Unreadable code often leads to bugs, inefficiencies, and duplicated code..  
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.  
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 academic field and the engineering practice of computer programming are both largely concerned with discovering and implementing the most efficient algorithms for a given class of problems.  
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.  
 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.  
 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.  
He gave the first description of cryptanalysis by frequency analysis, the earliest code-breaking algorithm.  
 Whatever the approach to development may be, the final program must satisfy some fundamental properties.  
 Readability is important because programmers spend the majority of their time reading, trying to understand, reusing and modifying existing source code, rather than writing new source code.  
It affects the aspects of quality above, including portability, usability and most importantly maintainability.  
A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.  
Methods of measuring programming language popularity include: counting the number of job advertisements that mention the language, the number of books sold and courses teaching the language (this overestimates the importance of newer languages), and estimates of the number of existing lines of code written in the language (this underestimates the number of users of business languages such as COBOL).  
 Machine code was the language of early programs, written in the instruction set of the particular machine, often in binary notation.  
 Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages.