Primary Computing Progression Map

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum *Pupils should be taught:*		• *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.*		• *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 know…

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Hardware Explorers**	**Programs and Algorithms**	**Digital Art**	**Introduction to Debugging**	**Writing Algorithms**	**Internet Explorers**
	Use different hardware devices Know how to care for computers Learn how to log in/log off Learn how to open programs Use a keyboard effectively to type including upper and lower case Know what personal information is. Understand the use of passwords to keep devices and information safe.	Know that everyday devices can be programmed through clear and accurate instructions. Know what happens if we program a device incorrectly. Program a beebot Know the distinction between an algorithm and a program.	Learn how to use tools in paint Create shapes and change colours on Paint Learn how to save work. Know how to open files previously saved. Know how to insert text and how to change it's font, colour and size. Create a piece of artwork on Paint.	Follow and us algorithms Understand that algorithm errors can make a program not work correctly. Identify errors in their algorithms and debug them. Evaluate the effectiveness of algorithms and the debugging process.	Write their own algorithms in a variety of contexts Use algorithms (unplugged) to record a dance routine Design instructions for a lego model. Plan a journey for a beebot. Find and correct errors Debug their own algorithms.	Know how to stay safe online. Understand what personal information is and how to stay safe online. Know what is appropriate conduct on the internet (what is kind and not kind) Conduct an internet search safely
Vocabulary	Device Symbol Access Window Word processing program	Program Algorithm Precise Sequence	Icon Delete File Folder Save Software Tool	Debug Solution Programmer	Test Bug Fix Tracing	Content
Year 2	**Algorithmic Thinking**	**Internet Awareness**	**Creating Presentations**	**Excellent Excel**	**Learning to Code**	**Digital Citizens**
	Test different algorithms Assess whether algorithms have achieved their intended goal. Know that algorithms need to be clear and unambiguous. Create their own algorithms Evaluate their own algorithm and improve it (adding detail and refining)	Further develop their skills in using the internet and search engines to find information and images. learn how to copy and paste information and images in word processing software. further develop their understanding of how to use the internet safely, searching for reliable content that is from trusted sites.	Explore the features and tools of a presentation software - PowerPoint. Learn how to open, edit and save a PowerPoint presentation. Know how to insert text boxes and insert and edit text within them. learn how to search the Internet for appropriate images, inserting and manipulating them in PowerPoint using the copy or cut	learn what a spread sheet is and begin to understand how to present data that they have collected for a specific purpose. Begin to create simple bar charts to present data and edit spread sheets. Children will also learn how to store, organise, find and access files.	Children will learn that computers speak a specific language Use scratch 3 platform Know what a sequence/block/event/script and sprites are.	Know how to keep safe online Know how to be a positive digital citizen. Understand that their actions online stay with them forever. Know what a trusted website is. Begin to understand the importance of regulating screen time. Further develop knowledge of what personal information is and how to keep it secure

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			and paste techniques. Make an existing powerpoint more visually appealing.			Know what to do if they find upsetting content online.
Vocabulary	Detect Error Sequential Specific Efficient Ambiguous Refine	Browser Tab Hardware Copy Paste Search engine	Media Slideshow Edit	Spreadsheet Cell Row Column Data Retrieve	Language Code Event Block Sprite Script	Digital citizen Digital footprint Permission Cyberbullying
Year 3	**Time to Travel**	**Apply our coding Alien at School**	**Networks**	**Communicating Online**	**Branching Databases**	**Presenting My Ideas**
	Build extended codes using Scratch Know what a network is Understand the concept of inputs/outputs Develop understanding of a sequence/event/debugging	Code an extended project independently Understand the concept of working in a loop Work on an open-ended task using the 'try-it, test-it, fix-it' approach	Learn how digital devices work. begin to understand what networks Differentiate between the internet and the WWW Know that the internet is a global system of interconnected computer networks that allows communication between networks and digital devices That the World Wide Web is a collection of web pages that are transported between digital devices across the world on the internet. Know how search engines work and what how to use them effectively. Know how to navigate webpages to access information.	Understand different ways that people can communicate online and that online communication leaves a digital footprint. Learn that age restrictions apply on digital platforms to protect children. Recognise that people can use email to communicate online and they will plan and write formal and informal emails to a range of recipients. Know the different protocols required when writing an email and that its language should be altered to fit its audience.	Know that a database is similar to an online library where information is sorted and classified. Discover the principles of branching databases, Create their own Learn how to refine internet searches using Boolean search terms. Understand the differences between search engines and databases.	Know what makes a presentation effective and appealing. Develop understanding of how to use a search engine using word-strings. They will then input their research findings into a multimedia presentation. Create presentations that contain transitioning slides with inserted text and images and audio recordings Deliver presentations to different audiences.
Vocabulary	Upload File explorer Network Input Output	Open-ended challenge Working in the loop	html - hypertext markup language http - hypertext transfer protocol rank relevance uniform resource locator (URL) global packet web server Boolean	Email Platform Emoticons	Database Branching database	Presentation Tools multimedia
Year 4	**Programming**	**Animation Adventures**	**Presenting Data**	**Advertising**	**Making a Quiz**	**Desktop Publishing**
	Explore features of educational games. (Question-response-feedback) Understand what a repeated pattern is Introduction to blocks that include variables (if, then, else)	Begin to understand the history of animation and recognise that animation can be created using multiple frames that change quickly. create animation using software technology.	Learn how to collect data for a given purpose using appropriate equipment. Learn how to organise data into tables and present it in a range of graphs and charts. They will learn how to use hyperlinks to insert data into presentation software.	Identify the features that make adverts and promotional videos effective. Learn how to create a storyboard for an advert using text, backgrounds, images, music and voiceovers. Learn the principles of filming	Use their understanding of a selection of variables to code a quiz. Decompose a game in order to understand how it works. Work in a loop Use accumulated knowledge of	Use desktop publishing programmes. Identify the differences between Microsoft PowerPoint and Publisher. Learn how to manipulate image size and shape by cropping Create images with transparent

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	Create a program with a repeat function, evaluate. Identify real world examples of repeat loops e.g traffic light. Debug algorithms Evaluate algorithms Create a new game on scratch using their programming skills to date.	Design stick figure animation videos, web-based animations using multiple actions that happen at the same time and create their own stop-frame animation using Lego. Know that modern software can record movement of inserted objects and interacting characters against a backdrop. appreciate the importance of timing in an animation – and learn how to coordinate frame transition timing with inserting and moving characters and introducing speech bubbles.		video footage and recording audio, using appropriate devices. Know how to import recordings into an editing software and creating a video following a plan	Scratch coding to complete open ended challenges	backgrounds. Know how to layer images. Use desktop publisher to create a printed outcome.
Vocabulary	if/else/then	Frame Animation Stop motion Stop frame Thaumatrope	Communication Chart Hyperlink	collaboration collect communication footage panning zooming filming angles	Decomposition Value	Microsoft Publication Desktop Publishing Crop Format Transparency tool
Year 5	**Complex Programming**	**Broadcasting**	**Analysing Data**	**Video Montage**	**Staying Safe Online**	**Repetition and Procedures**
	Program a Sprite to move through a maze game. Use a keyboard to program inputs Learn to use codes to modify outputs Revisit debugging skills to identify and solve errors within a program.	Create customised and animated sprites Learn how to use broadcast blocks to send messages and prompts to create dialogue between multiple characters in a program. Write block codes Refine codes by using debugging skills to identify and solve errors in programs Amalgamate all prior knowledge of coding.	Develop their understanding of how data processing software can be used to collect, organise, present, analyse and evaluate data for a given purpose. Begin to write formulae to manipulate data and learn how data can be used to support a claim. Create infographics to present data in more detail, using appropriate software.	Learn that a montage is a technique of film editing that combines a series of short shots or clips into one sequence and is often set to music. Know about different types of camera shots (wide shot, mid shot, close up, extreme close up) and understand their different effects. Practise different filming techniques, such as static, panning, zooming, camera angle and use of light and colour. download and save audio clips, Understand copyright law. Create own montages.	Develop an understanding of intellectual property, fair use and distribution and plagiarism and how they impact people's lives. Learn how our online identity can be copied, modified or altered. Know that not all people on the internet are safe to "connect" with. Know how to keep safe on the internet.	Learn the importance of writing efficient code. Know how to write efficient codes in logo Apply efficient code learning to scratch. Make links between different programming languages.
Vocabulary	complex	Broadcast	Analyse Sheets field	Tilt Shot Copyright Montage	Piracy Plagiarism Fair use and distribution Intellectual property Barcode QR code Infrared light Electromagnetic spectrum Client Server IP address DNS Router	Turtle Text programming languages Logo Procedure Function Custom block

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						Packets of data Internet service provider	
Year 6	**Different Languages**	**Meeting A Brief**	**Flowol**	**Internet Searches**	**Code Breakers**	**Solving Problems Using Data**	**Internet Fairness**
	Draw upon all prior knowledge of computer science. Learn the basics of Python Replicate a previous scratch maths game in python (transferrable skills) Create a quiz in Python.	Draw upon all prior knowledge of coding. Build a game Think about the needs of the user Choose an appropriate platform for building their game Evaluate the game.	Create a flowchart to visually represent algorithms Know how to use Flowol software. Use algorithms that have multiple outputs.	Learn how a search engine selects and ranks results using algorithms. Understand the potential for bias in ranking systems. Analyse the implications of fairness when a search engine's results present pages from opposing viewpoints.	Know the meaning of the word code Know different types of codes: Morse code, Cipher, and semaphore. Understand that codes have evolved over time. Understand the importance of coding at Bletchley Park. Know the significance of Alan Turing Know about significant individuals who have impacted and shaped the digital world. Steve Jobs, Bill Gates and Ada Lovelace.	Develop an understanding of data processing software. Learn how to use Excel to add and multiply amounts and workout averages. Examine in detail how bar codes and QR codes work and be able to generate QR codes using QR generator software. learn the varied uses of radio frequency identification (RFID) technology Use Excel to write examples of encryption code collect, organise and present data using Excel formulae, in order to analyse and evaluate it for specific research purposes.	Evaluate the benefits and flaws of technological advances and examine the contributions made to technology from a range of people. Explore idea of unconscious bias. Examine the importance of self-regulation when posting online. How social media sites to regulate the use of data. Understand how digital footprints are used to target us with online content and how personal data can be harvested and used to gather information about individuals.
Vocabulary	Python Print Selection	Brief Evaluate	Flowchart	Bias Components Interrelated Optimise Protocol System Usage Web crawlers Filters	Coding Cipher Morse code	Sum Average Cumulative Big Data Formula/formulae RFID (Radio Frequency Identification)	Bias Components Interrelated Optimise Protocol System