Programming languages are essential for software development. 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. Trial-and-error/divide-and-conquer is needed: the programmer will try to remove some parts of the original test case and check if the problem still exists. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. It is usually easier to code in "high-level" languages than in "low-level" ones. 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. Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Ideally, the programming language best suited for the task at hand will be selected. Unreadable code often leads to bugs, inefficiencies, and duplicated code. Programmable devices have existed for centuries. There are many approaches to the Software development process. 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. 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. Techniques like Code refactoring can enhance readability. 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. Text editors were also developed that allowed changes and corrections to be made much more easily than with punched cards. The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA. Provided the functions in a library follow the appropriate run-time conventions (e.g., method of passing arguments), then these functions may be written in any other language. It affects the aspects of quality above, including portability, usability and most importantly maintainability. 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. High-level languages made the process of developing a program simpler and more understandable, and less bound to the underlying hardware. 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. Trade-offs from this ideal involve finding enough programmers who know the language to build a team, the availability of compilers for that language, and the efficiency with which programs written in a given language execute. Allen Downey, in his book How To Think Like A Computer Scientist, writes: Many computer languages provide a mechanism to call functions provided by shared libraries.
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