

## APPENDIX C: GLOSSARY for COMPUTER SCIENCE STANDARDS—page 1 of 5

**Abstraction** (**Process**): The process of reducing complexity by focusing on the main idea. By hiding details irrelevant to the question at hand and bringing together related and useful details, abstraction reduces complexity and allows one to focus on the problem. (**Product**): A new representation of a thing, a system, or a problem that helpfully reframes a problem by hiding details irrelevant to the question at hand. [MDESE, 2016]

**Accessibility** The design of products, devices, services, or environments for people who experience disabilities. Accessibility standards that are generally accepted by professional groups include the Web Content Accessibility Guidelines (WCAG) 2.0 and Accessible Rich Internet Applications (ARIA) standards. [Wikipedia]

**Algorithm** A step-by-step process to complete a task.

**Analog** The defining characteristic of data that is represented in a continuous, physical way. Whereas digital data is a set of individual symbols, analog data is stored in physical media, such as the surface grooves on a vinyl record, the magnetic tape of a VCR cassette, or other non digital media. [Techopedia]

**App** A type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Also known as a mobile application. [Techopedia]

**Artifact** Anything created by a human. See computational artifact for the definition used in computer science.

**Application Programming Interface (API)** A set of subroutine definitions, communication protocols, and tools for building software. [Wikipedia]

**Audience** Expected end users of a computational artifact or system.

**Authentication** (verb): The verification of the identity of a person or process. [FOLDOC]

**Authentication Factor(s)** (noun): may include password, face recognition, fingerprints, PIN numbers, biometrics, smartcard, Virtual Private Networking (VPN) and Remote Access Services (RAS), etc.

**Automate** To link disparate systems and software so that they become self-acting or self-regulating. [Ross, 2016]

**Automation** The process of automating.

**Boolean** A type of data or expression with two possible values: true and false. [FOLDOC]

**Bug** An error in a software program. It may cause a program to unexpectedly quit or behave in an unintended manner. [Tech Terms] The process of finding and correcting errors (bugs) is called debugging. [Wikipedia]

**Code** Any set of instructions expressed in a programming language. [MDESE, 2016]

**Comment** A programmer-readable annotation in the code of a computer program added to make the code easier to understand. Comments are generally ignored by machines. [Wikipedia]

**Complexity** The minimum amount of resources, such as memory, time, or messages, needed to solve a problem or execute an algorithm. [NIST/DADS]

**Component** An element of a larger group. Usually, a component provides a particular service or group of related services. [Tech Terms, TechTarget]

**Computational** Relating to computers or computing methods.

**Computational Artifact** Anything created by a human using a computational thinking process and a computing device. A computational artifact can be, but is not limited to, a program, image, audio, video, presentation, or web page file. [College Board, 2016]

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**Computational Thinking** The thought processes involved in formulating a problem and expressing its solutions in such a way that a computer (human or machine) can effectively carry them out.

**Computer** A machine or device that performs processes, calculations, and operations based on instructions provided by a software or hardware program. [Techopedia]

**Computer Science** The study of computing principles, design, and applications (hardware & software); the creation, access, and use of information through algorithms and problem solving, and the impact of computing on society.

**Computing** Any goal-oriented activity requiring, benefiting from, or creating algorithmic processes. [MDESE, 2016]

**Computing Device** A physical device that uses hardware and software to receive, process, and output information. Computers, mobile phones, and computer chips inside appliances are all examples of computing devices. [CSTA, 2016]

**Computing System** A collection of one or more computers or computing devices, together with their hardware and software, integrated for the purpose of accomplishing shared tasks. Although a computing system can be limited to a single computer or computing device, it more commonly refers to a collection of multiple connected computers, computing devices, and hardware. [CSTA, 2016]

**Conditional** A feature of a programming language that performs different computations or actions depending on whether a programmer-specified Boolean condition evaluates to true or false. [MDESE, 2016] (A conditional could refer to a conditional statement, conditional expression, or conditional construct.)

**Configuration** ([process](#)): Defining the options that are provided when installing or modifying hardware and software or the process of creating the configuration (product). [TechTarget] ([product](#)): The specific hardware and software details that tell exactly what the system is made up of, especially in terms of devices attached, capacity, or capability. [TechTarget]

**Connection** A physical or wireless attachment between multiple computing systems, computers, or computing devices. [CSTA]

**Connectivity** A program's or device's ability to link with other programs and devices. [Webopedia]

**Control** ([in general](#)) The power to direct the course of actions. ([in programming](#)) The use of elements of programming code to direct which actions take place and the order in which they take place. [CSTA, 2016]

**Control Structure** A programming (code) structure that implements control. Conditionals and loops are examples of control structures. [CSTA, 2016]

**Culture** A human institution manifested in the learned behavior of people, including their specific belief systems, language(s), social relations, technologies, institutions, organizations, and systems for using and developing resources. [NCSS, 2013]

**Cultural Practices** The displays and behaviors of a culture.

**Cybersecurity** The protection against access to, or alteration of, computing resources through the use of technology, processes, and training. [TechTarget]

**Data** Information that is collected and used for reference or analysis. Data can be digital or nondigital and can be in many forms, including numbers, text, show of hands, images, sounds, or video. [CAS, 2013; Tech Terms]

**Data Structure** A particular way to store and organize data within a computer program to suit a specific purpose so that it can be accessed and worked with in appropriate ways. [TechTarget]

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**Data Type** A classification of data that is distinguished by its attributes and the types of operations that can be performed on it. Some common data types are integer, string, Boolean (true or false), and floating-point. [CSTA, 2016]

**Debugging** The process of finding and correcting errors (bugs) in programs. [MDESE, 2016]

**Decompose** To break down into components. [MDESE, 2016]

**Decomposition** Breaking down a problem or system into components. [MDESE, 2016]

**Device** A unit of physical hardware that provides one or more computing functions within a computing system. It can provide input to the computer, accept output, or both. [Techopedia]

**Document / Documentation** written text or illustration that accompanies computer software or is embedded in the source code. It either explains how it operates or how to use it, and may mean different things to people in different roles [Wikipedia]

**Digital** A characteristic of electronic technology that uses discrete values, generally 0 and 1, to generate, store, and process data. [Techopedia]

**Digital Citizenship** The norms of appropriate, responsible behavior with regard to the use of technology. [MDESE, 2016]

**Efficiency** A measure of the amount of resources an algorithm uses to find an answer. It is usually expressed in terms of the theoretical computations, the memory used, the number of messages passed, the number of disk accesses, etc. [NIST/DADS]

**Encapsulation** The technique of combining data and the procedures that act on it to create a type. [FOLDOC]

**Encryption** The conversion of electronic data into another form, called ciphertext, which cannot be easily understood by anyone except authorized parties. [TechTarget]

**End User (or User)** A person for whom a hardware or software product is designed (as distinguished from the developers). [TechTarget]

**Event** Any identifiable occurrence that has significance for system hardware or software. User-generated events include keystrokes and mouse clicks; system-generated events include program loading and errors. [TechTarget]

**Event Handler** A procedure that specifies what should happen when a specific event occurs. [CSTA, 2016]

**Execute** To carry out (or “run”) an instruction or set of instructions (program, app, etc.). [FOLDOC]

**Execution** The process of executing an instruction or set of instructions. [FOLDOC]

**Hardware** The physical components that make up a computing system, computer, or computing device. [MDESE, 2016]

**Hierarchy** An organizational structure in which items are ranked according to levels of importance. [TechTarget]

**Human-Computer Interaction (HCI)** The study of how people interact with computers and to what extent computing systems are or are not developed for successful interaction with human beings. [TechTarget]

**Identifier** The user-defined, unique name of a program element (such as a variable or procedure) in code. An identifier name should indicate the meaning and usage of the element being named. [Techopedia]

**Implementation** The process of expressing the design of a solution in a programming language (code) that can be made to run on a computing device.

**Inference** A conclusion reached on the basis of evidence and reasoning. [Oxford]

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**Input** (verb): The signals or instructions sent to a computer. [Techopedia]; (noun): A device or component that allows information to be given to a computer [code.org]

**Integrity** The overall completeness, accuracy, and consistency of data. [Techopedia]

**Internet** The global collection of computer networks and their connections, all using shared protocols to communicate. [CAS, 2013]

**Interactive** Involving the repeating of a process with the aim of approaching a desired goal, target, or result. [MDESE, 2016]

**Loop** A programming structure that repeats a sequence of instructions as long as a specific condition is true. [Tech Terms]

**Memory** Temporary storage used by computing devices. [MDESE, 2016]

**Model** A representation of some part of a problem or a system. [MDESE, 2016] **Note:** This definition differs from that used in science.

**Modularity** The characteristic of a software/web application that has been divided (decomposed) into smaller modules. An application might have several procedures that are called from inside its main procedure. Existing procedures could be reused by recombining them in a new application. [Techopedia]

**Module** A software component or part of a program that contains one or more procedures. One or more independently developed modules make up a program. [Techopedia]

**Network** A group of computing devices (personal computers, phones, servers, switches, routers, etc.) connected by cables or wireless media for the exchange of information and resources. [CSTA, 2016]

**Operation** An action, resulting from a single instruction, that changes the state of data. [Free Dictionary]

**Output** Any device or component that receives information from a computer [Code.org]

**Packet** The unit of data sent over a network. [Tech Terms]

**Password** A password is a string of characters used to verify the identity of a user during the authentication process. Password is an example of one authentication factor. [TechTarget]

**Parameter** A special kind of variable used in a procedure to refer to one of the pieces of data received as input by the procedure. [MDESE, 2016]

**Piracy** The illegal copying, distribution, or use of software. [TechTarget]

**Procedure** An independent code module that fulfills some concrete task and is referenced within a larger body of program code. The fundamental role of a procedure is to offer a single point of reference for some small goal or task that the developer or programmer can trigger by invoking the procedure itself. [Techopedia] In this framework, procedure is used as a general term that may refer to an actual procedure or a method, function, or module of any other name by which modules are known in other programming languages.

**Process** A series of actions or steps taken to achieve a particular outcome. [Oxford]

**Program** (noun): A set of instructions that the computer executes to achieve a particular objective. [MDESE, 2016]; (verb): To produce a program by programming.

**Programming** The craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them. [MDESE, 2016]

**Protocol** The special set of rules used by endpoints in a telecommunication connection when they communicate. Protocols specify interactions between the communicating entities. [TechTarget]

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**Prototype** A prototype is an early sample, model, or release of a product built to test a concept or process or to act as a thing to be replicated or learned from. [Wikipedia]

**Redundancy** A system design in which a component is duplicated, so if it fails, there will be a backup. [TechTarget]

**Reliability** Consistently produces the same results, preferably meeting or exceeding its requirements. [FOLDOC]

**Remix** The process of creating something new from something old. Originally a process that involved music, remixing involves creating a new version of a program by recombining and modifying parts of existing programs, and often adding new pieces, to form new solutions. [Kafai & Burke, 2014]

**Router** A device or software that determines the path that data packets travel from source to destination. [TechTarget]

**Scalability** The capability of a network to handle a growing amount of work or its potential to be enlarged to accommodate that growth. [Wikipedia]

**Simulate** To imitate the operation of a real-world process or system.

**Simulation** Imitation of the operation of a real-world process or system. [MDESE, 2016]

**Software** Programs that run on a computing system, computer, or other computing device.

**Storage** (noun): A place, usually a device, into which data can be entered, in which the data can be held, and from which the data can be retrieved at a later time. [FOLDOC]  
storage (verb): A process through which digital data is saved within a data storage device by means of computing technology. Storage is a mechanism that enables a computer to retain data, either temporarily or permanently. [Techopedia]

**String** A sequence of letters, numbers, and/or other symbols. A string might represent, for example, a name, address, or song title. Some functions commonly associated with strings are length, concatenation, and substring. [TechTarget]

**Structure** A general term used in the framework to discuss the concept of encapsulation without specifying a particular programming methodology.

**Switch** A high-speed device that receives incoming data packets and redirects them to their destination on a local area network (LAN). [Techopedia]

**System** A collection of elements or components that work together for a common purpose. [TechTarget] See also the definition for computing system.

**Test Case** A set of conditions or variables under which a tester will determine whether the system being tested satisfies requirements or works correctly. [STF]

**Topology** The physical and logical configuration of a network; the arrangement of a network, including its nodes and connecting links. A logical topology is the way devices appear connected to the user. A physical topology is the way they are actually interconnected with wires and cables. [PCMag]

**Troubleshooting** A systematic approach to problem solving that is often used to find and resolve a problem, error, or fault within software or a computing system. [Techopedia, TechTarget]

**Variable** A symbolic name that is used to keep track of a value that can change while a program is running. Variables are not just used for numbers; they can also hold text, including whole sentences (strings) or logical values (true or false). A variable has a data type and is associated with a data storage location; its value is normally changed during the course of program execution. [CAS, 2013; Techopedia] Note: This definition differs from that used in math.