Computing Progression Map

Wallace Fields Junior School Intent	In line with the 2014 National Curriculum for KS2 Computing, our aim is to to provide children with the necessary skills and knowledge to embark on all areas of society when faced with technology. The curriculum focuses on providing children with the skills required to use and apply computational thinking and creativity to understand and have an impact in our rapidly-changing, modern world. By the time the children leave Wallace Fields Junior School, we hope the children will have gained key knowledge and skills across the three main areas of the computing curriculum: computer science (programming, coding and understanding how digital systems work in practice), information technology (using computer systems to store, retrieve and send information; focus on presenting, designing and creating using a range of multimedia) and digital literacy (evaluating digital content for its reliability, using technology safely and respectfully, understanding the positive influence we can have on our digital footprint). The three strands are covered across all year groups in KS2 and ensure a solid grounding for future learning beyond for all children.

Compuational Thinking/ Computer Science	Information Technology	Digital Literacy/ E-Safety
Computer Science will introduce children to the understanding of how computers and networks work. It will also give all children the opportunity to learn about computer programming. <u>National Curriculum Requirements:</u> Children should know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. They should solve problems by decomposing them into smaller parts. Children should be able to use sequence, selection, and repetition in programs; work with variables and various forms of input and output. They should use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Children should understand computer networks, including the internet.	Information Technology is about the use of computers for functional purposes, such as collecting and presenting information, or using search technology. Children should know how compters can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration. <u>National Curriculum Requirements:</u> They should use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Children should select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Digital Literacy is about the safe and responsible use of technology, including recognising its' advantages for collaboration and communication. <u>National Curriculum Requirements:</u> Children should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. At Wallace Fields Junior School, all children are taught: **To use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact.** **All childen are taught:** • How to stay safe on the internet • To know what is right and wrong on the internet. • How to research safely online. • To know what to do if they are ever concerned about anything online.

KS1	To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. To create and debug simple programs. To use logical reasoning to predict the behaviour of simple programs To use technology purposefully to create, organise, store, manipulate and retrieve digital content To recognise common uses of information technology beyond school To use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	
National Curriculum/ End point for KS2	To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts To use sequence, selection, and repetition in programs; work with variables and various forms of input and output To use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs To understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content To select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	
Key Vocabulary	Algorithm Coding Communication technology Compile Computation logic/thinking Data Debug Hardware Information technology Input Internet	Logic Network Output Prodecure/function Program Programming language Repetition Sequence Software System Variable World Wide Web

Year 3	Unit	**Skills to be covered** **What should the children be able to do?**	**Knowledge to be covered** **What should the children know?**	**Resources**	**Key Vocabulary**
Information Technology	**Creating Media** Word Processing	• Touch typing to increase speed of input • To be able to insert an image onto a document. • To be confident with the 'shift' key and its' uses. • To know how to insert bullets and numbering to a document. • To be able to cut and paste information, text, pictures or diagrams from one place to another. • Creating a poster in word – *Internet safety – how to report concerns to someone in school*	• To know the features of good page design on Google documents. • To know how to open a Google document. • To know what an image is. • When we would need to 'cut' something. • When we would need to 'paste' something. • What it means to format a picture. • When to use the shift key. • To know what the shift key does.	Google Docs Google Classroom	Document Image Shift Insert File Copy Paste Information Text
	Computing Systems Digital Devices	• To create an 'input, process, output' machine. • To be able to identiy an input device. • To be able to identify a digital device. • To be able to identigy an output device. • To identify the different purposes a device can have. • Create a map of our school network.	• To know what a digital device is. • To know how a digital device works. • To know what an input and output is. • To know what parts make up a digital device. • To understand how digital devices help us. • To understand how digital devices are connected. • To know what a network is. • To know what the school's network looks like.	NCCE Google Docs Paintz.app	Input Process Output Program Digital Device Connection Network
Computer Science	**Coding** Scratch	• To move a sprite on Scratch. • To use motion blocks on Scratch. • To create a sequence of blocks. • To change the appearance of a sprite on Scratch. • To change the backgrop on Scratch. • To create a musial instrument on Scratch. • To use events on Scratch to make a sprite move. • To create a maze on Scratch.	• To know what a sprite is on Scratch. • To know what a backdrop is on Scratch. • To know that you can use blocks to represent commands. • To know what an algorithm is. • To know how simple algorithms work. • To implement an algorithm as a code on Scratch. • To be able to explain what different commands/ algorithms mean. • To know what a motion block is and what it does. • To know what a sound block is and what is does. • To know what happens if you apply the 'event' block. • To give a simple explanation of what 'debugging' means.	NCCE Scratch	Sprite Backdrop Block Command Algorithm Code Motion Sound Event Debug Programming Costume Stage Bug
Digital Literacy	**Online Safety** Online Privacy	• How to create a secure password to protect my personal information. • To give reasons why someone should only share information with people they choose to and can trust. • To explain that if they are not sure or feel pressured then they should tell a trusted adult.	• To know what a password is and why we have them. • To know who to trust when it comes to the online world. • To know when it is ok to share information. • To understand and give reasons why passwords are important.	Project Evolve	Information Password Share Trust
	Online Safety Online Bullying	• How to report online bullying.	• To know what online bullying is. • To identify how someone can be bullied online. • To know what to do if you see someone experiencing online bullying.		Bullying Cyber

	Online Safety Online Identity	• To reflect on what my online identity would be.	• To explain what it meant by the term 'identity'. • To know what an online profile is. • To know what makes an online profile. • To explain how people can represent themselves in different ways online. • I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.		Identity
	Online Safety Managing Online Information	• To explain the difference between 'opinions', 'beliefs' and 'facts'.	• To know what 'belief' means. • To know what a 'fact' is. • To know what an 'opinion' is. • To know that some things online are not always true.		Opinion Belief Fact Information
	Online Safety Online Wellbeing		• To know why some online activities have age restrictions. • To know what an age restriction is. • To know why it is important to follow age restrictions. • To know who to talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or websites).		Consent Age Restriction
	Online Safety Online Relationships	• To use evidence to explain why someone could or could not be trustworthy online.	• To explain what is meant by 'trusting someone online' and why this is different from 'liking someone online'. • To know why it is important to be careful about who to trust online including what information and content they are trusted with.		Trust
	Cross Curriculum Links	• Looking at internet pages for research and navigating your way through these. • To use a search engine. • To be competent on Google Classroom. • Being able to research, use and find appropriate information and photographs online.	• Know how to complete a safe internet search • How to stay safe on the internet • To use Kiddle for research	Kiddle	Kiddle Safe Search

Year 4	Unit	**Skills to be covered** **What should the children be able to do?**	**Knowledge to be covered** **What should the children know?**	**Resources**	**Key Vocabulary**
Information Technology	**Creating Media** Publishing	• Touch typing to increase speed of input • To be able to insert an image onto a document. • To be able to create a text box on a document. • To be able to change text font/size/colour. • To create a magazine template. • To be able to edit and improve a given magazine template.	• To know the features of good page design and multimedia presentations. • To know what text is. • To know what an image is. • To know the advantages and disadvantages of text and images for communication. • To know when it is appropriate to use text or an image. • When to move the position of a images for effect. • Where to put text for effect. • To know how to present text in an effective way. • To choose a layout for a given purpose. • How to take a screen shot and input into a ppt	NCCE Canva Google Slides Google Classroom	Text Image Publish Presentation Font Template Layout Style Copy Paste
	Creating Media Animations	• To plan sequences of events that can be collated to form an animation. • To create an animation that builds up frames.	• To know what an animation is. • To know what an animation looks like. • To know what needs to move in an animation and what needs to stay the same to create the desired effect. • To be able to explain why changes are needed for each frame.	Brush Ninja Clap Motion	Animation Sequence Frame Setting Character Event Onion Skinning Image Transition
	Computing Systems The Internet	• To be able to demonstrate how information is shared across the internet. • To be able to access websites on the internet. • To be able to use the internet successfully. • To be able to show what to do if rules are broken online.	• To know what a 'network' is. • To know what the 'internet' is. • To understand a computer network. • To know how we can all connect via the internet. • To know why a network needs protecting. • To understand what can be shared on the World Wide Web and where websites are stored. • To know who owns the content on the internet. • How search results are effectively ranked appreciate how results are selected and ranked.	NCCE Chrome Music Lab	Network Internet Device World Wide Web Router Security Website Web Page Browser
Computer Science	**Coding** (Unit 1 – Scratch Programming) (Unit 2 – Turtle Academy)	• To test an algorithm. • To write an algorithm for a specific outcome. • To explain how a simple algorithm works. • To code loops to create shapes – specifically using the repeat function to write an algorithm to draw a regular polygon. • To code infinite loops and count-controlled loops. • To create code to repeat sections of my program. • To animate their own name. • To design their own game using different codes. • To debug and modify an algorithm/ code if necessary.	• To know what an algorithm is. • To know what blocks are. • To know what sprites are. • To know what codes to write in for relevant directions. • To know what repetition looks like on a coding programme – what would I expect to see? • To know the difference between infinite loops and count-controlled loops. • To be able to spot a problem and modify a code to fix it. • To explain what it means to debug something.	NCCE Scratch Turtle Academy	Algorthim Code Infinite Loop Count-controlled Loop Action Command Block Repeitition Debug Modify Program Pattern Repeat

Digital Literacy	**Online Safety** Online Privacy	• How to create a secure password to protect my personal information.	• To know what a password is and why we have them. • To describe strategies for keeping personal information private, depending on context. • To explain what a strong password is and demonstrate how to create one.	Project Evolve	Private Personal Password
	Online Safety Online Bullying	• How to report online bullying.	• To know what online bullying is. • To identify how someone can be bullied online. • To describe ways people can be bullied through a range of media (e.g. image, video, text, chat). • To know what to do if you see someone experiencing online bullying.		Bullying Cyber
	Online Safety Online Identity	• To be able to identify if a comment is a positive or negative impact on an online identity.	• To know what 'online identity' means. • To know that identity can be different online to offline. • To give examples of positive ways to present online.		Online Identity
	Online Safety Managing Online Information	• To be able to identify is something is fake or real online. • To use evidence and clues to help determine is something is fake or real online.	• To explain what fake news is. • To know that some things online are real and some a fake. • To know what to look for to assess if something is fake or real online.		Fake News
	Online Safety Online Wellbeing	• To be able to identify times when technology would need to be limited.	• To know what happens to your body when you are on a device for too long. • To know what happens to your device when it is switched on for too long. • To understand the impact on our mood if we are on devices for too long.		Device
	Online Safety Online Relationships	• To identify, in a given context, inappropriate messages that could damage a relationship. • To give examples of how to be respectful online. • To recognise healthy and unhealthy behaviours online.	• To know what respect online looks like. • To be able to explain healthy online behaviours. • To be able to explain unhealthy online behaviours.		Respect Relationship
	Cross Curriculum Links	• To record data using a spread sheet – collect and present data and information (Science). • To create a graph to represent data (Science). • Looking at internet pages for research and navigating your way through these. • To use a search engine. • To be competent on Google Classroom. • Being able to research, use and find appropriate information and photographs online.	• To know how to input data onto a spreadsheet (Science) • To know how to turn data into a simple graph on a spread sheet (Science). • How to use spreadsheet and why it may be chosen as a program for recording data (Science). • Know how to complete a safe internet search • How to stay safe on the internet • To use Kiddle for research • Being able to use Google Earth (link to Geography)	Google Sheets Kiddle Google Earth	Cell Data Spread Sheet Graph Kiddle Safe Search

Year 5	Unit	Skills to be covered What should the children be able to do?	Knowledge to be covered What should the children know?	Resources	Key Vocabulary
Information Technology	**Creating Media** Photo Editing	• To investigate and evaluate photo editing effects. • To edit a given image. • To add an effect to a given image. • To change and/or remove the background of an image. • To add text to an image.	• To know how to edit photos, create art work and pixilate images.	Be Funky Pixlr	Image Edit Effect Crop Text Rotate Flip Adjust Colour Background Foreground
	Creating Media Blog Posts	• Touch typing to increase speed of input. • Presenting information in a clear and cohesive manner which is appropriate to an audience (Prezi) • Evaluate and improve/reflect upon presentations in order to improve our own • Use Google Classroom to write a blog post (Link to IOW trip) - select, use and combine a variety of software. • Post suitable blog comments • Add images to a blog post	• To know what a blog post it. • To know the purpose of a blog post. • To know the features of a blog post. • To know what makes a good blog (Link to IOW trip).	Google Doc	Blog Image Text Font
	Creating Media Podcasts	• Use **audacity** (software) to warp existing sound effects. • Record my own sound effects to make my own radio advert. • Warp and edit these effects appropriately and effectively	• To know what a podcast is. • To know why people have podcasts. • To know the purpose of a podcast. • To identify the features of a podcast. • Know how to use audacity to edit sounds • Know how to warp sounds and sound effects on audacity	Audacity Band Lab	Podcast Sound Effect Audio Script Record Playback Microphone Speaker Export
	Computing Systems Sharing Information	• To take part in a collaborative project to recreate the processes of a system.	• To know what a system is. • To know that systems are built using a number of parts. • To know that a computer system features inputs, processes and outputs. • To know that systems have to require information over the internet. • To know what an IP address is.	NCCE Google Docs	Digital System Componenet Internet IP address Connection Digital Input Process Output

Computer Science	**Coding** History of Coding Cryptographers	• To transmit information in semaphore • To use ciphers to create and crack codes • To use coding to complete a guided task	• To know why and when semaphores were and are used – how this links to the input on a computer system • To know why and when Morse code was used and how this is similar to the binary system for a computer to input and output data/information • The use of codes and why they were/are used		Cipher Semaphore Morse Code Input Output
	Coding Code.org	• To create, find and edit the assets needed for a game • To use functions to simplify complex programs. • To create a prototype of a game • To be able to de-bug a program • To be able to test and evaluate a game. • To detect and correct errors in algorithms and programs	• To know an algorithm is. • To know what different codes do on code.org. • To know what specific functions do on code.org. • To use pre-determined functions to complete commonly repeated tasks. • To consider the efficiency and effectiveness of codes and programming. • To be able to spot a problem and modify a code to fix it. • To explain what it means to debug something.	Code.org	Algorithm Block-based programming Bug Debugging Command Data
Digital Literacy	**Online Safety** Online Privacy	• To be able to evaluate a given scenario and identify any concerns in a scenario. • To list the positives of the online world. • To list the negatives of the onine world.	• To know how to navigate the online world in a safe way.	Project Evolve	
	Online Safety Online Bullying	• To identify a range of ways to report concerns. • To access support both in school and at home about online bullying.	• To know what online bullying is. • To know what to do if someone is being bullied online. • To know how anyone can get help if they are being bullied online and identify when to tell a trusted adult. • To know why we need to support one another (1 in 3 people experience bullying behaviour online). • To know what a supportive conversation looks like.		Report Online Bullying Support
	Online Safety Online Identity	• To demonstrate how to make responsible choices about having an online identity, depending on context. • To create top tips for sharing online identity.	• I understand that I can show my online identity in different ways. • I know that my online identity can have an impact on others, both positively and negatively. • To know what a positive identity looks like. • To know what a negative identity look like.		Online Identity
	Online Safety Managing Online Information	• To give examples of when and why it is important to be 'sceptical'. • To evaluate digital content and if it is trustworthy and reliable. • To think critically about digital content.	• To explain what is meant by 'being sceptical'. • To know why it is important to be 'sceptical' with content online. • To explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results. • I can explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence. • To begin to explain what misinformation and disinformation mean.		Reliable Information Fact Opinion Belief Validity Evidence Misinformation Disinformation Source

	Online Safety Online Wellbeing	• To recount simple benefits of sleep on body's health. • Can offer suggestions on how use of technology before sleep could affect quality of sleep. • Can assess own technology use and reflect its' impact on wellbeing.	• To know ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively. • To understand simple properties of healthy sleep.		Health
	Online Safety Online Relationships	• To describe what I can do to support others online, both friends and people I know less well • Can name a number of reporting routes that I could use or suggest to someone else	• To know how to support others (including those who are having difficulties) online. • To know when I or other might need support. • I understand some of the difficulties some people may have, including online. • To understand how to report problems online.		Support Report
	Cross Curriculum Links	• Looking at internet pages for research and navigating your way through these. • To use a search engine. • To be competent on Google Classroom. • Being able to research, use and find appropriate information and photographs online.	• Know how to complete a safe internet search • How to stay safe on the internet • To use Kiddle for research • Being able to use Google Earth (link to Prezi/Maya)	Kiddle Google Earth	Kiddle Safe Search

Year 6	Unit	**Skills to be covered** **What should the children be able to do?**	**Knowledge to be covered** **What should the children know?**	**Resources**	**Key Vocabulary**
Information Technology	**Creating Media** Spread Sheets	• Touch typing to increase speed of input • To organise data into columns and rows. • To build a data set. • To apply different formulas to cells (including the 4 operations). • To create a chart on a Google Sheet. • Using the functions of a spreadsheet to display information/data • Using formulas on spreadsheet to present data	• To know what Google Sheets is. • To know what a Spreadsheet is. • To know how to organise data. • To use formulas to produce calculated data. • To know data can be calculated using different operations: multiplication, subtraction, division, and addition. • To use a spreadsheet to answer questions on the data they have selected.	NCCE Google Sheets	Spread Sheet Formula Data Cell Column Row Format Multiplication Subtraction Addition Division
	Creating Media Video Making	• Generate, amend and combine digital images from different sources for a specific audience or task. • Integrate words, images and sounds imaginatively for different audiences and purposes • Select from a variety of ICT applications to present text images and sounds effectively and communicate specific information and ideas for a specific audience • Understand the importance of evaluation and adaptation of individual features to enhance the overall presentation	• Know that images from different sources (stills, video, graphics, animation) are used to enhance a presentation or communicate an idea • To know how to compile sound and images together to create a video.	Canva	Digital Images Sound Audience Video Audio Record Capture Export Trim/ Clip Special Effects Graphs Animation
	Computing Systems	• To investigate online communication and its' accuracy. • To evaluate methods of internet communication. • To explore issues around privacy and information security.	• What is the World Wide Web? • To understand how a search engine works. • To know what can influence an online search. • To know methods of communication on the internet.	NCCE Google	World Wide Web Search Engine Communication Online Search
Computer Science	**Coding** Websites	• To explore websites using the x-ray tool • To find out what happens behind the interface of a website page. • To be familiar with a webpage structure/ layout. • To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • To use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	• To know what makes a good website. • To recognise common features of a website. • To understand what is behind the interface of a website. • To use knowledge of websites to make their own. • Creating a website page using 'Google sites' • Creating different site pages using hyperlinks, insterting images, text and videos. • To understand fair use of images and media for the site (an understanding of copyirhgt). • To have some understanding that websites are created by using HTML code. • To explain what a navigation path is.	NCCE Google Sites	Copyright Fair Use Navigation Path Website Web Page Browser Inferface Algorithms Hyperlinks Image Text Video HTML code Layout Header Media

	Physical Computing Coding Micro:bits	• To transfer their learnt skills of coding into physical programming. • To create a physical code from a given design. • To create their own physical design of a step counter using micro:bits. • To be able to change the value of a variable. • To experiment with different physical inputs. • To debug a code, where necessary.	• To know what an input, process and output device is. • To know what variables to use/ change in my programming. • To know to use a button to change the value of a variable. • To know how to 'fix bugs' if something does not work.	NCCE Micro:bits	Micro:bit Input Process Output device Variable Algorithm Physical Device Debug Code
Digital Literacy	**Online Safety** Online Privacy	• To describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser).	• To know what an effective password is. • To know ways to remember a password safely. • To know who to share passwords with and who to trust (e.g. a trusted, well-known adult). • Appropriateness of sharing personal information • Action if inappropriate material is found	Project Evolve	Password
	Online Safety Online Bullying	• To identify a range of ways to report concerns. • To access support both in school and at home about online bullying.	• To know what online bullying is. • To know what to do if someone is being bullied online. • To how anyone can get help if they are being bullied online and identify when to tell a trusted adult.		Report Online Bullying Support
	Online Safety Online Identity	• To describe ways in which media can shape ideas about gender, race, religion, disability, culture and other groups.	• To identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups. • To explain why it is important to reject inappropriate representations online.		Stereotypes Representations Online Content
	Online Safety Managing Online Information	• To understand if something is popular online, it may still be inaccurate or untrue. Recognise how this may happen.	• Understand how a search is driven by algorithms. • To know why information that is on a large number of sites may still be inaccurate or untrue • To know the difference between Misinformation and Disinformation. •		Information Misinformation Disinformation
	Online Safety Online Wellbeing	• To action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise). • To select suitable strategies based on their own personal needs, use and experience of tech and the internet. • To describe positive outcomes that would show a strategy is successful.	• To demonstrate knowledge of age appropriate strategies that can limit the impact of technology on health. • To know health risks that technology can cause. • To be aware of strategies that could help me with my health and technology.		Health
	Online Safety Online Relationships	• To be able to assess a conversation and determine if it is respectful or not. • To describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.	• To know what boundaries are. • To know what boundaries online look like. • To know what respect online looks like. • How to show self-respect online.		Respect Boundaries
	Cross Curriculum Links	• Looking at internet pages for research and navigating your way through these.	• Know how to complete a safe internet search • How to stay safe on the internet	Kiddle	Kiddle Safe Search

		• To use a search engine. • To be competent on Google Classroom. • Being able to research, use and find appropriate information and photographs online.	• To use Kiddle for research • Know how to search effectively using key words		

Children leave Wallace Fields Junior School being able to:		
Computer Science	**Information Technology**	**Digital Literacy**
- *Explain what programming is* - *How an algorithm works* - *Control an object to move along a route* - *Commands to animate pictures* - *Conditional events in a program* - *Variable in a program* - *Program a complex game* - *Detect and correct errors in a program (debug)* - *Design and create a program* - *Identify computer components* - *Understand how a computer stores data* - *Uses of technology* - *Impact of technology* - *How the internet works* - *History of computing*	- *Type quickly and correctly* - *Type and design a printable document* - *Text using 'fancy' effects* - *Word collage* - *Photo collage* - *Mind map* - *Paint a picture* - *Picture using drawing tools* - *Audio recording* - *Edit a digital photo* - *Animations* - *Multimedia video producing* - *On-screen presentation* - *Create a website* - *Handling data* - *Creating a spreadsheet*	- *reading URLs* - *how to search effectively* - *exploring a virtual map* - *communicating online* - *staying safe online*

Key Vocabulary

Algorithm	An unambiguous set of rules or a precise step-by-step guide to solve a problem or achieve a particular objective.
Block	A graphical representation of computer code in languages such as Scratch; also used to describe a part of a computer program.
Block language	A programming language in which blocks are used to program the computer.
Cache	To make a copy of information for faster retrieval or processing.
Command	An instruction, written in a particular programming language, for the computer to execute.
Content management system	A database-driven system for managing web-based content, in which pages are generated automatically from stored content. Examples include WordPress and Moodle.
Data	A structured set of numbers, possibly representing digitised text, images, sound or video, which can be processed or transmitted by a computer; also used for numerical (quantitative) information.
Debug	To fix the errors in a program.
Digital devices	Electronic hardware that processes information represented as numbers, using a microprocessor to control its operation, including laptop computers, tablets and smartphones.
Domain Name System (DNS)	The distributed automatic system that converts domain names into the IP addresses that are used for routing packets via the internet.
Encryption	Securely encoding information so that it can only be read by those knowing both the system used and a secret, private key.
E-safety	Used to describe behaviours and policies intended to minimise the risks to a user of using digital technology, particularly the internet.
Hardware	The physical systems and components of digital devices; see also **software**.
Hypertext mark-up language (HTML)	HTML is the language in which web pages are composed.
Hypertext transfer protocol (HTTP)	HTTP is the standard protocol for the request and transmission of HTML web pages between browser and web server.
Hypertext transfer protocol – secure (HTTPS)	An encrypted version of HTTP in which page content cannot be read by the internet routers and gateways through which it passes.
Input	Data provided to a computer system, e.g. via a keyboard, mouse, microphone, camera or physical sensors.
Interface	The boundary between one system and another – often used to describe how a person interacts with a computer.
Internet Protocol (IP) addresses	Numeric addresses uniquely specifying computers directly connected to the internet; also used on private networks to uniquely identify computers on that network.
Iteration	A form of repetition in which a variable keeps track of how many times the loop has been executed.
Loop	A block of code repeated automatically under the program's control.
Network	The computers and the connecting hardware (Wi-Fi access points, cables, fibres, switches and routers) that make it possible to transfer data using an agreed method ('protocol').
Operating system	The programs on a computer that deal with internal management of memory, input/output, security and so on, such as Windows 10 or iOS.
Output	The information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems.
Packets of data	A small set of numbers that get transmitted together via the internet, typically enough for 1000 or 1500 characters.
Platform	Used to describe computer systems in which particular content, programs or systems can be developed.
Program	A stored set of instructions encoded in a language understood by the computer that does some form of computation, processing input and/or stored data to generate output.
Pulse code modulation (PCM)	The standard format for audio files, in which the amplitude of the sound is represented at one of, say, 65,536 levels, sampled, say, 44,100 times a second.
Repetition	Executing a section of computer code a number of times as part of the program.
Reverse engineer	The process of extracting knowledge or design information from an artefact, such as a computer program, often by experimenting with it to see how different inputs produce different outputs.
Safe search mode	A search engine functionality in which inappropriate results are hidden.
Script	A computer program typically executed one line at a time through an interpreter, such as the instructions for a Scratch character.
Selection	A programming construct in which one section of code or another is executed depending on whether a particular condition is met.
Sequence	To place program instructions in order, with each executed one after the other.

Server	A computer connected to the internet or to a local area network providing services – such as file storage, printing, authentication, web pages or email – automatically to other computers on the internet or local network.
Simulation	Using a computer to model the state and behaviour of real-world (or imaginary) systems, including physical or social systems; an integral part of most computer games.
Software	The programs that control or are run on a computer, written in one or other programming language, including the operating system, interpreters, compilers and application programs (apps).
Sprite	A computer graphics object that can be controlled (programmed) independently of other objects or the background.
Unicode	A system for representing typographic symbols and text in many different writing systems digitally.
Uniform Resource Locator (URL)	A standard for specifying the location on the internet of certain data files, such as http://info.cern.ch/hypertext/WWW/TheProject.html. In this case (and typically), the URL includes the protocol used to transmit the data, the computer on which it is stored, the file path and the file name of the data.
Variables	A way in which computer programs can store, retrieve or change data, such as a score, the time left or the user's name.
Web (World Wide Web or WWW)	A service provided by computers connected to the internet (web servers) in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.