

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. Programs were mostly entered using punched cards or paper tape. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. Computer programmers are those who write computer software. 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. Following a consistent programming style often helps readability. 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. Also, specific user environment and usage history can make it difficult to reproduce the problem. 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. Whatever the approach to development may be, the final program must satisfy some fundamental properties. The first computer program is generally dated to 1843, when mathematician Ada Lovelace published an algorithm to calculate a sequence of Bernoulli numbers, intended to be carried out by Charles Babbage's Analytical Engine. Normally the first step in debugging is to attempt to reproduce the problem. However, with the concept of the stored-program computer introduced in 1949, both programs and data were stored and manipulated in the same way in computer memory. 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. 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. 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. Many applications use a mix of several languages in their construction and use. Computer programmers are those who write computer software. 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. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation. Ideally, the programming language best suited for the task at hand will be selected. 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.