Computing Progression of Skills

	EYFS	Year 1	Year 2
Hardware	-Learning how to operate a camera to take photographs of meaningful creations or moments. -Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. -Recognising and identifying familiar letters and numbers on a keyboard. -Developing basic mouse skills such as moving and clicking.	-Learning how to operate a camera or tablet to take photos and videos. -Learning how to explore and tinker with hardware to find out how it works. -Recognising that some devices are input devices and others are output devices. -Learning where keys are located on the keyboard.	-Understanding what a computer is and that it's made up of different components. -Recognising that buttons cause effects and that technology follows instructions. -Learning how we know that technology is doing what we want it to do via its output. -Using greater control when taking photos with cameras, tablets or computers. -Developing confidence with the keyboard and the basics of touch typing.
Networks and data representation	N/A	N/A	N/A
Computational thinking	-Using logical reasoning to understand simple instructions and predict the outcome.	-Learning that decomposition means breaking a problem down into smaller parts. -Using decomposition to solve unplugged challenges. -Using logical reasoning to predict the behaviour of simple programs. -Developing the skills associated with sequencing in unplugged activities. -Following a basic set of instructions. -Assembling instructions into a simple algorithm.	-Articulating what decomposition is. -Decomposing a game to predict the algorithms used to create it. -Learning that there are different levels of abstraction. -Explaining what an algorithm is. Following an algorithm. -Creating a clear and precise algorithm. -Learning that programs execute by following precise instructions. -Incorporating loops within algorithms.
Programming	-Following instructions as part of practical activities and games. -Learning to give simple instructions. -Experimenting with programming a Bee-bot/Blue- bot and learning how to give simple commands. -Learning to debug instructions, with the help of an adult, when things go wrong.	-Programming a Floor robot to follow a planned route. -Learning to debug instructions when things go wrong. -Using programming language to explain how a floor robot works. -Learning to debug an algorithm in an unplugged scenario.	-Using logical thinking to explore software, predicting, testing and explaining what it does. -Using an algorithm to write a basic computer program. -Using loop blocks when programming to repeat an instruction more than once.

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	Year 3	Year 4	Year 5	Year 6
Hardware	-Understanding what the different components of a computer do and how they work together. -Drawing comparisons across different types of computers. -Learning about the purpose of routers.	-Using tablets or digital cameras to film a weather forecast. -Understanding that weather stations use sensors to gather and record data which predicts the weather.	-Learning that external devices can be programmed by a separate computer. -Learning the difference between ROM and RAM. -Recognising how the size of RAM affects the processing of data. -Understanding the fetch, decode, execute cycle.	-Learning about the history of computers and how they have evolved over time. -Using the understanding of historic computers to design a computer of the future. -Understanding and identifying barcodes, QR codes and RFID. -Identifying devices and applications that can scan or read barcodes, QR codes and RFID. -Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files).
Networks and data representation	-Understanding the role of the key components of a network. Identifying the key components within a network, including whether they are wired or wireless. -Understanding that websites and videos are files that are shared from one computer to another. -Learning about the role of packets. -Understanding how networks work and their purpose. -Recognising links between networks and the internet. -Learning how data is transferred.	-Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.	-Learning the vocabulary associated with data: data and transmit. -Learning how the data for digital images can be compressed. -Recognising that computers transfer data in binary and understanding simple binary addition. -Relating binary signals (Boolean) to the simple character-based language, ASCII. -Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. -Understanding how bit patterns represent images as pixels.	-Understanding that computer networks provide multiple services.
Computational thinking	-Using decomposition to explain the parts of a laptop computer. -Using decomposition to explore the code behind an animation. -Using repetition in programs. -Using logical reasoning to explain how simple algorithms work. -Explaining the purpose of an algorithm.	-Using decomposition to solve a problem by finding out what code was used. -Using decomposition to understand the purpose of a script of code. -Identifying patterns through unplugged activities. -Using past experiences to help solve new problems.	-Decomposing animations into a series of images. -Decomposing a program without support. -Decomposing a story to be able to plan a program to tell a story. -Predicting how software will work based on previous experience.	-Decomposing a program into an algorithm. -Using past experiences to help solve new problems. -Writing increasingly complex algorithms for a purpose.

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	-Forming algorithms independently.	-Using abstraction to identify the important parts when completing both plugged and unplugged activities.	-Writing more complex algorithms for a purpose.	
Programming	-Using logical thinking to explore more complex software; predicting, testing and explaining what it does. -Incorporating loops to make code more efficient. -Continuing existing code. -Making reasonable suggestions for how to debug their own and others' code.	-Creating algorithms for a specific purpose. -Coding a simple game. -Using abstraction and pattern recognition to modify code. -Incorporating variables to make code more efficient.	-Programming an animation. -Iterating and developing their programming as they work. -Confidently using loops in their programming. -Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. -Writing code to create a desired effect. -Using a range of programming commands. -Using repetition within a program. -Amending code within a live scenario.	-Debugging quickly and effectively to make a program more efficient. -Remixing existing code to explore a problem. -Using and adapting nested loops. -Programming using the language Python. -Changing a program to personalise it. -Evaluating code to understand its purpose. -Predicting code and adapting it to a chosen purpose.
Using software	-Taking photographs and recording video to tell a story. -Using software to edit and enhance their video adding music, sounds and text on screen with transitions.	-Building a web page and creating content for it. -Designing and creating a webpage for a given purpose. -Use online software for documents, presentations, forms and spreadsheets. -Using software to work collaboratively with others.	-Using logical thinking to explore software more independently, making predictions based on their previous experience. -Using software programme Sonic Pi/Scratch to create music. -Using the video editing software to animate. -Identify ways to improve and edit programs, videos, images etc. -Independently learning how to use 3D design software package TinkerCAD.	-Using logical thinking to explore software independently, iterating ideas and testing continuously. -Using search and word processing skills to create a presentation. -Creating and editing sound recordings for a specific purpose. -Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. -Using design software TinkerCAD to design a product. -Creating a website with embedded links and multiple pages.
Using email and internet searches	-Learning to log in and out of an email account. -Writing an email including a subject, 'to' and 'from.' -Sending an email with an attachment. Replying to an email.	-Understanding why some results come before others when searching. -Using keywords to effectively search for information on the internet. -Understanding that information found by searching the internet is not all grounded in fact. -Searching the internet for data.	-Developing searching skills to help find relevant information on the internet. -Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns.	-Understanding how search engines work.
Using data	-Understanding the vocabulary to do with databases: field, record, data.	-Understanding that data is used to forecast weather.	-Understanding how data is collected in remote or dangerous places.	-Understanding how barcodes, QR codes and RFID work.

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	-Learning about the pros and cons of digital versus paper databases. -Sorting and filtering databases to easily retrieve information. -Creating and interpreting charts and graphs to understand data.	-Recording data in a spreadsheet independently. -Sorting data in a spreadsheet to compare using the 'sort by…' option. -Designing a device which gathers and records sensor data.	-Understanding how data might be used to tell us about a location.	-Gathering and analysing data in real time. -Creating formulas and sorting data within spreadsheets.
Wider use of technology	-Understanding the purpose of emails. -Recognising how social media platforms are used to interact.	-Understanding that software can be used collaboratively online to work as a team.	-Learn about different forms of communication that have developed with the use of technology.	-Learning about the Internet of Things and how it has led to 'big data'. -Learning how 'big data' can be used to solve a problem or improve efficiency.