



Aims:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

The children will:

- 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.

Term	Unit	Overview	Knowledge	Skills	Assessment
Autumn 1	Connecting Computers	Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network. You will need digital devices for learners to interact with during this unit. Lesson 3 requires digital devices with a painting application. Lesson 6 includes a 'network tour', which involves learners identifying key parts of your school network. You will therefore need access to your school's server, switch, and wireless access points.	<p>To describe what an output is</p> <p>To explain that a process acts on the inputs</p> <p>To explain that an output is produced by the process</p> <p>To explain how computer systems can change the way that we work</p> <p>To identify how changing the process can effect the output</p> <p>To recognise that a digital device is made up of several parts</p> <p>To recognise that computers can be connected to each other</p> <p>To identify how devices in a network are connected with one another</p> <p>To recognise that a network is made up of a number of components</p> <p>To explain how information is passed through multiple connections</p> <p>To identify the benefits of computer networks</p>	<p>To identify input and output devices</p> <p>To explain that a computer system accepts an input and processes it to produce and output</p> <p>To explain how a computer network can be used to share information</p> <p>To explain the role of a switch, server, and wireless access point in a network</p> <p>To identify network devices around me</p> <p>To explain how networks can be connected</p>	<p>Can children identify input and output devices?</p> <p>Can children explain that a computer system accepts an input and processes it to produce and output?</p> <p>Can children explain how a computer network can be used to share information?</p> <p>Can children explain the role of a switch, server, and wireless access point in a network?</p> <p>Can children identify network devices around themselves?</p> <p>Can children explain how networks can be connected?</p>
		<p>Vocabulary Digital device, input, output, process, program, connection, network, network switch, server, wireless access point (WAP)</p>			



Autumn 2	Creating media - Animation	Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To plan an animation using a storyboard To set up the work area with an awareness of what is to be captured To capture an image To use the onion skinning tool to review subject position To move a subject between captures To review a captured sequence of frames as an animation To remove frames to improve an animation To add media to enhance animation To review a completed project 	<ul style="list-style-type: none"> Can children plan an animation using a storyboard? Can children set up the work area with an awareness of what is to be captured? Can children capture an image? Can children use the onion skinning tool to review subject position? Can children move a subject between captures? Can children review a captured sequence of frames as an animation? Can children remove frames to improve an animation? Can children add media to enhance animation? Can children review a completed project?
		<p>Vocabulary</p> <p>Animation, flip book, stop frame, animation, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, delete, frame, media, import, transition</p>			

Spring 1	Programming A - Sequence in music	This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their	<ul style="list-style-type: none"> To explain that programs start because of an input To explain what a sequence is To identify that a program includes sequences of commands To identify that the sequence of a program is a process To explain that the order of commands can affect a program's output To identify that different sequences can achieve the same output To identify that different sequences can achieve different outputs 	<ul style="list-style-type: none"> To build a sequence of commands To combine commands in a program To order commands in a program To create a sequence of commands to produce a given outcome 	<ul style="list-style-type: none"> Can children build a sequence of commands? Can children combine commands in a program? Can children order commands in a program? Can children create a sequence of commands to produce a given outcome?
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		<p>own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.</p>			
		<p>Vocabulary Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, event, task, design, code, run the code, order, note, chord, algorithm, bug, debug</p>			

Spring 2	Data and information - Branching databases	<p>Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an</p>	<p>To investigate questions with yes/no answers To identify the object attributes needed to collect relevant data To select an attribute to separate objects into two similarly sized groups To explain that data can be used to answer questions To decide what data needs to be collected to answer a specific question To relate two levels of a branching database using AND To compare the information shown in a pictogram with a branching database</p>	<p>To retrieve information from different levels of the branching database To create questions with yes/no answers</p>	<p>Can children retrieve information from different levels of the branching database? Can children create questions with yes/no answers?</p>
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		<p>identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.</p>			
		<p>Vocabulary Attribute, value, questions, table, objects, branching databases, objects, equal, even, separate, order, organise, j2data, selecting, pictogram, information, decision tree, questions</p>			

Summer 1	Creating media - Desktop publishing	<p>During this unit, learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own</p>	<p>To recognise how text and images can be used together to convey information To define landscape and portrait as two different page orientations To consider how different layouts can suit different purposes To recognise that DTP pages can be structured with placeholders To recognise how different font styles and effects are used for particular purposes To consider the benefits of using a DTP application</p>	<p>To show that page orientation can be changed To add text to a placeholder To organise text and image placeholders in a page layout To add and remove images to and from placeholders To edit text in a placeholder To move resize and rotate images To review a document</p>	<p>Can the children show that page orientation can be changed? Can children add text to a placeholder? Can children organise text and image placeholders in a page layout? Can children add and remove images to and from placeholders? Can children edit text in a placeholder? Can children move resize and rotate images? Can children review a document?</p>
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		<p>template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.</p>			
		<p>Vocabulary Text, images, advantages, disadvantages, communicate, font, style, template, desktop publishing, copy, paste, layout, purpose, benefits,</p>			

Summer 2	Programming B - Events and actions	<p>This unit explores the links between events and actions, whilst consolidating prior learning relating to sequencing. Learners will begin by moving a sprite in four directions (up, down, left and right). They will then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of pen blocks. Learners are given the opportunity to draw</p>	<p>To explain that programs start because of an input To explain what a sequence is To identify that a program includes sequences of commands To identify that the sequence of a program is a process To explain that the order of commands can affect a program's output To identify that different sequences can achieve the same output To identify that different sequences can achieve different outputs</p>	<p>To build a sequence of commands To combine commands in a program To order commands in a program To create a sequence of commands to produce a given outcome</p>	<p>Can children build a sequence of commands? Can children combine commands in a program? Can children order commands in a program? Can children create a sequence of commands to produce a given outcome?</p>
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		lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze tracing program.			
		Vocabulary motion, event, sprite, algorithm, logic, move, resize, algorithm, extension block, pen up, set up, design, action, debugging, errors, setup, test			
Enrichment Internet safety week Remote learning at home learning using the internet Anti-bullying week (keeping safe online opportunities)					