Computing Curriculum Plan

By the end of studying Computing at Beechwood Primary School, children will have an understanding of Digital Literacy, Computer Science and Information Technology and be able to talk about the following themes which they cover through the Kapow Primary Scheme of work:

Online Safety: Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.
Computing systems and networks: Identifying hardware and using software, while exploring how computers communicate and connect to one another
Programming: Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks.
Creating media: Learning how to use various devices — record, capture and edit content such as videos, music, pictures and photographs.
Data Handling: Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.

Units and End Points

	Autumn	Spring	Summer
EYFS	Computing systems and networks 1 To be able to understand what a computer keyboard is and recognise some letters and numbers. To know that a mouse can be used to click, drag and create simple drawings. To know that to use a computer you need to log in to it and then log out at the end of your session.	Programming 1 To know that being able to follow and give simple instructions is important in computing. To understand that it is important for instructions to be in the right order. To understand why a set of instructions may have gone wrong. Programming 2 To know that you can program a Bee-Bot with some simple commands. To understand that debugging means how to fix some simple programming errors.	Data handling To know that sorting objects into various categories can help you locate information. To know that using yes/no questions to find an answer is known as a branching database. To know that a pictogram is a way of showing information.

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		To understand that an algorithm is a set of clear and precise instructions.	
Year 1	Online Safety To know that the internet is many devices connected to one another. To know what to do if you feel unsafe or worried online - tell a trusted adult. To know that people you do not know on the internet (online) are strangers and are not always who they say they are. To know that to stay safe online it is important to keep personal information safe. To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	Computing systems and networks To know that "log in and log out" means to begin and end a connection with a computer. To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art To know that passwords are important for security	Digital media To understand that holding a camera or device still and considering angles and light are important to taking good pictures. To know that photographs can be edited, cropped and filtered. To know how to search safely for images online.
	Programming 2 To understand the basic functions of a Bee-Bot. To know that you can use a camera/tablet to make simple videos. To know that algorithms move a Bee-Bot accurately to a chosen destination	Programming 1 To understand that an algorithm is when instructions are put in an exact order To know that input devices get information into a computer and that output devices get information out of a computer. To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.	

Year 2	<u>Online Safety</u> To understand the difference between online and offline To understand what information I should not post online. To know what the techniques are for creating a strong password. To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' To understand that not everything I see or read online is true.	<u>Programming 1</u> To understand what machine learning is and how it enables computers to make predictions To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. To know that abstraction is the removing of unnecessary detail to help solve a problem	<u>Data Handling</u> To understand that you can enter simple data into a spreadsheet. To understand what steps you need to take to create an algorithm. To know what data to use to answer certain questions. To know that computers can be used to monitor supplies.
	<u>Computing systems and networks 1</u> To know the difference between a desktop and laptop computer. To know that people control technology To know some input devices that give a computer an instruction about what to do (output). To know that computers often work together	<u>Programming 2</u> To know that coding is writing in a special language so that the computer understands what to do. To understand that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke.	
Year 3	<u>Online Safety</u> To know that the internet is many devices connected to one another. To know what to do if you feel unsafe or worried online - tell a trusted adult. To know that people you do not know on the internet (online) are strangers and are not always who they say they are.	<u>Creating Media</u> To know that different types of camera shots can make my photos or videos look more effective. To know that I can edit photos and videos using film editing software. To understand that I can add transitions and text to my video.	<u>Computing systems and networks 2</u> To know the roles that inputs and outputs play on computers To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.

	To know that to stay safe online it is important to keep personal information safe. To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.		To know what a tablet is and how it is different from a laptop/desktop ***computer.***
	<u>Computing systems and networks 1</u> To understand what a network is and how a school network might be organised. To know that a server is central to a network and responds to requests made. To know how the internet uses networks to share files. To know that a router connects us to the internet. To know what a packet is and why it is important for website data transfer	<u>Programming 1</u> To know that Scratch is a programming language and some of its basic functions. To understand how to use loops to improve programming To understand how decomposition is used in programming. To understand that you can remix and adapt existing code	
Year 4	<u>Online Safety</u> To understand some of the methods used to encourage people to buy things online To understand that technology can be designed to act like or impersonate living things To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. To understand what behaviours are appropriate in order to stay safe and be respectful online.	<u>Programming 1</u> To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. To know what a conditional statement is in programmin To understand that variables can help you to create a quiz on Scratch.	<u>Programming 2</u> To know that combining computational thinking skills can help you to solve a problem. To understand that pattern recognition means identifying patterns to help them work out how the code works. To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.
	<u>Computing systems and networks</u>	<u>Data Handling</u>	

	To understand that software can be used collaboratively online to work as a team. To know what type of comments and suggestions on a collaborative document can be helpful. To know that you can use images, text, transitions and animation in presentation slides	To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data'). To know that a weather machine is an automated machine that respond to sensor data. To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.	
Year 5	<u>Online Safety</u> To know different ways we can communicate online. To understand how online information can be used to form judgements To understand some ways to deal with online bullying. To know that apps require permission to access private information and that you can alter the permissions. To know where I can go for support if I am being bullied online or feel that my health is being affected by time online	<u>Programming 1</u> To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. To understand that using loops can make the process of writing music simpler and more effective To know how to adapt their music while performing.	<u>Data Handling</u> To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. To know what numbers using binary code look like and be able to identify how messages can be sent in this format. To understand that RAM is Random Access Memory and acts as the computer's working memory To know what simple operations can be used to calculate bit patterns.
	<u>Computing systems and networks</u> To know how search engines work. To understand that anyone can create a website and therefore we should take steps to check the validity of websites. To know that web crawlers are computer programs that crawl through the internet		<u>Creating media</u> To know that decomposition of an idea is important when creating stop-motion animations. To understand that stop-motion animation is filmed one frame at a time using models and with tiny changes between each photograph.

	To understand what copyright is.		To understand that editing is an important feature of making and improving a stop-motion animation.
Year 6	<u>Online Safety</u> To know that a digital footprint means the information that exists on the internet as a result of a person's online activity To know what steps are required to capture bullying content as evidence To understand that it is important to manage personal passwords effectively To understand what it means to have a positive online reputation. To know some common online scams	<u>Programming</u> To know that there are text-based programming languages such as Logo and Python To know that nested loops are loops inside of loops. To understand the use of random numbers and remix Python code	<u>Computing systems and networks</u> To know that AI is artificial intelligence and is used in everyday life. To know that AI is trained on data to recognise patterns and generate outputs. To know that AI can be used to generate written content. To know that AI can be used to create visual content like pictures. To know that AI can help generate basic HTML code to create the structure and layout of a website. To understand that there are ethical issues surrounding AI, including data privacy, bias and responsible use.
	<u>Computing systems and networks</u> To understand the importance of having a secure password and what "brute force hacking" is. To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. To know about some of the historical figures that contributed to technological advances in computing. To understand what techniques are required to create a presentation using appropriate software	<u>Data Handling 1</u> To know that data contained within barcodes and QR codes can be used by computers To know that infrared waves are a way of transmitting data To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. To know that data is often encrypted so that even if it is stolen it is not useful to the thief. Produce a completed sculpture demonstrating experimentation, originality and technical competence. Competently reflect on successes and personal development	