# Digital Technologies glossary

## A

abstraction

The process of reducing complexity to define a main idea, problem or solution. This is achieved by hiding details to focus on a manageable number of aspects.

advanced feature

A function or peripheral that uses the specialised capabilities of digital tools (hardware and software), for example using a style sheet to automate formatting or a drone to capture field data.

AI (artificial intelligence)

A field in computer science that enables computers to perform tasks in which they are able to be trained and learn in order to solve problems. It also involves machine learning and deep learning to enable tasks to be performed in less time and for the automation of repetitive tasks.

AI model

An algorithm that has been trained on a collection of data or data sets to recognise patterns in the data to make predictions or decisions. This is all completed without human intervention.

AI tool

A software tool that uses artificial intelligence to automate specific tasks by analysing data and making decisions.

AI-generated content

New content created (e.g. text, images and video) by an application involving algorithms that use machine learning techniques to analyse and recognise patterns in data.

algorithm

A description of the steps and decisions required to solve a problem. An algorithm often has iterative (repetitive) processes. An algorithm can be represented as a flowchart or pseudocode. For example, to find the largest number in a list of positive numbers:

1. Note the first number as the largest.
2. Look through the remaining numbers, in turn, and if a number is larger than the number found in step 1, note it as the largest.
3. Repeat this process until complete. The last noted number is the largest in the list.

alt tag

A description in text that includes the specific information included in an image. The description is displayed when mousing over the image.

American Standard Code for Information Interchange (ASCII)

An early encoding system (that was later extended) used to represent characters, including 0–9 and a–z, in computer systems. For example, capital letter P is represented by the number 80 in ASCII, which in turn is represented as 01010000 in binary.

See also: data representation

app

See: application

application (app)

Software originally designed to run on mobile devices and to be quite targeted in its purpose; an app can now be considerably broader in its purpose.

AR

See: augmented reality

artificial intelligence

See: AI

ASCII

See: American Standard Code for Information Interchange

attribute

A characteristic or property that identifies and describes an entity within a database. For example, an attribute of the entity ‘person’ could be ‘name’ or ‘date of birth’.

augmented reality (AR)

A display over an existing real-world environment with computer-generated enhancements and limited interaction.

Australian Privacy Principles

A component of the Privacy Act 1988 that applies to organisations or agencies that the Privacy Act covers. The 13 Australian Privacy Principles govern the standards, rights and obligations involving:

* collection, use and disclosure of personal information
* integrity and correction of personal information
* rights of an individual to access their personal information.

autocomplete

A feature in a software tool to enhance user efficiency by making predictions and suggestions based on the word or phrase that the user types.

automation

The application of technology, such as a digital solution, which replaces a manual process that is typically repetitive (e.g. chatbot automation or a garage opener app).

## B

binary

Referring to a base 2 number system that uses 2 states or permissible values to represent data, such as the on and off positions of a light switch or the transistors in a computer silicon chip, which can be in either the electrical state of ON or OFF.

Binary data is typically represented as a series of single digits referred to as binary digits (or bits), each having a value of either 0 or 1.

bitmap

A representation in which each item corresponds to one or more bits or pixels of information, especially the information used to control the display of a computer screen.

boundary condition

A range of values that are accepted between a minimum value and a maximum value. For example, a range check in an algorithm would look at ranges of test scores entered to determine the grade of an entered score. A test score between 90 and 100 could be A+, and between 80 and 89 could be A, etc.

boundary test

A testing technique that recognises that a computer program often behaves unexpectedly at the edges of an input range. For example, if the requirements for a computer program were to only accept a numeric input for a valid age field of 18 to 65 years, then boundary testing would involve using age inputs that are below the lower boundary (<18), at the lower boundary (18), between 18 and 65, at the upper boundary (65) and above the boundary (>65), to ensure the program produces the correct results.

branching (decision)

A control structure that involves making a ‘yes’ (true) or ‘no’ (false) decision based on defined conditions and the data provided, and determining the next step (e.g. ‘IF it is raining take a raincoat, ELSE take a hat’).



## C

Cascading Style Sheets (CSS)

A style sheet language that renders the presentation of a document developed using HTML or XML. It includes the colour, font, size of text, positioning of elements in a document, images and background colours.

central processing unit (CPU)

The main processor in a computer, which executes instructions that run the device’s operating system and software applications.

cloud storage

A system that enables data and files to be stored and accessed on the internet with a third-party provider. The third-party provider manages and secures the data stored.

comparison operators (branching)

Operators (such as <, <=, > or >=) used in an algorithmic expression to compare values, returning ‘true’ or ‘false’ to make decisions (e.g. ‘IF a < b THEN do action 1 ELSE do action 2’).

components

The hardware and software parts of a digital system that perform specific functions and are needed for a system to operate. The components of a digital system may be a central processing unit (CPU); memory chips and a hard disk (for storing data and instructions); keyboard, mouse, camera and microphone (to input instructions and data for the CPU); screen, printer and speakers (to output data); USB port; and ethernet cards (to communicate with other systems or components).



compression

The process of encoding information using fewer bits (i.e. 0 or 1) than the original representation to reduce file size – typically using mathematical formulas to remove repeated data, combine related data or simplify data (e.g. a line segment can be represented by the positions of the endpoints instead of every dot on it). Common examples include:

* ZIP files, which can contain one or more files or folders that have been compressed
* JPEG files in digital photography, produced by processing the complete (lossless) data from the camera’s sensor by compressing (looking for redundant/unnecessary data) into a smaller file size
* MP3 files for audio, which compress the original audio source to reduce the file size significantly but still sound like an exact copy of the original.

computational thinking

A way of thinking comprising the components of decomposition, pattern recognition, abstraction, modelling and algorithms, which may be used to create digital solutions.

concept map

A visual diagram that represents relationships between concepts and ideas. It can assist in the design of user interfaces and experiences.

constraints

Conditions or limitations (e.g. economic, technical, social and legal) that must be considered when designing a digital solution.

control structures

The decision-making building blocks of an algorithm that determine or control the sequence or order in which statements are executed. The 3 control structures are sequence, branching (selection) and iteration (repetition).

convention

A rule or preferred standard about how content is to be created, located and communicated (e.g. using agreed formatting styles for headings and charts, and a common file-naming system).

Country

The physical environment that a particular Aboriginal and Torres Strait Islander Peoples’ group has a relationship with. Referring to this territory as ‘Country’, rather than land, indicates a reciprocal and deep relationship and one where Country both owns and is owned by the People. The concept of Country includes lands, waters and sky.

CPU

See: central processing unit

cryptography

An algorithm for securing data that involves the encryption of data. Symmetric encryption uses a single key to encrypt and decrypt data. Asymmetric encryption uses 2 different keys to encrypt and decrypt data: a public key and a private key. Data is encrypted with the public key and decrypted with the private key.

CSS

See: Cascading Style Sheets

cyber attack

An unauthorised attempt to access a digital system. This can involve the theft or exposure of an individual’s or an organisation’s data. Data access can be disabled, and data can be altered or destroyed. Examples of cyber attacks include malware, phishing and denial-of-service attacks.

cyber security

Technologies, processes and practices taken to protect digital systems and networks from theft or damage to their hardware, software, data or to the disruption of services.

cyber security threat

A malicious act designed to damage or steal stored and transmitted data, or to disrupt networked digital systems (e.g. distributed denial-of-service attacks, phishing or ransomware).

cybercriminal

An individual that commits a cybercrime using computer systems, networks or online devices. Examples of cybercriminal activities are the stealing of personal data, details of credit card transactions and intellectual property.

## D

data

The discrete representation of information, done using characters (e.g. letters, numbers and symbols), images, sounds and/or instructions, that when represented by number codes can be manipulated, stored and communicated by digital systems. Data is processed into information. ‘Data’ is also a general term for a set of observations or measurements collected during an investigation. Primary data is collected by the user; secondary data has been collected by others.

data acquisition

Ways of collecting and accessing data from a range of sources (e.g. collection by counting objects, surveys and tables).

data compression

The process of encoding data; using less data than the original representation to reduce size.

data representation

How data is represented and structured symbolically for storage and communication, by people and digital systems (e.g. people read symbols, and digital systems use binary to represent letters).

data visualisation

The process of presenting data in a summarised visual form to help with communication and analysis (e.g. sorting and presenting data as a line chart showing spending trends to help make financial decisions).

database

A collection of data organised by records and fields that can be easily stored, accessed, managed and updated. Each discrete piece of data to be stored is represented by a field (e.g. a song title, song artist or bank account number and date of transaction), and the values in the fields (e.g. a song or a bank transaction) associated with an entity are a record. Interaction with the database usually takes place through a user interface designed specifically for the structure and use of the data stored in it.

debugging

A systematic process that involves finding existing errors in a program, fixing them and validating if the changes made are correct.

decomposition

The process of breaking down a problem into simpler, less complex components that allow the problem to be better understood. For example, to create an interactive story the problem could be decomposed to a list of characters and their characteristics (e.g. clothing), the actions of the characters, the backdrops and the sequence of scenes with reference to the characters, actions and backdrops for each scene. Iterative questioning helps to understand a problem and reveal possible solutions.

decryption

The process of converting encrypted data into a readable format. Unencrypted data is referred to as plaintext and encrypted data is referred to as cyphertext.

design thinking

An approach that helps people to identify with and understand problems, needs and opportunities; generate, iterate and represent innovative, user-centred ideas; and analyse and evaluate those ideas.

digital footprint

The total set of traceable data left behind by a person using digital tools. A person’s digital footprint includes active data (e.g. posts and emails) and passive data (e.g. browser history). Location data can also be included.

digital identity

The relationship between an individual and their digital presence. Digital identity can also be referred to as online identity. Information about an individual can be determined by their digital identity. This could include usernames, passwords, names, birthdays, images and other personal information such as location data.

digital solution

The result (or output) of transforming data into information using digital systems, skills, techniques and processes to meet a problem, need or opportunity.

digital system

A system that processes data in binary, made up of hardware, controlled by software, and connected to form networks (e.g. a laptop and a networked banking system).

digital tools

Digital hardware, software and resources used to develop and communicate learning, ideas and information.

DNS

See: domain name system

domain name system (DNS)

A system that enables domain names to be converted into IP addresses. This allows web browsers to link to websites so that users can access content on webpages.

## E

effectiveness

A measure of how well digital tools are used to create, locate, communicate, share and plan tasks. Measures include accessibility, accuracy, attractiveness, clarity, communication of message, completeness, maintainability, readability, relevance, timeliness and usability.

encryption

A cryptographic process that protects data stored and transmitted by digital systems. It involves encoding data so that the data can only be decoded by the intended recipient using a secret key.

entities

Key elements of a data modelling technique that represents the entities (e.g. employees and their department) and their relationships (e.g. one department has many employees).

ethical obligations

Generally accepted rules or behaviours when undertaking research and collecting and using information from primary and secondary sources. Examples are confidentiality, informed consent, citation and integrity of data.

Extensible Markup Language (XML)

A markup language and file format that follows a set of rules for defining, storing and sharing data.

## F

features

Distinctive properties, characteristics, functions and qualities of an object, material, living thing, system or event that affect how it performs or operates.

flowchart

A diagrammatic representation of an algorithm. Steps and decisions are represented by specific-shaped symbols, and arrows indicate sequence.

functional requirements

A set of specifications or functions that describe what a digital solution must provide. An example is the required input, output and functions of a solution, processing speed/response times, a storage capacity or a security function.

## G

general-purpose programming language

A text-based programming language designed to solve a wide range of programming problems (rather than a language designed for solving domain-specific problems or for pedagogical reasons). It includes procedural, functional and object-oriented programming languages, but does not include declarative programming languages such as Prolog or SQL. It includes scripting and/or dynamically typed languages such as Python and Ruby. Examples are C#, C++, Java, JavaScript, Python, Ruby and Visual Basic.

generative AI

An application that uses machine language to identify patterns and structure in learning. These applications can generate content such as text (including programming languages), images and other media, including video.

## H

hardware

Physical components of a digital system. Hardware comprises internal components (e.g. motherboard and CPU) and external peripherals (e.g. microphone and keyboard).

hardware specifications

Technical descriptions of the capabilities of hardware components (e.g. descriptions of storage memory size, in gigabytes, and speed of the central processing unit, in gigahertz).

hashing

A cryptographic process for keeping sensitive data safe. It is used to validate the authenticity of data, such as passwords. It is the preferred method of storing passwords in a database and it is more secure than encryption because it is a one-way process, whereas encrypted data can always be decrypted.

heading hierarchy

A system of ordering or ranking that groups content into main headings and subheadings and helps with locating information. For example, a range of font sizes from large to small shows their relative importance.

HTML

See: HyperText Markup Language

HyperText Markup Language (HTML)

The standard markup language for content to be viewed in a web browser. It enables a webpage structure that uses elements and tags to allow inclusion of text, images and video.

## I

ideating

Generating and developing ideas as part of a process that follows a cycle from starting with a concept through to developing a design. Ideas can be expressed as text, images and drawings, and in verbal form.

information

Useful knowledge created from data that has been processed, organised or presented in a specific context, which carries logical meaning.

information systems

The combination of digital hardware and software components (digital systems), data, processes and people that interact to create, control and communicate information.

input

Data acquired from a user or digital system or sensor (e.g. a light sensor for a line-following robot) to which an algorithm or program can respond.

integer

A whole number, which could be a negative number (e.g. –4). It is sometimes defined as a number that can be written without a fractional component.

interactive

Involving communication between a user and a digital system, with the user able to change the behaviour, view or result by providing some input, often with the support of software. For example, a spreadsheet is an interactive tool that helps users draw conclusions and make predictions.

internal components

Hardware component inside a digital system for storing data (e.g. RAM), for processing data (e.g. CPU) and for connectivity purposes (e.g. motherboard).

See also: components

internet

A globally interconnected network of digital systems communicating using standardised internet protocols such as TCP/IP.

Internet of Things (IoT)

All digital devices that are used to connect and exchange data with other digital devices over the internet. These devices include sensors and software for processing data.

Internet Protocol (IP) address

A protocol that involves a set of rules for communicating over the internet, whether by sending an email, streaming a video or accessing a website.

IoT

See: Internet of Things

IP address

See: Internet Protocol address

iteration (repetition)

Iteration involves the repetition of a set of steps or instructions (processes) in an algorithm or program (e.g. a loop in a flowchart or a repeat block of FOR, WHILE statements).

## J

Joint Photographic Experts Group (JPEG)

An image file format that uses lossy compression to reduce image file sizes and maintain image quality.

JPEG

See: Joint Photographic Experts Group

## L

Likert scale

A rating system that measures responses within a survey. Usually it would include a 5-point rating system to include the following scale of responses: ‘strongly disagree’ (1), ‘disagree’ (2), ‘neither agree nor disagree’ (3), ‘agree’ (4) and ‘strongly agree’ (5).

logical operator

An operator or function to combine Boolean (true or false) values, including AND, OR and NOT (e.g. ‘the “x AND y” operation is only true if both x and y are true’).

lossless compression

Compression that reduces file sizes by removing repeated data. This data is not deleted.

lossy compression

A process of reducing file sizes by permanently deleting some of the original and redundant data within a file.

## M

machine learning

An artificial intelligence technique that uses data and algorithms to learn over time rather than through direct programming. It enables computers to use data to identify patterns and to make decisions without human intervention.

malware

An abbreviation for malicious software, malware is software used by cybercriminals to harm computer systems or networks. Malware is used to steal information, encrypt data for ransom and install software without the user’s knowledge. Common types of malware include ransomware, pharming, trojans and backdoors, keyloggers, viruses and worms, web shell malware and adware.

man-in-the-middle attack

A cyber security attack that allows an attacker to intercept a conversation or data transfer for malicious purposes. Attacks can involve stealing login details and personal data, and corrupting data.

markup

Tags (or annotations) created by a markup language such as HTML, XML or SVG that define the separate elements within a document. Markups tell a browser how a file should be arranged and displayed, and keep a history of changes.

mind mapping

A drawing technique used when brainstorming ideas as part of the ideation process. It involves visually organising ideas around a central point. This can help to identify patterns and organise features when designing user interfaces.

mixed reality (MR)

Technology that enables users to interact with a combination of physical and digital tools. Users can interact with one another in real time.

mock-up

A design tool that visualises a user interface to allow a preview of a final solution to share with stakeholders for feedback.

model

A visual or physical representation that describes, simplifies, clarifies or explains the workings, structure or relationships within an object, system or idea.

modelling

The process of making a visual or physical representation of something (e.g. creating a flowchart as a visual representation of an algorithm).

modular program

A program separated into individual, well-defined modules of code that perform related tasks. Each subdivided program or module performs one aspect of the required functionality of the solution.

Moving Picture Experts Group audio layer 3 (MP3)

An audio file format that uses lossy compression to reduce components of sound that cannot be heard by most humans. This can reduce large file sizes.

Moving Picture Experts Group audio layer 4 (MP4)

A multimedia video file format that stores audio, video, images and captions. It uses lossy compression to reduce file sizes. The large amount of compression makes MP4 suitable for streaming.

MP3

See: Moving Picture Experts Group audio layer 3

MP4

See: Moving Picture Experts Group audio layer 4

MR

See: mixed reality

multi-factor authentication

A security system that typically requires 2 or more authentication factors to identify a person for access purposes (e.g. a personal identification number, a swipe card and a biometric).

multidimensional data

An extension of two-dimensional tables (e.g. tables with rows and columns), such as a data cube, that allows businesses and other organisations to generate answers to problems faster and to identify patterns and trends that would otherwise remain undetected.

multimedia

Digital systems and peripheral devices that present text, graphics, video, animation and sound in an integrated way. Examples include interactive games, media-rich websites, electronic books (ebooks) and/or animated short films.

multiple alternatives (branching)

Algorithmic expressions that involve making multiple ‘yes’ or ‘no’ decisions based on defined conditions and the data provided.

## N

natural language interface

A user interface that enables a user to interact with a computer using natural language, for example using speech or text to query a database.

nested control structure

A control structure placed within other control structures (e.g. an IF, THEN, ELSE block placed within a FOR, NEXT loop).

networked digital systems

Digital systems connected via the internet or Bluetooth devices that allow data to be transmitted. The connection can be established with cables (wired) or without cables (wireless).

non-functional requirements

A set of quality attributes or characteristics that a solution should have (e.g. reliability, robustness, usability, portability and maintainability).

## O

object-oriented programming (OOP) language

A programming language that supports the object-oriented programming framework. Objects represent a combination of data (the attributes of an object) and the actions that can be performed on or with that data (the methods of the object). Examples of OOP languages are C++, Eiffel, Java, Python and Scala.

online repository

An online collection of documents that can be shared by individuals when collaborating on a task or project. The repository enables documents to be uploaded, viewed and edited by a group working in real time.

online safety

The practice of individuals protecting themselves and others from online harm and risks that might jeopardise their personal information or financial status, lead to unsafe communications or affect their mental health and wellbeing.

OOP language

See: object-oriented programming language

open source software

Software designed to make code publicly available. It is developed collaboratively and with community support to enable users to implement, distribute, modify and redistribute its source code.

outlier

A data point that appears to differ significantly from other data points in a set of data or in a trend. Due to variability or an error, an outlier may be excluded from analysis.

## P

packets

Data that is sent over networks, including the internet. Packets contain a header and a payload to enable the data to be reassembled when transmitted.

passphrase

A string of words that is used for authentication purposes to gain access to a digital system. The string needs to be memorable to the user but difficult for others to guess or determine.

pattern recognition

A data analysis method that can detect arrangements of characteristics of data (e.g. water consumption across the seasons).

performance

Measurements of the accuracy, speed and efficiency with which digital systems can carry out tasks. For example, a hard disk’s performance can be measured by how fast it transfers data.

peripheral

A digital component that can be connected to a digital system but is not essential to the system’s function (e.g. a printer, digital camera, keyboard, mouse, monitor, external hardware or speakers).

personal accounts

Accounts used on different platforms (websites and apps) for school and home use. For example, students can have personal accounts to gain access to music, gaming, sport and school resources.

phishing

The fraudulent practice of sending untargeted emails asking people to reveal sensitive data such as bank details, or encouraging people to open a malicious attachment or download malicious content.

pixel (picture element)

The smallest component that makes up a digital image or display such as a monitor. Pixels are used to represent the quality of the resolution of an image. The higher the number of pixels in an image, the better the image quality.

PNG

See: Portable Network Graphics

Portable Network Graphics (PNG)

A file format that uses lossless compression.

predictive model

A mathematical process using statistics to analyse data to determine patterns and trends to predict a future outcome.

privacy

The ability of an individual or group to control who can use or see information about themselves. Information privacy is related to how personal data and information are handled.

project

The set of activities undertaken by students to address specified content, involving understanding the nature of a problem, need or opportunity; creating, designing and producing a solution to the project task; and documenting the process. Project work has a benefit, purpose and use; a user or audience who can provide feedback on the success of the solution; limitations to work within; and a real-world technologies context influenced by social, ethical and environmental issues.

project management

Detailed proposals for managing projects so they can meet the requirements and constraints. For example, plans usually list and sequence tasks, and indicate the required timelines and resources.

project management tool

Software that supports the planning and tracking of projects. Project management tools provide visualisations of the workflow, timelines and resources involved in completing a project.

protocols

Generally accepted standards or rules that govern relationships between and within information systems, including processing and formatting data. For example, TCP/IP is an industry standard set of protocols that provides network communications and access to the internet.

prototype

A trial model used to test an idea or process and to inform further design development. Its purpose is to see if and how well a design works. It is tested by users, programmers and analysts.

pseudocode

Structured English language statements that describe the steps in an algorithm in a clear, unambiguous way. It can be easily translated into code using a programming language.

See also: structured English

## Q

QR code

See: quick response code

queries

Requests for data from a database, which can involve accessing one or more tables in a relational database. For example, the following SQL statement will return all rows of the database table ‘rainfall’ for those months when more than 50 mm of rain fell:

SELECT \* FROM rainfall WHERE amount > 50

quick response (QR) code

A 2D barcode that forms a matrix of black-and-white pixels, which form patterns that store information. The QR code is scanned by a digital device, which reads the pattern and presents information to the user.

## R

RAM

See: random access memory

random access memory (RAM)

Temporary storage on a computer to give quick access to a range of software applications, including games.

ransomware

A common type of malware that works by locking or encrypting files on a digital device so the user no longer has access to them. The cyber attacker uses the ransomware to demand a ransom. The ransom has to be paid before the user can access the files again.

RAW

An uncompressed image file produced by digital cameras or image scanners. A RAW image has high quality because it has not been processed or compressed.

real-world problem

A problem that exists; it is authentic and not hypothetical or fictional. It is related to an actual event or situation and can possibly be solved through computation.

relational database

A type of database that organises data into one or more tables (relations) of rows and columns. Relationships between tables can be created based on data (i.e. matching columns) that is common to each table. For example, the tables STUDENT and SUBJECT can be linked by the column SUBJECT\_ID.

report (database)

A visual presentation of data from queries. It summarises data stored in a database and is used to aid decision-making.

represent documents

Model webpages by showing their separate elements: content (text), structure (e.g. headings and paragraphs) and presentation (e.g. style).

requirement

A need related to a proposed digital solution that is commonly identified as either functional or non-functional. Functional requirements outline the set of specifications or functions that a digital solution must provide (e.g. required input, output and functions; processing speed/response times; a storage capacity or a security function). Non-functional requirements outline the set of quality attributes or characteristics that a solution should have (e.g. reliability, robustness, usability, portability and maintainability).

RGB (red, green and blue)

An additive colour model that uses 3 numbers to represent the ratio of red, green and blue in any individual colour.

ROT13

An encryption and decryption algorithm that involves a letter substitution method. This simple cipher works by substituting a particular letter with the 13th letter after it.

## S

Safety by Design

A set of principles that places user safety at the forefront of the design and development of online products and services. It acknowledges that digital spaces should be safe and inclusive, to protect those users most at risk of harmful content and abuse online, by encouraging a design ethos that invests in risk mitigation at the start of the design process.

Scalable Vector Graphics (SVG)

A file format that involves two-dimensional vector-based graphics using XML format.

security

The measures and controls that ensure the privacy, integrity and availability of the information processed and stored by a digital system. Examples are using passwords, encrypting data when transmitted and protecting physical assets.

sequence

A control structure that determines that each line of code (or statement) is followed, in order, to the end of a program, no matter what conditions are met.

Short Message Service (SMS)

A service that enables text to be sent as a message with up to 160 characters.

single-table (flat-file) database

A database structured as a single table with fields, records and files. A single-table database cannot represent relationships between entities.

SMS

See: Short Message Service

software

A set of programs, procedures and routines associated with the operation of a digital system.

SQL

See: Structured Query Language

storyboard

A design tool that consists of images and text displayed to demonstrate how content (a website, video, animation or data visualisation) may appear. It represents navigation on a page or scene by scene.

structured data

Data organised on the basis of a predefined model and formatted in a way that shows relationships, such as in fields, rows and columns. This structuring makes the data more easily searchable and analysable.

structured English

The use of the English language to describe the steps of an algorithmin clear, unambiguous statements that can be read from start to finish. The use of keywords (e.g. START, END, IF, UNTIL) provides a syntax similar to that of a programming language to assist with identifying logical steps necessary to properly describe the algorithm.

Here is a structured English description of a person’s decision about how to get to a destination based on the weather and the distance from their current location to their destination.

START

IF it is raining outside THEN

 Catch the bus

ELSE

 IF it is less than 2 km to the destination THEN

 Walk

 ELSE IF it is less than 10 km to the destination THEN

 Ride a bicycle

 ELSE

 Catch the bus

 ENDIF

ENDIF

END

The structured English description can easily be translated into code using a programming language and it accurately captures the logical elements that must be followed to answer the question.

Structured Query Language (SQL)

A programming language for manipulating and querying a relational database. SQL statements are used to perform tasks such as retrieving data via queries.

styling

Representing how a webpage is laid out, such as with heading styles and by placement of images.

supply chain vulnerability

Possible risks to a system involved in supplying a product or service (supply chain) to a consumer (e.g. a cyber attack resulting in malicious code that stops a system from functioning correctly).

sustainability

Economic, environmental and social decisions that impact on current design decisions without compromising future needs.

SVG

See: Scalable Vector Graphics

systems thinking

A way of thinking holistically about the interactions and interconnections of the components of a system, based on the belief that in isolation these component parts will behave differently. Systems thinkers consider the purpose, parts, order of events and feedback in a system.

## T

tablet

A flat, thin, mobile computer fitted with a touchscreen display and a rechargeable battery. Finger or stylus gestures replace the conventional computer mouse.

TCP

See: Transmission Control Protocol

test cases

A set of specifications or conditions and expected results used to systematically test if software solutions satisfy requirements.

TLS

See: Transport Layer Security

trace

The process of following an algorithm precisely to confirm that it produces the expected output for a given input. For example, a trace table allows for the manual checking of any logical errors.

training data

A large data set that is used to train a machine learning model to make predictions or decisions.

translation tool

A software tool that translates text in one spoken language to text in another spoken language.

Transmission Control Protocol (TCP)

A standard that enables data as packets to be shared between computing devices over a network using software applications.

Transport Layer Security (TLS)

A cryptographic protocol that is used to provide security over a network. TLS is used to encrypt the communication between web applications and servers. This includes email, messaging and web browsers.

trusted adult

A reliable person whom children feel comfortable talking to if they are upset or need help when engaged in online activities. They might include family members, carers and teachers.

types of data

General categories of data that can be transmitted between digital systems, such as text (e.g. text messages), numeric (e.g. sporting results), sound (e.g. streamed music) and images (e.g. photos).

## U

Unicode

An encoding system used to represent characters expressed in most of the world’s writing systems. Character representations consist of the letter U followed by a plus sign and a hexadecimal number. For example, the English upper-case letter E is represented by the code U+0045, whereas the French upper-case letter Ê (with a circumflex) is represented by the code U+00CA.

Uniform Resource Locator (URL)

A reference to an address of a resource on the internet. This is used to locate a file on the internet. The URL consists of the protocol and the domain name or IP address.

Universal Serial Bus (USB)

An industry standard that specifies the protocols for sharing data between devices, connecting and powering devices. Devices include PCs and laptops; peripherals such as keyboards, headsets and mouses; and storage devices such as flash drives and external hard drives.

URL

See: Uniform Resource Locator

USB

See: Universal Serial Bus

user experience

Aspects (e.g. navigation design, visual design, expertise of user and ergonomics) that affect how a user interacts with digital systems.

user interface

The characteristics of the boundary between users and a digital system**,** or the manner in which users interact with digital system components (hardware and software). For software, this usually comprises fields for text and number entry, mouse pointers, buttons and other graphical elements. For hardware, switches, dials and LEDs provide information about the interactions between a user and machine.

## V

validate

Check that input data, such as its accuracy, consistency, completeness and bias, is reasonable.

variable

A data value that can change depending on the conditions during the running of a program. A variable is the named, stored location where a data value is held.

virtual reality (VR)

A self-contained environment in which a user can immerse themselves in simulated surroundings. A range of sensors such as headsets and gloves are used to assist the user in the simulated environment. There are 3 types of VR: non-immersive, semi-immersive and fully immersive.

visual program/programming

Programming languages or environments in which a program is represented and created visually rather than as text. A common visual metaphor represents statements and control structures as blocks that can be composed to form programs, allowing programming without syntax errors. Examples of visual programming languages are Alice, GameMaker, Kodu, LEGO Mindstorms, MIT App Inventor and Scratch (Build Your Own Blocks and Snap).

A visual programming language is not the same as a programming language for creating visualisations or programs with user interfaces (e.g. Processing or Visual Basic).

visualise data

Present data in a summarised form to help with communication and analysis (e.g. sorting and presenting data as a chart showing spending trends to help make financial decisions).

VR

See: virtual reality

## W

WAV

See: Waveform Audio File Format

Waveform Audio File Format (WAV)

An audio file format for storing audio data. WAV files are usually uncompressed.

wired network

A digital system that uses cables (or wires) to establish connections to the internet and allows the transmission of data to other digital systems.

wireframe

A design tool that uses placeholders to represent the visual elements of a design. It is a visual layout that represents all the elements that will appear on a webpage.

wireless network

A digital system that can transmit data to, or receive data from, other systems without using cables (e.g. transmitted via microwave signals, radio frequencies, and Bluetooth and infrared devices). For example, home wi-fi uses radio frequencies to communicate between digital devices such as a laptop, printer and router.

workload

The computational requirements of a digital system (e.g. the effort required by a gaming server to meet storage, communication and processing demands).

## X

XML

See: Extensible Markup Language

XOR

A form of symmetric encryption in which the same cryptographic key is used to encrypt and decrypt a message.