Computing long term plan

Year Group	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Nursery	To follow an instruction e.g., "Find your coat and come to the carpet". To find out how things work.		To understand and follow two-part instructions in daily routines. To find out how things work.		To continue to understand and follow two-part instructions in daily routines. To find out how things work.	
Reception	To follow instructions with several actions.		To follow instructions with several actions. To sequence story events in order, explaining choices		To follow instructions with several actions. To sequence story events in order, explaining choices	
Year 1	<u>Hardware Explorers</u> • to recognise different types of technology and what they are used for • taking care of different hardware and logging on and off • to open a word processing document and enter text • to begin to understand what we mean by personal information and why we must be careful when sharing it (e.g. passwords)	<u>Programs and Algorithms</u> • to predict the outcome of a command on a device • To match a command to an outcome • to run a command on a device • to create simple programs • to understand that an algorithm is a set of instructions that must be followed • to recognise that algorithms execute as programs on digital devices	<u>Digital Art</u> • adjusting the colour and thickness of the pen or brush tool • to create shapes with different colours • to add text to artwork and alter font, colour, size and effect • applying knowledge of Paint tools to plan an artwork design • to use a selected range of Paint tools to create a digital piece of artwork	<u>Internet Explorers</u> • to understand the rules for staying safe online • to understand what personal information means and how to keep it safe • to understand what actions and comments are kind and considerate when communicating online • to search for and find information using the internet • to use a range of tools to edit a word processing document	<u>Writing Algorithms</u> • to find the commands to move a sprite • to use commands to move a sprite • to compare different programming tools • to use more than one block by joining them together • To use a range of blocks • to test the programs I have created	<u>Digital Photography</u> • to recognise what devices can be used to take photographs • to explain the process of taking a good photograph • To take photos in both landscape and portrait format • to explain why a photo looks better in portrait or landscape format • to identify what is wrong with a photograph • to improve a photograph by retaking it • I can explore the effect that light has on a photo • I can recognise that images can be changed

Year 2	Algorithmic Thinking and Sequencing • To assess the purpose of an algorithm • To make an algorithm more efficient • To evaluate and improve the quality of an algorithm • To create a detailed algorithm • To refine an algorithm	Writing Algorithms • To recognise internet content that may be upsetting and how to report it • to begin to understand the purpose and function of search engines and compare their different features • to select appropriate search engine information results • to select appropriate search engine image results	Creating Presentations • to explore the features and tools of presentation software • to open, edit and save a PowerPoint • to insert text boxes and insert and edit text within them • to search the internet for appropriate images and insert and manipulate them in PowerPoint • to apply knowledge of PowerPoint tools to make a presentation more visually effective	Excellent Excel • To understand what a spreadsheet is • To understand different ways of collecting data • To be able to store and organise files • To be able to find and access files on a system • To be able to present data visually as a bar chart • To be able to edit a spreadsheet	Learning to Code • To understand that to control computers we need to speak their language. • To use computer code to write a program in a computer language • To understand that all scripts need an Event so the program knows when to run them. • To apply our knowledge of coding for a purpose • To embed the Sprite programming language and the concept of its endless possibilities	Digital Citizens • To recognise that some sites on the website are less trustworthy than other sites • To recognise that media balance is important • To understand that passwords should be private and secure • To understand that it is important to be kind to others online • To understand how to report upsetting content. • To understand that positive relationships can be supported online. • To recognise that we leave trails online
Year 3	Time to Travel • To create custom sprites • To duplicate and delete sprites • To upload backdrops • To understand that inputs are pieces of information given to a computer	Apply Our Coding Skills • To understand that the micro:bit is a tiny computer. • to use LED display outputs using a micro:bit • to explain that the order or sequence of instructions is	Networks • To understand how digital devices work • To understand what a network is. • To understand how computer networks work. • To understand that the internet is a	Communicating Online • To recognise the different ways we communicate online and how online communication forms our 'digital footprint'. • To understand that	Branching Databases • To understand that a database is an online library where information is sorted and classified. • To understand what a branching database is	Presenting My Ideas • To recognise that we leave trails online To be able to explain what makes a presentation effective • To understand how to create

	• To program a sprite to create outputs	important. • to create more complex code using inputs and outputs • to use a range of loops to make code more efficient • to explain that inputs are data sent to a computer. • to explain that outputs are data sent from a computer	global system of interconnected computer networks that allows communication between networks and digital devices. • To understand that the world wide web is a collection of webpages that are transported between digital devices across the internet. • To understand how search engines work to be able to navigate websites within the world wide web and access information	age restrictions apply on platforms to protect children. • To begin to communicate using email • To understand that the language of communication should be altered to fit the audience • To understand the different email protocols •	• To further understand how to create a branching data base • To create a branching database • To understand real-life applications of branching databases	effective word-strings when using a search engine • To create a simple presentation using Power Point (choose a theme, insert and manipulate text and images and add slides with transitions) • To be able to insert sound recordings into a multimedia presentation. • To effectively communicate information using a PowerPoint presentation. •
Year 4	<u>Programming</u> • to explain that the order or sequence of instructions is important. • to create more complex code using inputs and outputs • to use a range of loops to make code more efficient • to explain that inputs are data sent to a computer. • to explain that outputs are data sent from a	<u>Animation Adventures</u> • To create custom sprites • To duplicate and delete sprites • To create custom backdrops • To understand that inputs are pieces of information given to a computer • To program a sprite to create outputs	<u>Presenting Data</u> • to collect and insert data into a data processing program • to use data to create graphs and charts • to collect and insert data into a data processing program • to insert hyperlinks to enhance a presentation. • to insert data into a PowerPoint using hyperlinks	<u>Advertising</u> • to be able to identify features of adverts/promotional video • to be able to storyboard a TV advert (that depicts scenes and plans for text, backgrounds, images, music and voiceover) • to understand the principles of filming video footage and recording audio using appropriate	<u>Coding with Loops</u> • To understand that the micro:bit is a tiny computer. • to use LED display outputs using a micro:bit • to explain that the order or sequence of instructions is important. • to create more complex code using inputs and outputs • to use a range of loops to make code more efficient	<u>Desktop Publishing</u> • To understand how to use text-based programming (in contrast to block programming) to draw regular polygons • To understand that repeat loop commands in a text-based programming language are more efficient when drawing regular

	computer. • To apply coding to real-life situations			devices • To be able to save images found using a search engine • To be able to create a video using editing software from a planned story board	• to explain that inputs are data sent to a computer. • to explain that outputs are data sent from a computer. • To apply coding to real-life situations	polygons • I can identify the effect of changing the number of times a task is repeated • I can predict the outcome of a program containing a count-controlled loop • I can choose which values to change in a loop
Year 5	<u>Complex Programming</u> • to understand that a flowchart algorithm can be used to plan a playground game • to be able to create a flow chart to visually represent an algorithm that controls a single output for a device using Flowol software. (Zebra crossing) • to be able to create a flow chart to visually represent an algorithm that controls multiple outputs for a device using Flowol software. (traffic lights) • to program a sprite	<u>Further Programming</u> • to collect and insert to create more complex code using inputs and outputs • to use a range of loops to make code more efficient • to explain that inputs are data sent to a computer. • to explain that outputs are data sent from a computer. • To apply coding to real-life situations	<u>Searching and Safety</u> • to explain why we need tools to find things online • To recognise the role of web crawlers in creating an index • To relate a search term to the search engine's index • to give examples of criteria used by search engines to rank results • To understand how identity online can be manipulated • To understand the terms, 'intellectual property', 'copyright', 'piracy and 'fair use and distribution' • To understand why	<u>Flatfile Databases</u> • to create a database using cards • to navigate a flat-file database to compare different views of information • To choose which field to sort data by to answer a given question • to outline how 'AND' and 'OR' can be used to refine data selection • to ask questions that will need more than one field to answer • to refine a search in a real-world context	<u>Video Montage:</u> • To understand 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). • To be able to identify different types of camera shots (wide shot, mid shot, close up, extreme close up) and understand their different effects. • To become familiar with different filming techniques (static, panning, zooming, camera	<u>Repetition and Procedures:</u> • To understand how to use text-based programming (in contrast to block programming) to draw regular polygons • To understand that repeat loop commands in a text-based programming language are more efficient when drawing regular polygons • To understand that a 'procedure' is a shorthand way of explaining a more complicated

	to move in response to a programmed input • to use variables to modify outputs within a maze game • to add complexity to a sequence by creating an end goal		policies linked to image rights on the internet are important.		angle and use of light and colour) • To be able to select and save an audio to accompany a video • To understand the importance of the copyright law • to be able to use and apply knowledge of filming techniques, audio downloads and software editing to assemble a video montage.	set of steps. • To understand how to create procedures to draw regular polygons in text-based language • To understand how to combine procedure and loops to draw repeating patterns in text-based language • To be able to apply their knowledge of procedures and loops in a block programming language
Year 6	<u>Different Languages</u> • To become familiar with the programming language of Python • To be able to use Python to create simple programs • To be able to compare programming languages and make links between them • To be able to use subroutines (procedures) in code • To create a flowchart that	<u>Flowol and Micro:bit</u> • to create a flow chart that controls a single output • to create a flow chart that controls multiple outputs • To create a flow chart that controls multiple outputs using selection • to use variables to code a micro:bit • to apply coding to real-life situations	<u>Meeting a Brief</u> • To be able to use the decomposition method to break down the design of a game into its component parts • To be able to apply previously learned coding knowledge to refine the plan to create the game. • To be able to translate their planning into the development process of creating a program • To be able to	<u>Code Breakers</u> • To understand the meaning of the word code and learn how different codes have evolved through time. • To understand that codes/passwords can be cracked/broken • To understand the importance coding at Bletchley Park and the significance of Alan Turing. • To learn about further significant individuals in the	<u>Solving Problems Using Data</u> • To be able to use the SUM function in Excel to solve problems • To be able to use a range of Excel formulae to carry out different calculations (multiplying, an example of a complex formula, averages and conditional formatting) • To understand how barcodes work	<u>Internet Fairness</u> • To understand the implication of digital footprints, the importance of self-regulation when posting online and the issue of the conflict between regulation and control of content faced by social media providers. • To be able to examine unconscious bias in relation to the concept of gender

	controls multiple outputs <u>Internet Searches</u> • To understand that search engines use algorithms to rank results to a search • To be able to insert elements into a web page that satisfy search engine ranking algorithms in order to maximise its search engine optimisation • To understand the concept of bias and its debatable role in relation to how website search engine optimisation and search engine algorithms potentially effect website rankings. • To understand the implications of fairness when a search engine's results present pages from opposing viewpoints		evaluate whether a game meets a brief	history of computing. • To understand and convey the impact that significant individuals have made on the world of computing	• To understand how QR codes work and be able to generate QR codes using QR generator software • to be able to write encryption codes in Excel for RFID readers • to be able to collect, organise and present data • To be able to collect, organise and present data using Excel formulae, in order to analyse and evaluate it for a specific purpose.	imbalance in technological advancements • To recognise contributions to technology from a range of people • to understand the idea of 'Big Data' • To understand how personal data can be harvested and used to gather information about individuals. • To be able to research and clearly articulate the benefits and flaws of technological advances •