By the late 1960s, data storage devices and computer terminals became inexpensive enough that programs could be created by typing directly into the computers..  
 In the 1880s, Herman Hollerith invented the concept of storing data in machine-readable form.  
In the 9th century, the Arab mathematician Al-Kindi described a cryptographic algorithm for deciphering encrypted code, in A Manuscript on Deciphering Cryptographic Messages.  
However, readability is more than just programming style.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
 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.  
 It is very difficult to determine what are the most popular modern programming languages.  
Many applications use a mix of several languages in their construction and use.  
Integrated development environments (IDEs) aim to integrate all such help.  
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.  
Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic.  
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.  
 After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug.  
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.  
  
 Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks.