

Computing Curriculum Progression

Purpose: A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

	Key Stage 1		Key Stage 2			
	Hedgehog (Y1)	Fox (Y2)	Badger (Y3)	Otter (Y4)	Robin (Y5)	Deer (Y6)
Breadth of Study	Technology around us Digital painting Digital writing Grouping data Moving a robot Introduction to animation	IT around us Digital photography Making music Pictograms Robot algorithms An introduction to quizzes	Connecting computers Animation Desktop publishing Branching databases Sequence in music Events and actions	The Internet Audio editing Photo editing Data logging Repetition in shapes Repetition in games	Sharing information Vector Drawing Video Editing Flat-file databases Selection in physical computing Selection in quizzes	Communication 3D Modelling Web page creation Spreadsheets Variables in games Sensing
Knowledge and Understanding	Technology around us To identify technology To identify a computer and its main parts. To use a mouse in different ways. To use a keyboard to type on a computer. To use the keyboard to edit text.To create rules for using technology	IT around us To recognise the uses and features of information technology. To identify the uses of information technology in the school. To identify information technology beyond school. To explain how information technology	Connecting computers To explain how digital devices function. To identify input and output devices. To recognise how digital devices can change the way that we work. To explain how a computer network can be used to share	The Internet To describe how networks physically connect to other networks. To recognise how networked devices make up the internet. To outline how websites can be shared via the World Wide Web. To describe how	Sharing information To explain that computers can be connected together to form systems. To recognise the role of computer systems in our lives. To experiment with search engines. To describe how search engines select results.	Communication To explain the importance of internet addresses. To recognise how data is transferred across the internet. To explain how sharing information online can help people to work together. To evaluate different

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	<p>responsibly.</p> <p>Digital painting To describe what different freehand tools do. To use the shape tool and the line tools. To make careful choices when painting a digital picture. To explain why I chose the tools I used. To use a computer on my own to paint a picture. To compare painting a picture on a computer and on paper.</p> <p>Digital writing To use a computer to write. To add and remove text on a computer. To identify that the look of text can be changed on a computer. To make careful choices when changing text. To explain why I used the tools that I chose. To compare typing on a computer to writing on paper.</p> <p>Grouping data To label objects. To identify that objects</p>	<p>helps us To explain how to use information technology safely. To recognise that choices are made when using information technology.</p> <p>Digital photography To use a digital device to take a photograph. To make choices when taking a photograph. To describe what makes a good photograph. To decide how photographs can be improved. To use tools to change an image. To recognise that photos can be changed.</p> <p>Making music To say how music can make us feel. To identify that there are patterns in music. To experiment with sound using a computer. To use a computer to create a musical pattern. To create music for a purpose. To review and refine our computer work.</p>	<p>information. To explore how digital devices can be connected. To recognise the physical components of a network.</p> <p>Animation To explain that animation is a sequence of drawings or photographs. To relate animated movement with a sequence of images. To plan an animation. To identify the need to work consistently and carefully. To review and improve an animation. To evaluate the impact of adding other media to an animation.</p> <p>Desktop publishing To recognise how text and images convey information. To recognise that text and layout can be edited. To add content to a desktop publishing publication. To choose appropriate page</p>	<p>content can be added and accessed on the World Wide Web. To recognise how the content of the WWW is created by people. To evaluate the consequences of unreliable content.</p> <p>Audio editing To identify that sound can be recorded. To explain that audio recordings can be edited. To recognise the different parts of creating a podcast project. To apply audio editing skills independently. To combine audio to enhance my podcast project. To evaluate the effective use of audio.</p> <p>Photo editing To explain that the composition of digital images can be changed. To explain that colours can be changed in digital images. To explain how cloning can be used in photo editing. To explain that images</p>	<p>To recognise why the order of results is important, and to whom.</p> <p>Vector Drawing To identify that drawing tools can be used to produce different outcomes. To create a vector drawing by combining shapes. To use tools to achieve a desired effect. To recognise that vector drawings consist of layers of objects. To group objects to make them easier to work with. To apply what I have learned about vector drawings.</p> <p>Video Editing To explain what makes a video effective. To use a digital device to record video. To capture video using a range of techniques. To create a storyboard. To identify that video can be improved through reshooting and editing. To consider the impact of the choices made</p>	<p>ways of working together online. To recognise how we communicate using technology. To evaluate different methods of online communication.</p> <p>3D Modelling To recognise that you can work in three dimensions on a computer. To identify that digital 3D objects can be modified. to recognise that objects can be combined in a 3D model. To create a 3D model for a given purpose. To plan my own 3D model. To create my own digital 3D model.</p> <p>Web page creation To review an existing website and consider its structure. To plan the features of a web page. To consider the ownership and use of images. To recognise the need to preview pages. To outline the need for</p>
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	<p>can be counted. To describe objects in different ways. To count objects with the same properties. To compare groups of objects. To answer questions about groups of objects.</p> <p>Moving a robot To explain what a given command will do. To act out a given word. To combine 'forwards' and 'backwards' commands to make a sequence. To combine four direction commands to make sequences. To plan a simple program. To find more than one solution to a problem.</p> <p>Introduction to animation To choose a command for a given purpose. To show that a series of commands can be joined together. To identify the effect of changing a value. To explain that each sprite has its own instructions</p>	<p>Pictograms To recognise that we can count and compare objects using tally charts. To recognise that objects can be represented as pictures. To create a pictogram. To select objects by attribute and make comparisons. To recognise that people can be described by attributes. To explain that we can present information using a computer.</p> <p>Robot algorithms To describe a series of instructions as a sequence. To explain what happens when we change the order of instructions. To use logical reasoning to predict the outcome of a program. To explain that programming projects can have code and artwork. To design an algorithm. To create and debug a program that I have written.</p>	<p>settings. To consider how different layouts can suit different purposes. To consider the benefits of desktop publishing.</p> <p>Branching databases To create questions with yes/no answers. To identify the attributes needed to collect data about an object. To create a branching database. To explain why it is helpful for a database to be well structured. To plan the structure of a branching database. To independently create an identification tool.</p> <p>Sequence in music To explore a new programming environment. To identify that commands have an outcome. To explain that a program has a start. To recognise that a sequence of commands can have an order. To change the appearance of my</p>	<p>can be combined. To combine images for a purpose. To evaluate how changes can improve an image.</p> <p>Data logging To explain that data gathered over time can be used to answer questions. To use a digital device to collect data automatically. To explain that a data logger collects 'data points' from sensors over time. To recognise how a computer can help us analyse data. To identify the data needed to answer questions. To use data from sensors to answer questions.</p> <p>Repetition in shapes To identify that accuracy in programming is important. To create a program in a text-based language. To explain what 'repeat' means. To modify a</p>	<p>when making and sharing a video.</p> <p>Flat-file databases To use a form to record information. To compare paper and computer-based databases. To outline how you can answer questions by grouping and then sorting data. To explain that tools can be used to select specific data. To use a real-world database to answer questions.</p> <p>Selection in physical computing To control a simple circuit connected to a computer. To write a program that includes count-controlled loops. To explain that a loop can stop when a condition is met. To explain that a loop can be used to repeatedly check whether a condition has been met. To design a physical project that includes selection.</p>	<p>a navigation path. To recognise the implications of linking to content owned by other people.</p> <p>Spreadsheets To create a data set in a spreadsheet. To build a data set in a spreadsheet. To explain that formulas can be used to produce calculated data. To apply formulas to data. To create a spreadsheet to plan an event. To choose suitable ways to present data.</p> <p>Variables in games To define a 'variable' as something that is changeable. To explain why a variable is used in a program. To choose how to improve a game by using variables. To design a project that builds on a given example. To use my design to create a project. To evaluate my project.</p> <p>Sensing</p>
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	<p>Programming</p> <p>Data and Information</p> <p>Design and Development</p>	<p>Algorithms</p> <p>Programming</p> <p>Data and Information</p> <p>Design and Development</p>	<p>Programming</p> <p>Design and Development</p> <p>Data and Information</p>	<p>Programming</p> <p>Design and Development</p> <p>Data and Information</p> <p>Safety and Security</p> <p>Algorithms</p>	<p>Programming</p> <p>Design and Development</p> <p>Data and Information</p> <p>Algorithms</p>	<p>Programming</p> <p>Design and Development</p> <p>Data and Information</p>
Vocabulary	<p>Technology around us Technology, computer, mouse, trackpad, keyboard, screen, trackpad, double-click, typing</p> <p>Digital painting Paint program, tool, paintbrush, erase, fill, undo, Piet Mondrian, primary colours, shape tools, line tool, fill tool, undo tool, Henri Matisse, shape tool, fill tool, Wassily Kandinsky, tools, feelings, colour, brush style, Georges Seurat, pointillism, brush size, pictures, painting, computers, like, prefer, dislike</p>	<p>IT around us Information technology (IT), computer, barcode, scanner/scan</p> <p>Digital photography Device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, lighting</p> <p>Making music Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions, pattern, rhythm, pulse, Neptune, pitch, tempo, notes, notes,</p>	<p>Connecting computers Digital device, input, process, output program, digital, non-digital, connection, network, network switch, server, wireless access point, network cables, network sockets</p> <p>Animation Animation, flip book, stop-frame animation, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition</p> <p>Desktop publishing</p>	<p>The Internet Internet, network, router, network security, network switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, content, download, sharing, ownership, permission, information, sharing, accurate, honest, content, adverts</p> <p>Audio editing Audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record,</p>	<p>Sharing information System, connection, digital, input, process, output, system, connection, digital, input, process, output, search engine, refine, Index, crawler, bot, web crawler, content creator, selection, ranking</p> <p>Vector Drawing Vector, drawing tools, object, toolbar, move, resize, colour, rotate, duplicate/copy, zoom, select, rotate, align, resize, modify, layers,</p>	<p>Communication Communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many</p> <p>3D Modelling 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, placeholder, hollow, choose,</p>

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	<p>Digital writing Word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, undo, redo, font, format, compare, typing</p> <p>Grouping data Object, search, image, property, label, colour, size, shape, group, value, data set, more, less, most, fewest</p> <p>Moving a robot Forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, turn, plan, algorithm, program, route</p> <p>Introduction to animation ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area, block, joining,</p>	<p>instrument, tempo, create, pulse/beat, instrument, rhythm</p> <p>Pictograms More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, common, least common, attribute, conclusion</p> <p>Robot algorithms Instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, program, artwork, design, route, mat, debugging, decomposition</p> <p>An introduction to quizzes Sequence, command, program, run, start, outcome, predict, blocks, sprite, algorithm, blocks, design, actions, project, design, modify, change, build, match, compare,</p>	<p>Text, images, advantages, disadvantages, communicate, font, font style, template landscape, portrait, orientation, placeholder, layout, content, desktop publishing, copy, paste</p> <p>Branching databases Attribute, value, questions, table, objects, branching database, database, equal, even, separate, structure, compare, order, organise, decision tree</p> <p>Sequence in music Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, code, run the code, design, algorithm, bug, debug</p> <p>Events and actions</p>	<p>playback, edit, selection,, load, import, save, export, MP3, editing, evaluate, feedback</p> <p>Photo editing Image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, retouch, clone, select, copy, paste, combine, made up, real, composite, cut, alter, background, foreground, rotate, crop, zoom, clone, select, undo, font</p> <p>Data logging Data, table, layout, input device, sensor, data logger, logging, data point, interval, analyse, data set, import, export, logged, collection, review, conclusion</p> <p>Repetition in shapes Program, turtle, commands, code snippet, algorithm</p>	<p>order, Copy, paste, group, ungroup, duplicate, object, vector drawing, reuse,</p> <p>Video Editing</p> <p>Flat-file databases</p> <p>Selection in physical computing</p> <p>Selection in quizzes</p>	<p>combine, construct, evaluate, modify</p> <p>Web page creation Website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed</p> <p>Spreadsheets Data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, input, output, data, calculate, operation, formula, range, duplicate, sigma, question, organised, formula, chart, evaluate, results, comparison, questions, software, tools</p> <p>Variables in games</p>
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	<p>command, Start block, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, delete, program</p>	<p>debug, features, evaluate</p>	<p>Motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, event, action, debugging, errors, setup, design, code, setup, test, debug, actions, events</p>	<p>design, debug, logo, Pattern, repeat, repetition, count-controlled loop, algorithm, value, repeat, repetition, count-controlled loop, trace, value, repeat, count-controlled loop, decompose, procedure</p> <p>Repetition in games Scratch, programming, sprite, blocks, code, loop, repeat, value, block, forever, infinite loop, count-controlled loop, costume, modify, design, repetition, design, sprite, algorithm, duplicate, debug, refine, evaluate</p>		<p>Variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share</p> <p>Sensing Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, code, test, debug</p>
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