

Programmable devices have existed for centuries. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. There are many approaches to the Software development process. Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line. A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it. 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. Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment. Many applications use a mix of several languages in their construction and use. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. The choice of language used is subject to many considerations, such as company policy, suitability to task, availability of third-party packages, or individual preference. 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. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. 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. Normally the first step in debugging is to attempt to reproduce the problem. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Programs were mostly entered using punched cards or paper tape. 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. However, readability is more than just programming style. 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. In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages. Some languages are very popular for particular kinds of applications, while some languages are regularly used to write many different kinds of applications. It is usually easier to code in "high-level" languages than in "low-level" ones.