

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. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. 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). Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. Ideally, the programming language best suited for the task at hand will be selected. In 1206, the Arab engineer Al-Jazari invented a programmable drum machine where a musical mechanical automaton could be made to play different rhythms and drum patterns, via pegs and cams. It affects the aspects of quality above, including portability, usability and most importantly maintainability. While these are sometimes considered programming, often the term software development is used for this larger overall process – with the terms programming, implementation, and coding reserved for the writing and editing of code per se. For example, when a bug in a compiler can make it crash when parsing some large source file, a simplification of the test case that results in only few lines from the original source file can be sufficient to reproduce the same crash. 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. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. It is usually easier to code in "high-level" languages than in "low-level" ones. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Computer programmers are those who write computer software. It is usually easier to code in "high-level" languages than in "low-level" ones. As early as the 9th century, a programmable music sequencer was invented by the Persian Banu Musa brothers, who described an automated mechanical flute player in the Book of Ingenious Devices. There are many approaches to the Software development process. By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers. 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. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills.