

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). In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. Ideally, the programming language best suited for the task at hand will be selected. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. Normally the first step in debugging is to attempt 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. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Integrated development environments (IDEs) aim to integrate all such help. There exist a lot of different approaches for each of those tasks. Normally the first step in debugging is to attempt to reproduce the problem. 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. Unreadable code often leads to bugs, inefficiencies, and duplicated code. 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. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). Computer programmers are those who write computer software. Use of a static code analysis tool can help detect some possible problems. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. 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. Methods of measuring programming language popularity include: counting the number of job advertisements that mention the language, the number of books sold and courses teaching the language (this overestimates the importance of newer languages), and estimates of the number of existing lines of code written in the language (this underestimates the number of users of business languages such as COBOL). Programs were mostly entered using punched cards or paper tape.