applications use a mix of several languages in their construction and use. 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. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. It is usually easier to code in "high-level" languages than in "low-level" ones. 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. Languages form an approximate spectrum from "low-level" to "high-level"; "low-level" languages are typically more machine-oriented and faster to execute, whereas "high-level" languages are more abstract and easier to use but execute less quickly. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Whatever the approach to development may be, the final program must satisfy some fundamental properties. 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. Expert programmers are familiar with a variety of well-established algorithms and their respective complexities and use this knowledge to choose algorithms that are best suited to the circumstances. Later a control panel (plug board) added to his 1906 Type I Tabulator allowed it to be programmed for different jobs, and by the late 1940s, unit record equipment such as the IBM 602 and IBM 604, were programmed by control panels in a similar way, as were the first electronic computers. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. 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. 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. 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. It affects the aspects of quality above, including portability, usability and most importantly maintainability. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). However, Charles Babbage had already written his first program for the Analytical Engine in 1837. Programmers typically use high-level programming languages that are more easily intelligible to humans than machine code, which is directly executed by the central processing unit. Also, specific user environment and usage history can make it difficult to reproduce the problem.