Computing Long Term Plan

	Autumn 1 Computing systems and networks	Autumn 2 Creating media	Spring 1 Programming A	Spring 2 Data and information	Summer 1 Creating media	Summer 2 Programming B
EYFS	**Introduction to computers** Mouse control to draw an object selecting colour and pen. • To control the mouse to draw a picture • To select a different colour	**Introduction to iPads** Learning how to open 'Numbots' by entering username and password. Use of number keypad and enter. • From the logon screen to type username using keyboard and select 3 pictures for password • To select number to answer question • To use the enter key to confirm answer	**Keyboard familiarisation** Type full name including using spacebar and selection of capital letter. • To use the keyboard to type name • To use spacebar to create a space between first name and surname • To press the capital key to select capital letter	**Moving a car** Using a remote control to move a car around a track. • To turn on the remote control and the car • To use buttons to send car to the left and right, forwards, and backwards • To control the car around a track	**Making a list** Typing a list of items using the return key and changing size of text and colour of text. • To type a list of words linked to curriculum using the return key to select new line • To change the size of text • To change the colour of text	**Moving a robot** Program a floor robot to navigate a maze. • To choose a command to send the robot in a desired direction • To try to link two commands • To discuss what happened if the robot went in the wrong direction
Year 1	**Technology around us** Recognising technology in school and using it responsibly. • To identify technology • To identify a computer and it main parts • To use a mouse in different ways • To use a keyboard to type on a computer • To use the keyboard to edit text • To create rules for using technology responsibly	**Digital painting** Choosing appropriate tools in a program to create art and making comparisons with working non-digitally. • To describe what different freehand tools do • To use the shape tool and the line tool • To make careful choices when painting a digital picture • To explain why I choose the tools I used • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper	**Moving a robot** Writing a short algorithms and programs for floor robots and predicting program outcome. • To explain what a given command will do • To act out a given word • To combine forwards and backwards commands to make a sequence • To combine four direction commands to make a sequence • To plan a simple program • To find more than one solution to a problem	**Grouping data** Exploring object labels, then using them to sort and group objects by properties. • To label objects • To identify that objects can be counted • To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects	**Digital writing** Using a computer to create and format text, before comparing to writing non-digitally. • To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper	**Programming animations** Designing and programming the movement of a character on screen to tell stories. • To choose a command for a given purpose • To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program
Year 2	**Information technology around us** Identifying IT and how its responsible use improves our world in school and beyond. • To recognise the uses and features of information technology • To identify the uses of information technology in the school	**Digital photography** Capturing and changing digital photographs for different purposes. • To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved	**Robot algorithms** Creating and debugging programs and using logical reasoning to make predictions. • To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer. • To recognise that we can count and compare objects • To recognise that objects can be represented as pictures • To create a pictogram • To select objects by attribute and make comparisons	**Making music** **Using a computer** as a tool to explore rhythms and melodies, before creating a musical composition. • To say how music can make us feel • To identify that there are patterns in music • To show how music is made from a series of notes • To create music for a purpose	**Programming quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. • To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome • To create a program using a given design

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	• To identify information technology beyond the school • To explain how information technology helps us • To explain how to use information technology safely • To recognise that choices are made when using information technology	• To use tools to change an image • To recognise that photos can be changed	program (series of commands) • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written	• To recognise that people can be described by attributes • To explain that we can present information using a computer	• To review and refine our computer work	• To create a program using my own design • To decide how my project can be improved
Year 3	**Connecting computers** Identifying that digital device have inputs, processes, and outputs, and how devices can be connected to make networks. • To explain how digital devices function • To identify input and output devices • To recognise how digital devices can change the way we work • To explain how a computer network can be used to share information • To explore how digital devices can be connected • To recognise the physical components of a network	**Stop-frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story. • To explain that animation is a sequence of drawings or photographs • To relate animated movement with a sequence of images • To plan an animation • To identify the need to work consistently and carefully • To review and improve an animation • To evaluate the impact of adding other media to an animation	**Sequencing sounds** Creating sequences in a block-based programming language to make music. • To explore a new programming environment • To identify that commands have an outcome • To explain that a program has a start • To recognise that a sequence of commands can have an order • To change the appearance of my project • To create a project from a task description	**Branching databases** Building and using branching databases to group objects using yes/no questions. • To create questions with yes/no answers • To identify the object attributes needed to collect relevant data • To create a branching database • To explain why it is helpful for a database to be well structured • To identify objects using a branching database • To compare the information shown in a pictogram with a branching database	**Desktop publishing** Creating documents by modifying text, images, and page layouts for specified purpose. • To recognise how text and images convey information • To recognise that text and layout can be edited • To choose appropriate page settings • To add content to a desktop publishing publication • To consider how different layouts can suit different purposes • To consider the benefits of desktop publishing	**Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions. • To explain how a sprite moves in an existing project • To create a program to move a sprite in four directions • To adapt a program to a new context • To develop my program by adding features • To identify and fix bugs in a program • To design and create a maze-based challenge
Year 4	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. • To describe how networks physically connect to other networks • To recognise how networked devices make up the internet	**Audio editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered. • To identify that sound can be digitally recorded • To use a digital device to record sound • To explain that a digital recording is stored as a file • To explain that audio can be changed through editing	**Repetition in shape** Using a text-based programming language to explore count-controlled loops when drawing shapes. • To identify that accuracy in programming is important • To create a program in a text-based language • To explain what 'repeat' means	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out investigations. • To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time	**Photo editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled. • To explain that digital images can be changed • To change the composition of an image • To describe how images can be changed for different uses • To make good choices when selecting different tools	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game. • To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count controlled loops

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Year 5	**Sharing information** Identifying and exploring how information is shared between digital systems. • To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To recognise how information is transferred over the internet • To explain how sharing information online lets people in different places work together • To contribute to a shared project online • To evaluate different ways of working together online	**Video editing** Planning, capturing, and editing video to produce a short film. • To explain what makes a video effective • To identify digital devices that can record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller. • To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project	**Flat-file database** Using a database to order data and create charts to answer questions. • To use a form to record information • To compare paper and computer-based databases • To outline how grouping and then sorting data allows us to answer questions • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To apply my knowledge of a database to ask and answer real-world questions	**Vector drawing** Creating images in a drawing program by using layers and groups of objects. • To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To evaluate my vector drawing	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz. • To explain how selection is used in computer programs • To relate that a conditional statement connects a condition to an outcome • To explain how selection directs the flow of a program • To design a program which uses selection • To create a program which uses selection • To evaluate my program
Year 6	**Internet communication** Recognising how the WWW can be used • To identify how to use a search engine • To describe how search engines select results • To explain how search results are ranked	**Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation. • To review an existing website and consider its structure • To plan the features of a web page	**Variables in games** Exploring variables when designing and coding a game. • To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data. • To identify questions which can be answered using data • To explain that objects can be described using data	**3D modelling** Planning, developing, and evaluating 3D computer models of physical objects. • To use a computer to create and manipulate three-dimensional (3D) digital objects	**Sensing** Designing and coding a project that captures inputs from a physical device. • To create a program to run on a controllable device • To explain that selection can control the flow of a program

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	• To recognise why the order of results is important, and to whom • To recognise how we communicate using technology • To evaluate different methods of online communication	• To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path • To recognise the implications of linking to content owned by other people	• To design a project that builds on a given example • To use my design to create a project • To evaluate my project	• To explain that formulas can be used to produce calculated data • To apply formulas to data, including duplicating • To create a spreadsheet to plan an event • To choose suitable ways to present data	• To compare working digitally with 2D and 3D graphics • To construct a digital 3D model of a physical object • To identify that physical objects can be broken down into a collection of 3D shapes • To design a digital model by combining 3D objects • To develop and improve a digital 3D model	• To update a variable with a user input • To use an conditional statement to compare a variable to a value • To design a project that uses inputs and outputs on a controllable device