

Programmable devices have existed for centuries. New languages are generally designed around the syntax of a prior language with new functionality added, (for example C++ adds object-orientation to C, and Java adds memory management and bytecode to C++, but as a result, loses efficiency and the ability for low-level manipulation). 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. Ideally, the programming language best suited for the task at hand will be selected. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. 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. Different programming languages support different styles of programming (called programming paradigms). Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Many applications use a mix of several languages in their construction and use. 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. 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. There are many approaches to the Software development process. Also, specific user environment and usage history can make it difficult to reproduce the problem. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. Ideally, the programming language best suited for the task at hand will be selected. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Following a consistent programming style often helps readability. Many applications use a mix of several languages in their construction and use. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). 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.