

Whatever the approach to development may be, the final program must satisfy some fundamental properties. In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form. Later a control panel (plug board) added to his 1906 Type I Tabulator allowed it to be programmed for different jobs, and by the late 1940s, unit record equipment such as the IBM 602 and IBM 604, were programmed by control panels in a similar way, as were the first electronic computers. The following properties are among the most important: In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code. Programs were mostly entered using punched cards or paper tape. However, Charles Babbage had already written his first program for the Analytical Engine in 1837. It is very difficult to determine what are the most popular modern programming languages. 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. The following properties are among the most important: In computer programming, readability refers to the ease with which a human reader can comprehend the purpose, control flow, and operation of source code. There exist a lot of different approaches for each of those tasks. The first step in most formal software development processes is requirements analysis, followed by testing to determine value modeling, implementation, and failure elimination (debugging). Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Many applications use a mix of several languages in their construction and use. There exist a lot of different approaches for each of those tasks. Unreadable code often leads to bugs, inefficiencies, and duplicated code. A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). Normally the first step in debugging is to attempt to reproduce the problem. For this purpose, algorithms are classified into orders using so-called Big O notation, which expresses resource use, such as execution time or memory consumption, in terms of the size of an input. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. 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. He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm. Normally the first step in debugging is to attempt to reproduce the problem.