

Glossary

absolute addressing Cell references in a formula using absolute addressing remain the same as you copy from one cell to another

abstraction Removes detail by reducing the problem to a general principle or main idea. The third stage in computational thinking

actuator Output devices, such as motors that convert signals into movement

algorithm Step-by-step procedure to solve a problem

algorithm design Devising a series of ordered steps to solve a problem and refining these for automation by a computer. The fourth and final stage in computational thinking

analog data Data represented by values, which vary continuously, e.g. time, live music, traditional photographs

ASCII A numeric code used to represent 128 specific characters in computer systems, including 0–9, A–Z and a–z

binary A base 2 number system typically using the two symbols 0 and 1 to represent switches as being either off or on. This system is particularly suited to digital computers contain switches in the form of integrated circuits comprising many transistor switches

bit A binary digit. The smallest digital data item a computer can process. A binary digit can have only two values, most often represented by either a 0 or 1

bit depth Number of bits available to represent a pixel's colour (also known as colour depth)

bitmap The result of mapping items to bits (binary digits 0 and 1) and most often referring to graphics or images (but can be other forms of media). Bitmapped images (also known as paint or raster images) are ones in which each 'dot', or pixel, is represented by a number mapped to its colour

branching A choice between two or more possible paths in an algorithm, depending on the response to a given condition. Also known as selection

byte Package of 8 bits

cell The intersection of a row and a column in a spreadsheet, identified using a letter and a number, e.g. A3

central processing unit (CPU) Main chip in a computer, performing data processing and control

column A vertical set of data items in a spreadsheet, identified using letters

computational thinking Problem-solving method involving breaking one big problem into smaller ones, recognising patterns, isolating and representing a main idea and designing algorithms. See also decomposition, pattern recognition, abstraction and algorithm design

control structures Basic building blocks of a computer program. The three control structures are sequence, branching and iteration

data Information in its unorganised or raw form; the representation of information using numerical codes

database An organised collection of data comprising files, records and fields. Database structures allow ease of access, management and searching of data

data type Category of data defining its possible values and its method of storage and processing by a computer, e.g. text, graphics, audio

decomposition Breaking down a complex problem into parts to allow it to be more easily understood and solved. The first stage in computational thinking

defining Stage of the design process in which the project is investigated, understood, described and broken down into smaller tasks

design process Defining, designing, implementing and evaluating by collaborating and managing to create a digital solution

designing Stage of the design process in which the project ideas are generated, prototypes developed, algorithms prepared and user interfaces planned

desk checking Method used by programmers to check the logic of an algorithm to reduce the likelihood of errors occurring. This may be done on paper, using a diagram, or mentally

digital data Data represented by fixed values rather than a continuous spectrum of values, e.g. integers, alphabets

digital solution Final version of a digital or information system designed to fulfill a given need

digital system A collection of hardware and software components. A computer is part of a digital system. Digital systems transform data and can be connected to form networks

Domain Name Server (DNS) Converts written URL (such as www.google.com.au) into correct numerical IP address (such as 216.58.212.99)

Ethernet Protocol for linking computers, sending data and checking for collisions

evaluating Stage of the design process in which the project is measured against given criteria such as user needs and stated requirements

field Discrete piece of stored data (for example, song title, song artist or bank account number)

file format Particular structure used to store various data files, e.g. jpeg, tif, gif are different file formats for storing bitmap images

flowchart Pictorial method for describing a procedure or algorithm

function Part of a computer program that performs a procedure or routine. May return a value or merely perform an operation

general-purpose programming languages Programming language able to be used for many applications and purposes. Often therefore a text-based rather than a visual programming language

Hertz (Hz) Standard unit of measurement for frequency equal to one cycle per second

hub Networking device to connect devices and that broadcasts data to all connected devices

implementing Stage of the design process in which the project is built

information Data that has been given meaning by people; data given context and organisation

information system Digital systems combined with data, processes and people to collect, organise and communicate information

input Data put into a digital system for processing via an input device such as a keyboard or sensor

iteration A set of instructions in computer programming that repeats until a change of test condition ends the process. For example, the word WHILE might be followed by a test that asks if a counter is less than some value. This test can act as a gatekeeper and only allow the program to enter the loop when the test is true. As the counter value can change the loop can eventually be escaped

MAC address Unique identifier assigned to hardware network devices

network Computers or other devices connected to share data

output Data produced by a digital system and typically delivered to an output device such as a printer, monitor or actuator

packet switching Splits messages into small 'packets', transmitting each using the best available route (using routers) and assembling them at the other end in correct order

pattern recognition Finding patterns in data, making sense of data. The second stage in computational thinking

primary key A primary key is a field in a table that is unique. It can be used to uniquely identify every record and is often a serial number

processing Changing data from one form to another

project management Overall oversight and control of planning, monitoring and execution of a project. Critical features of project management are successfully achieving the stated outcomes within budget and within time

prototype Agreed set of rules controlling interaction between systems or individuals. In information systems, networking and data communication protocols determine agreed ways in which data is packaged, transmitted and exchanged

RAM Random-access memory. Primary volatile (non-permanent) data storage device

record Values in collection of fields associated with an entity (for example, a song, a bank transaction)

relative addressing Cell references in a formula using relative addressing change as you copy it from one cell to another

robot Machine able to perform tasks automatically

robotics The science of the use and study of robots

ROM Read-only memory. Primary non-volatile (permanent) data storage device

router Forwards data to connected router or ultimate destination by determining best route using stored tables based on MAC (Ethernet) addresses

row A horizontal set of data items in a spreadsheet, identified using numbers

sample rate Describes the number of samples taken each second when digitising analog data

sensor Input device that accepts data from the environment

sequence Set of instructions in computer programming which follow one another in order. Each instruction must be completed before the next one is executed

spreadsheet An application using rows, columns and formulas to organise and store data requiring calculation

structured English Simplified English statements using keywords to unambiguously describe the steps of an algorithm and to assist later coding in a computer language. Also known as pseudocode

switch Networking device that connects devices and allows simultaneous transmission by forwarding data only to specific destinations

syntax Rules or grammar of a programming language

Transmission Control Protocol/Internet Protocol (TCP/IP) Basic communication protocols used by the Internet

Unicode A method for digital encoding text from most of the world's writing systems. Includes ASCII as a subset

validation Checks for the correctness and meaningfulness of data input to the system

variable A storage location reserved by a program and given a name (called an identifier), which contains data (called a value)

vector Images represented by geometric descriptions such as points, lines, curves and shapes. Vector images are also known as draw images

visual programming language Program code represented as graphical blocks in place of text. For example, variously shaped blocks in jigsaw-like shapes that can only be joined in given ways, resulting in syntax error-free program code