

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. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Debugging is a very important task in the software development process since having defects in a program can have significant consequences for its users. Programming languages are essential for software development. 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. These compiled languages allow the programmer to write programs in terms that are syntactically richer, and more capable of abstracting the code, making it easy to target varying machine instruction sets via compilation declarations and heuristics. Some of these factors include: The presentation aspects of this (such as indents, line breaks, color highlighting, and so on) are often handled by the source code editor, but the content aspects reflect the programmer's talent and skills. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. The first compiler related tool, the A-0 System, was developed in 1952 by Grace Hopper, who also coined the term 'compiler'. Also, specific user environment and usage history can make it difficult to reproduce the problem. There exist a lot of different approaches for each of those tasks. Programming languages are essential for software development. Their jobs usually involve: Although programming has been presented in the media as a somewhat mathematical subject, some research shows that good programmers have strong skills in natural human languages, and that learning to code is similar to learning a foreign language. For example, COBOL is still strong in corporate data centers often on large mainframe computers, Fortran in engineering applications, scripting languages in Web development, and C in embedded software. 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. Many applications use a mix of several languages in their construction and use. Use of a static code analysis tool can help detect some possible problems. 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. Ideally, the programming language best suited for the task at hand will be selected. 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. 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. Code-breaking algorithms have also existed for centuries. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Unreadable code often leads to bugs, inefficiencies, and duplicated code.