

Also, specific user environment and usage history can make it difficult to reproduce the problem. There are many approaches to the Software development process. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. Also, specific user environment and usage history can make it difficult to reproduce the problem. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation. Ideally, the programming language best suited for the task at hand will be selected. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. 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. 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. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. 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. Programs were mostly entered using punched cards or paper tape. FORTRAN, the first widely used high-level language to have a functional implementation, came out in 1957, and many other languages were soon developed—in particular, COBOL aimed at commercial data processing, and Lisp for computer research. 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. Also, specific user environment and usage history can make it difficult to reproduce the problem. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. 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. 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. Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). It is very difficult to determine what are the most popular modern programming languages. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. 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. Computer programmers are those who write computer software.