

Unreadable code often leads to bugs, inefficiencies, and duplicated code. It is usually easier to code in "high-level" languages than in "low-level" ones. 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. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). 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. Different programming languages support different styles of programming (called programming paradigms). Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. Also, specific user environment and usage history can make it difficult to reproduce the problem. 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. Allen Downey, in his book *How To Think Like A Computer Scientist*, writes: Many computer languages provide a mechanism to call functions provided by shared libraries. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. They are the building blocks for all software, from the simplest applications to the most sophisticated ones. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. It is very difficult to determine what are the most popular modern programming languages. 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. 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. It is very difficult to determine what are the most popular modern programming languages. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. 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. 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.