

Also see the glossary page on Mark Kelly's VCE IT site: <http://vceit.com/wp/vce-computing-glossary-2016-2019/>

Glossary from the VCE Computing Study Design 2016–2019 (pp 11–13)		Comments and resources
Term	Definition	
Application architecture (SD 3-4 only)	Application architecture is the process of identifying the components, and their interrelationships, of a structured (software) solution that meets all of the technical and operational requirements, while optimising common quality attributes such as performance, security and manageability. There are styles of application architecture such as client-server, peer-to-peer, rich client and service oriented	
Computational thinking	Computational thinking is a process of recognising aspects of computation in the world and being able to think logically, algorithmically, recursively and abstractly. It is about systematic problem solving in light of the capabilities of digital systems. It typically involves thinking abstractly, defining problems through decomposition, documenting steps and decisions through algorithms, transforming algorithms through the use of programming languages and software that supports automation, and evaluating the resulting digital solutions.	Computational thinking is one of those terms that has been hard to nail down – but we will take VCAA's statement as gospel. Here's some other good definitions (also see refs within): Google's Exploring CT course ; Harvard's Scratch team ;
Data types	Data types are the particular forms that an item of data can take including numeric, character and Boolean, and are characterised by the kind of operations that can be performed on it. Depending on the software being used, these fundamental types can be divided into more specific types, for example integer and floating point are numeric types. More sophisticated types can be derived from them, for example a string of characters or a date type and their names may vary, such as text data type versus string data type.	In the VCAA courses (since they are not CS courses), there is no need to get into the details of the hardware implementation of these data types. However, the pros and cons of using different data structures should be discussed in the light of hardware as well as their applicability in different applications.
Design brief	A design brief is a statement that contains an <u>outline</u> of a situation, context, problem, need or an opportunity, and constraints or conditions under which a solution must be developed. It is sometimes important to create a solution that not only meets the current needs but has the capacity to meet future or changing needs. It provides a basis from which students can apply some or all of the stages of the problem-solving methodology when creating digital solutions.	

Design principles	Design principles are accepted characteristics that contribute to the functionality and appearance of solutions. In this study the principles related to functionality are usability, including robustness, flexibility and ease of use, and accessibility, including navigation and error tolerance. Design principles related to appearance are alignment, repetition, contrast, space and balance.	
Design thinking	Design thinking is a way of thinking critically and creatively to generate innovative ideas, evaluate them and precisely define the preferred solution so it can be created using a digital system. It involves a strong understanding of the needs of users and of ways of creating solutions that are more efficient or effective than existing ones. When designing, students use both convergent and divergent thinking skills: divergent thinking supports creativity and the generation of a range of ideas, and convergent thinking supports the selection of a preferred solution and the preparation of accurate and logical plans and instructions to digitally create the solution.	
Efficiency	Efficiency is a measure of how much time, cost and effort is applied to achieve intended results. Measures of efficiency in a solution could include the speed of processing, its functionality and the cost of file manipulation. Measures of efficiency in a network include its productivity, processing time, operational costs and level of automation.	
Effectiveness	Effectiveness is a measure of how well a solution, an information management strategy or a network work and whether each achieves its intended results. Measures of effectiveness in a solution include completeness, readability, attractiveness, clarity, accuracy, accessibility, timeliness, communication of message, relevance and usability. Measures of effectiveness of an information management strategy include integrity of data, security, ease of retrieval and currency of files. Measures of effective networks include reliability and maintainability.	See Mark Kelly's discussion about Correctness vs Accuracy
Information architecture	Information architecture is the ways in which content (information and objects) is grouped, labelled and located in online solutions. This includes the structuring or grouping of sets of information and determining navigation pathways. Effective and efficient information architecture enables users to intuitively and confidently locate information they require. Key principles that govern information architecture include disclosure, classifications, navigation, growth, choices.	

Information system	An information system is the combination of digital hardware and software components (digital systems), data, processes and people that interact to create, control and communicate ideas and digital solutions.	Not just the software or hardware, it's the whole shebang!
Legal requirements	There are legal requirements with which individuals and organisations are expected to comply, with respect to the ownership and privacy of information, and freedom of expression. For the purposes of this study the key provisions of the following acts are relevant: Privacy Act 1988 , including Privacy Amendment (Enhancing Privacy Protection) Act 2012 , Privacy and Data Protection Act 2014 , Health Records Act 2001 , Copyright Act 1968 , Charter of Human Rights and Responsibilities Act 2006 (VIC) (sections 13, 14 and 15), and the Spam Act 2003 (Part 1.3, Simplified outline)	OAIC Privacy Fact Sheet 17 (oaic.gov.au) Health Records Act Info Sheets (health.vic.gov.au) Copyright Law Overview (creativecommons.org) CPDP Privacy and Data Protection Act 2014: FAQs CPDP Privacy by Design Factsheet (cpdp.vic.gov.au) Charter of Human Rights & Resp Fact Sheet (vic.gov.au) Key Elements of the Spam Act (acma.gov.au)
Normalisation (Info 3-4 only)	Normalisation is the process of ensuring that a database conforms to a set of normal forms. Its primary purpose is to remove redundancies that create threats to data integrity such as update anomalies. It also plays a role in making querying more efficient. The first three normal forms should be realised: First normal form (1NF): Where a table has no repeating groups, that is, no single row has a column containing more than one value or more than one column with the same kind of value, for example telephone1 and telephone2. Second normal form (2NF): Where a table is in 1NF and any column that is not part of the primary key is dependent on the whole primary key. Third normal form (3NF): Where a table is in 2NF and any column that is not part of the primary key is dependent only on the primary key and no other column. A table's primary key is the smallest set of columns needed to uniquely identify a row in the table.	
Physical security controls	Physical security controls are the equipment and procedures used to assist in the protection of information systems and the files created, communicated and stored by individuals and organisations. Equipment controls include zoned security strategies, barrier techniques and biometrics. Physical procedures include backing up, shredding confidential documents and checking authorisation credentials. Also see Software security controls.	

Security threats	Security threats are the actions, devices and events that threaten the integrity and security of data and information stored within, and communicated between, information systems. The threats can be accidental, such as losing a portable storage device containing files; deliberate, such as malware, phishing; and events-based such as a power surge.	
Software requirements specification	Software requirements specification is a comprehensive description of the intended purpose and environment for purpose-designed software solutions. It documents the key activities associated with the analysing stage of the problem-solving methodology. Software requirements specifications (SRS) fulfil the purposes of breaking down a problem into component parts, providing input to the design stage and serving as a reference point for further stages of the problem-solving methodology .	
Software security controls	Software security controls are the software and procedures used to assist in the protection of information systems and the files created, communicated and stored by individuals and organisations. These include user names and passwords, access logs and audit trails, access restrictions, encryption, firewalls and system protection, and security protocols such as Transport Layer Security (TLS) and Secure Sockets Layer (SSL).	
Solution (digital)	A digital solution is the method of creating required digital output through the application of digital systems and processes that transforms data and information. Depending on the chosen context, the output of a solution may take forms such as an information product like a website, instructions to control a game, an abstract piece of art or a soundscape. Solutions can be interactive or non-interactive, online (internet connected) or not, multimodal or not. An example of an interactive online solution is a website where users can input variable data. An example of a non-interactive, non-internet connected solution is an infographic stored on a hard drive. An example of a multimodal solution is a website that combines multiple types of data, for example text, sound and images to communicate an idea and information.	
Systems thinking	Systems thinking is a way of thinking that takes a holistic approach to identifying and solving problems. It involves analysing the interactions and interrelationships between individual information system components (data, processes, people and digital systems), to identify how they influence the functioning of the entire system.	

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