

software engineering glossary

Editor: Richard H. Thayer ■ California State Univ., Sacramento ■ thayer@csus.edu
Technical Reviewer: Merlin Dorfman ■ Cisco Systems ■ dorfman@computer.org

Software Design, Part I

abstract design: 1. A generic form that needs specialization (further design work) to produce concrete designs. 2. Design aimed at producing designs; for example, design patterns.

architectural design: In system/software system engineering: 1. The process of defining a collection of hardware and software components and their interfaces to establish a framework for developing a system/software system. 2. The result of the architectural design process. *Also called high-level design, internal specification, preliminary design, system design, top-level design.* [ANSI/IEEE Std 610.12-1990]

architectural design phase: The life-cycle phase in which a system's general architecture is developed, thereby fulfilling the requirements laid down by the software requirements document and detailing the implementation plan in response to it.

architectural design review: A joint acquirer-supplier review to evaluate the technical adequacies of the software architectural design as depicted in the software design descriptions.

architectural structure: A physical or logical layout of the components of a system design and their internal and external connections. Examples are function-oriented (structured) design, object-oriented design, and data-structure-oriented design.

architectural style: 1. Defines a family of systems in terms of a pattern of structural organization. Commonly used styles include pipes and filters, layers, rule-based systems, and blackboards. 2. Characterizes a family of

systems that are related by sharing structural and semantic properties.

architectural view: A representation of a whole system from the perspective of a related set of concerns. [IEEE Std 1471-2000]

architectural viewpoint: 1. A specification of the conventions for constructing and using a view. 2. A pattern or template from which to develop individual views by establishing the purposes and audience for a view and the techniques for its creation and analysis. [IEEE Std 1471-2000]

baseline design: A system design that has been agreed on by all stakeholders interested in the system development.

bottom-up design: The process of designing a system by identifying low-level components, designing each component separately, and then designing a structure to integrate the low-level components into larger and larger subsystems until the design is finished.

cohesion: In software design, a measure of the strength of association of the elements within a module. Contrast with coupling.

computer-aided design: The use of a computer to design a device or a system, display it on a computer monitor or printer, simulate its operation, and provide statistics on its performance. The computer is provided with data concerning the item to be designed, how it is to function, and the rules for the way in which the different components can be joined.

coupling: In software design, a measure of the interdependence among modules in a computer program; the

amount of information shared between two modules. Contrast with cohesion.

critical design review: A somewhat obsolete software development term for what is now called detailed design review.

database design specification: A document that describes the content and format of the permanent or semipermanent data necessary for the software to carry out its functions.

data-structure-oriented design: A design methodology used for business applications by basing the design on the logical data structures of the program specification. Examples include the Jackson System Design and Warnier-Orr methods.

design: 1. The process of defining the software architecture, components, modules, interfaces, and data for a software system to satisfy specified requirements. 2. The results of the design process.

design analysis: 1. The evaluation of a design to determine correctness with respect to stated requirements, conformance to design standards, system efficiency, and other criteria. 2. The evaluation of alternative design approaches. [ANSI/IEEE Std 830-1984]

design analyzer: An automated design tool that accepts information about a program's design and produces such outputs as module hierarchy diagrams, graphical representations of control and data structure, and lists of accessed data blocks.

design concept: A fundamental idea that can be applied to designing a system (for example, information hiding). 