

Primary Computing Progression Map

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum <i>Pupils should be taught:</i>	N/A	<ul style="list-style-type: none"> understand what algorithms are; how they are 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 use technology purposefully to create, organise, store, manipulate and retrieve digital content recognise common uses of information technology beyond school 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. 	<ul style="list-style-type: none"> 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 and programs 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 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 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. 				

By the end of the year, children should be able to...

Knowledge and understanding							
Computer Science [CS]	Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	Understand that an algorithm is a set of instructions designed to solve a problem Understand that an algorithm written for a digital device is called a program Know that many everyday devices respond to commands.	Explain what an algorithm is and that it may or may not be executed on a digital device Understand that instructions must be precise and unambiguous in order for programs to achieve a specific objective Know that more than one algorithm can be used to achieve the same objective and that some are more efficient than others Understand that once programmed a programmable device can repeat the same command	Understand the need to be precise when developing an algorithm as well as pre-empt errors Understanding that a real-life situation can be turned into an algorithm Identify where computer science can be found in the real world Understand and Identify specific inputs and outputs within own programs and in the world around them Understand what a variable is and the impact it can have on programs	Understand sequences & repetition [e.g., repeat... until...] of commands Understand the algorithms required for some specific real-world systems (e.g., traffic lights) Understand how to use a repetition loop and how these can be used in conjunction with selection to create a desired effect Understand there is a wide variety of inputs and outputs	Understand sequences, selection [e.g., if...then...] and repetition [e.g., repeat... until...] of commands Understand that algorithms can select from variables and prioritise instructions as a result Develop an understanding of how to use a repetition loop and how these can be used in conjunction with selection to create a desired effect	Understand sequences, selection [e.g., if...then...] and repetition [e.g., repeat... until...] of commands in a variety of contexts Understand that outputs can be programmed or be a response to the environment

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Vocabulary	<p>computer control digital electronic game instruction remote screen smartphone tablet technology touch use</p>	<p>aim algorithm app command debug device fix function keyboard instruction mouse objective problem program programmable programming sequence solution solve step symbol task test</p>	<p>animation code detect error hardware logic logical pixel precise reason rules sequential software specific sprite</p>	<p>block language computational thinking controlled expected impact input inputting interaction outcome output pattern random reasoned reasoning repeat repeating result unexpected user variable</p>	<p>condition conditional conditions decibel dependent GPS - global positioning system independent light motion prioritise priority proximity repetition selection sensor simulate</p>	<p>decomposition server</p>	<p>generalisation response</p>
Information Technology [IT]	<p>Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>	<p>Understand that data can be stored on computers and retrieved as well as deleted</p>	<p>Understand that there are a variety of different programs on computers used to create original content (e.g., word processing, drawing, calculating etc)</p> <p>Understand what a spreadsheet is</p> <p>Know different ways of collecting data</p>	<p>Understand what a search engine is and what it is used for</p> <p>Understand what digital networks are, of which the internet is one</p> <p>Understand that the world wide web is a one of multiple services provided by the internet</p> <p>Understand that search engines are used to navigate websites within the world wide web</p> <p>Understand Boolean logic to refine a search resulting in a more focused and productive result.</p>	<p>Understand that searches are selected and ranked when using search engines</p> <p>Understand the different types of computer network</p> <p>Identify the variety of services offered by the internet in terms of communication and collaboration</p> <p>Understand the history of animation and learn how to create an animation in its simplest form</p> <p>Understand the concept of desktop publishing and be able to identify the differences between Microsoft PowerPoint and Publisher</p>	<p>Identify the reasons for using different digital networks</p> <p>Design and create programs on a computer in response to a given goal</p> <p>Understand how to use and apply knowledge of filming techniques, audio downloads and software editing to assemble a video montage.</p>	<p>Identify the different protocols that are needed within digital networks</p> <p>Critically evaluate the ways in which search results are ranked and selected and factors that contribute to this</p>

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				<p>Know what a branching database is and how to create one.</p> <p>Know what makes a presentation effective</p>			
Vocabulary	<p>click</p> <p>enter</p> <p>information</p> <p>internet</p> <p>password</p> <p>search</p> <p>select</p> <p>view</p> <p>web page</p> <p>website</p>	<p>access</p> <p>collate</p> <p>content</p> <p>copy</p> <p>data</p> <p>delete</p> <p>edit</p> <p>file</p> <p>folder</p> <p>hyperlink</p> <p>link</p> <p>offline</p> <p>online</p> <p>paste</p> <p>recover</p> <p>resources</p> <p>retrieve</p> <p>save</p> <p>sort</p> <p>store</p> <p>user</p> <p>username</p> <p>wired</p> <p>wireless</p> <p>world wide web</p>	<p>blog</p> <p>browser</p> <p>email</p> <p>hardware</p> <p>media</p> <p>medium</p> <p>publishing</p> <p>slideshow</p> <p>software</p> <p>spreadsheet</p> <p>video conference</p> <p>window</p> <p>word processor</p>	<p>autocomplete</p> <p>chart</p> <p>data</p> <p>html - hypertext</p> <p>markup language</p> <p>http - hypertext</p> <p>transfer protocol</p> <p>index</p> <p>Internet service provider (ITP)</p> <p>IP address</p> <p>network</p> <p>numerical</p> <p>plan</p> <p>presentation</p> <p>rank</p> <p>relevance</p> <p>search engine</p> <p>shoot</p> <p>tools</p> <p>uniform resource locator (URL)</p>	<p>collaboration</p> <p>collect</p> <p>communication</p> <p>filters</p> <p>global</p> <p>hub</p> <p>local area network (LAN)</p> <p>organise</p> <p>packet</p> <p>web server</p> <p>wide area network (WAN)</p>	<p>accuracy</p> <p>accurate</p> <p>analyse</p> <p>assumption</p> <p>Boolean</p> <p>cascading style sheets</p> <p>field</p> <p>file transfer protocol</p> <p>reliability</p> <p>reliable</p> <p>rights</p> <p>strings</p>	<p>bias</p> <p>components</p> <p>evaluate</p> <p>interrelated</p> <p>optimise</p> <p>protocol</p> <p>system</p> <p>usage</p>

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<p>Digital Literacy [DL]</p>	<p>Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>	<p>Understand what is meant by digital technology and can give examples both inside and out of school</p> <p>Understand that some information used on digital technology (e.g., passwords) should be kept private</p> <p>Understand what personal information is and how to protect it online</p> <p>Understand that there is content on the internet that may upset them</p>	<p>Understand how to report their concerns about something online</p> <p>Understand how to protect personal information online and how you could inadvertently give it away (e.g., images shared)</p> <p>Identify ways in which people can communicate with others online</p> <p>Understand what constitutes acceptable and unacceptable behaviour when communicating online</p>	<p>Understand the importance of their conduct when using communication tools</p> <p>Understand the variety of online 'identities' someone may have (gaming, avatar, social media)</p> <p>Are aware of what information should be shared online and who they should share it with</p> <p>Understand that any form of online content can remain indefinitely</p> <p>Know more than one way to report concerns about inappropriate content and communication</p>	<p>Understand the potential ramifications of unacceptable behaviour online</p> <p>Understand that online identities are not always a reflection of the person who created them</p> <p>Understand that everyone that does anything online has a digital footprint</p> <p>Identify a variety of ways to report concerns about inappropriate content and communication</p>	<p>Understand the impact of the services offered by the internet on people's lives</p> <p>Understand what is meant by intellectual property, copyright, piracy, and fair use and distribution</p> <p>Understand that there may be people online that wish to hurt you or your friends</p> <p>Understand that your digital footprint can be used to target you with online content</p> <p>Are aware of the variety of support networks in place to assist in the event of reporting a concern</p>	<p>Understand how online content can be misleading and designed with a particular viewpoint in mind</p> <p>Understand how to legally, safely and fairly use others' online content in your own work</p> <p>Understand how your online behaviour can negatively impact on your future</p> <p>Are aware of terms and conditions for web servers/apps (for examples age restrictions on social media use or ownership of content shared by individuals shared online) and the reasons behind them</p>
<p>Skills</p>							
<p>Computer Science [CS]</p>	<p>With support, use simple adventure games and simulations.</p> <p>Use a remote control toy</p> <p>Use a programmable toy e.g. BeeBot, Romer.</p>	<p>Follow a simple algorithm</p> <p>Give a series of simple commands to achieve a specific objective</p> <p>Identify what is wrong with a simple algorithm when the steps are out of order</p> <p>Make logical attempts to fix a simple algorithm (debug)</p> <p>Explain what they think a simple program will do</p>	<p>Design a simple program that achieves a specific objective</p> <p>Identify problems within an algorithm that will lead to an unexpected outcome and make attempts to fix them</p> <p>Use trial and error in problem solving to reduce the amount of possible solutions</p> <p>Give a logical explanation for predicting the behaviour of programs</p>	<p>Create a simple program using a block language, <u>without</u> user interaction (e.g., create a simple animation in Scratch with a sprite, dialogue and background)</p> <p>Use sequences of commands or blocks in on-screen programming, producing an output on the screen (e.g. a simple animation in Scratch).</p> <p>Use logical reasoning to identify errors within their own and others programs and give reasons</p> <p>Use logical reasoning to explain the steps they've used and the reasons for their choices</p>	<p>Create a program using a block language, <u>with</u> simple user interaction (e.g., create a simple game involving use of backgrounds, props, sprites, costumes, sound).</p> <p>Use sequences & repetition [e.g. repeat... until...] of commands or blocks in on-screen programming, inc keyboard inputs & on-screen outputs (e.g. write a game using Scratch with repeated commands)</p> <p>Use logical reasoning to identify errors within their own and others' programs and give reasons. Then test them to ensure they are fixed</p> <p>Explain an algorithm using sequence and repetition, in their own words</p>	<p>Independently create, test & debug complex programs using a block language (e.g., create, test & debug a Scratch animation with multiple scenes, background, sprites, dialogue, music & costume).</p> <p>Use sequences, selection [e.g. if...then...] and repetition [e.g. repeat... until...] of commands or blocks in on-screen programming, including both keyboard/mouse inputs, and on-screen outputs.</p> <p>Use logical reasoning to detect and fix errors in a variety of algorithms fully justifying your choices</p> <p>Explain an algorithm using sequence, selection and</p>	<p>Independently create, test and debug a program using a second programming language (e.g., create, test and debug a Smartphone app)</p> <p>Use sequences, selection [e.g. if...then...], variables & repetition [e.g. repeat... until...] of commands/blocks in on-screen programming, including other types of input/output (e.g. create a Smartphone app).</p> <p>Develop, create & debug computer control applications</p> <p>Use logical reasoning to detect and fix errors in a variety of algorithms fully justifying your choices</p> <p>Give clear & precise logical explanations of algorithms</p>

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						repetition, in their own words	
Information Technology [IT]	<p>With support, log on to an app or program.</p> <p>Use the touchscreen to navigate apps.</p> <p>With support, use pre-selected web pages.</p>	<p>Sort, collate, edit and store simple original digital content (e.g., they can name, save and recover their work)</p> <p>Follow simple instructions to access online resources</p> <p>Adjust the colour and thickness of a pen or brush tool</p> <p>Create shapes with different colours</p> <p>Add text to artwork and alter font, colour, size and effect</p> <p>Applying knowledge of Paint tools to <u>plan</u> an artwork design</p> <p>Use a selected range of Paint tools to <u>create</u> a digital piece of art work</p> <p>Open a word processing document and enter text</p> <p>Use a range of tools to edit a word processing document</p>	<p>Store, organise and retrieve content on digital devices for a given purpose, naming my files meaningfully</p> <p>Create, manipulate and edit original content using a range of media</p> <p>Explore the features and tools of presentation software</p> <p>Open, edit and save a PowerPoint</p> <p>Insert text boxes and insert and edit text within them</p> <p>Search the internet for appropriate images and insert and manipulate them in PowerPoint</p> <p>Applying knowledge of PowerPoint tools to make a presentation more visually effective</p> <p>Present data visually as a bar chart</p> <p>Edit a spreadsheet</p>	<p>Carry out simple searches to retrieve information from the internet</p> <p>Design and create content on a computer (e.g. take photos and use in a Comic Strip).</p> <p>Collect and present information from both online and offline services</p> <p>Incorporate images into branching databases (using a 3-D modelling software)</p> <p>Create a simple presentation using PowerPoint (choose a theme, insert and manipulate text and images and add slides with transitions)</p> <p>Use different ways of manipulating text, underlining text, centring text, change font and size and save text to a folder.</p> <p>Insert sound recordings into a multimedia presentation.</p> <p>Effectively communicate information using a PowerPoint presentation (taking into consideration different audiences)</p>	<p>Identify which software is most appropriate for a given task</p> <p>Design and create content on a computer using a variety of software (e.g. plan, shoot and edit a video, plan and create a presentation)</p> <p>Collect, organise and present data for a specific purpose (e.g. transport data and creating simple graphs or charts)</p> <p>Save images found using a search engine</p> <p>Create a video using editing software from a planned story board</p> <p>Use appropriate devices to film video footage and record audio</p> <p>Create animations using software technology</p> <p>Manipulate image size and shape by cropping</p> <p>Find and create images with a transparent backgrounds</p> <p>Layer images and text by moving them forwards and backwards</p>	<p>Collect, organise, present and analyse data for a specific purpose (e.g., transport data and creating simple graphs or charts)</p> <p>Analyse the quality of information gathered using a search engine (accuracy and reliability)</p> <p>Collect and enter data into a software programme (in Excel)</p> <p>Create visual representations of data and use formula to calculate averages (using Excel)</p> <p>Analyse and interpret data and understand how data can be used to support a claim</p> <p>Analyse and represent data as infographics (using Publisher)</p>	<p>Design and create systems in response to a given goal, with multiple, interrelated components</p> <p>Collect, organise, present, analyse and evaluate data for a specific purpose (e.g. transport data and creating simple graphs or charts)</p> <p>Analyse the quality of information gathered using a search engine (evidence of bias and assumptions)</p> <p>Use the SUM function in Excel to solve problems</p> <p>Use Excel formula to carry out different methods of multiplying</p> <p>Use Excel formula to calculate averages and highlighting different cell values</p> <p>Understand how QR codes work and be able to generate QR codes using QR generator software</p> <p>Write encryption codes in Excel for RFID readers</p>

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					<p>Use and apply learned desktop publishing skills to create a printed end product</p> <p>Collect and insert data into a data processing software program</p> <p>Present data by creating graphs and charts in a data processing software program</p> <p>Insert hyperlinks to enhance a presentation</p> <p>Insert data into a PowerPoint using hyperlinks</p>		
Digital Literacy [DL]		Explain why it is important to be considerate and kind to people online.	Explain, giving examples, of why it is important to be considerate to people online	<p>Demonstrate the importance of having a secure password</p> <p>Explain the negative implications of failure to keep password secret</p>	<p>Identify unsafe online behaviour and ways in which they may be encouraged to share personal information</p> <p>Help others to keep safe online</p>	Explain how identity online can be copied, modified or altered.	<p>Create a robust, safe and secure online identity and explain how it can impact on the way people perceive you</p> <p>Explain the potential consequences of sharing reportable online content</p>