

After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. 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. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. 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. 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. Unreadable code often leads to bugs, inefficiencies, and duplicated code. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic. 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. It affects the aspects of quality above, including portability, usability and most importantly maintainability. Programmable devices have existed for centuries. Ideally, the programming language best suited for the task at hand will be selected. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. However, readability is more than just programming style. FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). 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. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form.