

This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. This can be a non-trivial task, for example as with parallel processes or some unusual software bugs. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. 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. It affects the aspects of quality above, including portability, usability and most importantly maintainability. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Ideally, the programming language best suited for the task at hand will be selected. 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. Normally the first step in debugging is to attempt to reproduce the problem. Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process. Many factors, having little or nothing to do with the ability of the computer to efficiently compile and execute the code, contribute to readability. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Techniques like Code refactoring can enhance readability. Many programmers use forms of Agile software development where the various stages of formal software development are more integrated together into short cycles that take a few weeks rather than years. Different programming languages support different styles of programming (called programming paradigms). In 1801, the Jacquard loom could produce entirely different weaves by changing the "program" – a series of pasteboard cards with holes punched in them. It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages. 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). Techniques like Code refactoring can enhance readability. 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. Auxiliary tasks accompanying and related to programming include analyzing requirements, testing, debugging (investigating and fixing problems), implementation of build systems, and management of derived artifacts, such as programs' machine code. After the bug is reproduced, the input of the program may need to be simplified to make it easier to debug. Following a consistent programming style often helps readability. Programs were mostly entered using punched cards or paper tape.