Curriculum Progression Map - Computing

Internet Safety

In KS2, all children will complete an annual update on e-safety through Google's 'Be Internet Awesome' Scheme of Work.

Year Group	Computer Systems & Networks	Creating Media 1	Creating Media 2	Data & Information	Programming 1	Programming 1
EYFS	- Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions - Make comments about what they have heard and ask questions to clarify their understanding - Offer explanations for why things might happen - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function					
Year 1 & 2	Skills Develop understanding of technology and how it can help us	Skills Develop understanding of a range of tools used for digital painting	Skills Develop understanding of the various aspects of using a computer to create and manipulate text.	Skills Labelling, grouping, and searching data and information.	Skills Develop early programming concepts, including algorithms.	Skills Develop knowledge of on-screen programming and program design.
	Knowledge Recognise common uses of information technology beyond school	Knowledge Use technology purposefully to create, organise,	Knowledge Use technology purposefully to create, organise,	Knowledge Use technology purposefully to create, organise,	Knowledge Understand what algorithms are; how they are	Knowledge Understand what algorithms are, how they are

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	- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content - 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	store, manipulate, and retrieve digital content - To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space - About the work of a range of artists, craft makers, and designers, describing the differences and similarities between different practices and disciplines and making links to their own work	store, manipulate and retrieve digital content Use technology safely and respectfully, keeping personal information private	store, manipulate and retrieve digital content Use technology safely and respectfully	implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions - Create and debug simple programs - Use logical reasoning to predict the behaviour of simple programs - Recognise common uses of information technology beyond school	implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions - Create and debug simple programs - Use logical reasoning to predict the behaviour of simple programs
Year 3 & 4	**Skills** Develop their understanding of digital devices,	**Skills** Develop a range of techniques to create a stop-frame animation.	**Skills** Use desktop publishing software and become familiar	**Skills** Develop understanding of branching databases.	**Skills** Sequence programming through Scratch.	**Skills** Explore the links between events and actions.

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	focussing on inputs, processes, and outputs		with 'templates', 'orientation' and 'placeholders'.			
	Knowledge • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • 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 • Select, use and combine a variety of software (including internet	**Knowledge** • 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 • use technology safely, respectfully and responsibly; recognise acceptable/un	**Knowledge** • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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	**Knowledge** • 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 • Use technology safely, respectfully, and responsibly	**Knowledge** • Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms	**Knowledge** • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms

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	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 • Solve number problems and practical problems • To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials	acceptable behaviour; identify a range of ways to report concerns about content and contact. • Pupils should be taught to: draft and write by: in narratives, creating settings, characters and plot • Pupils should be taught to: proof-read for spelling and punctuation errors • The Roman Empire and its impact on Britain	presenting data and information • Pupils should be taught to draft and write by: in non-narrative material, using simple organisational devices [for example, headings and subheadings] • Evaluate and edit by assessing the effectiveness of their own and others' writing and suggesting improvements • Proofread for spelling and punctuation errors		and programs • 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	and programs • 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
Year 5 & 6	Skills Explore how computer systems and	Skills Use a range of drawings tools to	Skills To develop capturing, editing and	Skills Use flat-file databases to organise data in	Skills Use physical computing to explore	Skills Explore If, Then, Else structure to select

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information is transferred between systems and devices.	create images in layers.	manipulating video.	records.	the concept of selection in programming through the Crumble environment.	different outcomes depending on conditions.
Knowledge	Knowledge	Knowledge	Knowledge	Knowledge	Knowledge
• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Understand computer networks, including the internet; how they can provide	• 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.	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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,	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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,	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to

	multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration • 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 • Use technology safely, respectfully		evaluating and presenting data and information • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • Recognise inappropriate content, contact, and conduct and know how to report concerns • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable	evaluating, and presenting data and information	correct errors in algorithms and programs • 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 • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.	detect and correct errors in algorithms and programs.

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	and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		behaviour • Identify a range of ways to report concerns about content and contact			

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.

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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.

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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.

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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.

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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.