# Great Gaddesden
# Church of England (VA) Primary School

# Computing Curriculum

“Treat others exactly as you would like to be treated yourself”  Luke 6:31

# Statement of Intent:

At Great Gaddesden CofE Primary School, it is our intention that pupils in our school become digitally literate by the time they leave KS2.  They will enhance keyboard skills, use common place programs and devices and develop coding skills to create algorithms and solve problems.

Within the teaching of coding they will regularly be exposed to problems solving activities where they will have to debug existing programs or work to a specified design brief. They will understand the benefits and dangers of online activities, their responsibilities for staying safe online and the potential consequences of their actions. Using a variety of devices, children will also experience computing across the curriculum through online work, research tasks in addition to practising times-tables and other core curriculum skills. Parents will work in partnership with the school to support children in an ever changing digital world.

Each year the children will study five units, comprising of the necessary strands of computer science, information technology and digital literacy to ensure they have a broad wealth of skills and knowledge. Each unit will also include an e-safety session that is linked to the unit being studied.

# Aims:

EYFS:

- Despite computing not being explicitly mentioned within the EYFS framework, we ensure children have many opportunities to use technology and solve problems and produce creative outcomes. In particular, learning through play: our pupils are encouraged to make use of a variety of devices and digital technology through explorative work promoting computational thinking as well as collaborative work.

KS1:

- To be introduced to fundamental computer science concepts, develop basic digital literacy skills, and foster safe and responsible use of technology.
- To understand algorithms, create and debug simple programs, and use technology purposefully to create, organize, store, manipulate, and retrieve digital content.
- To recognize common uses of technology beyond school and use it safely and respectfully, including keeping personal information private and knowing where to seek help when needed.

KS2:

- To equip pupils with the skills to become confident, creative, and responsible users of technology.
- To develop the children's understanding of computer science, digital literacy, and information technology.
- To use digital tools effectively, and understanding online safety and responsible online behavior.

"Treat others exactly as you would like to be treated yourself"  Luke 6:31

# Computing Long-Term Overview
# Cycle A 23-24; 25-26

| Year group(s) | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| **Early Years** | The use of technology is on-going throughout EYFS. Technology can be seen in a number of different circumstances.<br>Personal, Social and Emotional Development - showing resilience and perseverance in the face of a challenge. So be confident to try new activities and show independence, resilience and perseverance.<br>Physical Development - Develop their small motor skills so they can use a range of tools competently, safely and confidently. Know and talk about the different factors that support their overall health and wellbeing. Sensible amounts of screen time.<br>Expressive Arts & Design - Explore, use and refine a variety of artistic effects to express. Their ideas and feelings.<br>Children are exposed to some of the skills and equipment used in computing through linked provision and access to technological toys in the classroom:<br>taking a photograph with a camera or tablet<br>searching for information on the internet<br>playing games on the interactive whiteboard<br>exploring an old typewriter or other mechanical toys – Linking with the technology around us unit in Year 1<br>using a Beebot –Links with Year 1 unit – Programming A – Moving a Robot unit<br>watching a video clip – learning that the internet can be used to support the learning. This links in with Computer systems & Networks Units. Developing mouse skills, keyboard, as well as using a computer responsibly<br>listening to music – link to the units in Year 2 Digital Media – Making Music<br>Using the interactive whiteboard to enhance their learning. This links with the Creating media – Digital painting unit in Year 1. Where children learn to use IPads and be able use a computer/IPad to paint<br>Allowing children the opportunity to explore technology in this carefree and often child-led way, means that not only will they develop a familiarity with equipment and vocabulary but they will have a strong start in Key Stage 1 Computing and all that it demands. Children develop a greater understanding of the world by recognising a range of technology that is used in their homes and In EYFS, having open ended activities that encourage the children to use all their senses to observe, discover and engage with the world, encouraging them to tinker, play and explore. Opportunities to take things apart, to build and make models help children to be creative. Getting children to recreate a pattern or draw a<br>picture can all encourage them to debug.<br>Computational thinking in EYFS:<br>Logical reasoning - What will happen if I do this? How do you know?<br>Algorithms - What do I need to do to solve this? Is there a better way?<br>Decomposition - Can we break this problem up? Could we each do different jobs to solve a problem?<br>Patterns - Have you solved something like this before? What did you do then and what's changed? Abstraction - What's the most important thing here? Maybe we can draw a picture of this?<br>Evaluation - What went well? Which way worked best? What would you do differently next time | | | | | |
| **Year 1 & 2** | NETWORKS – IT AROUND US<br>- To recognise the uses and features of information technology<br>- To identify information technology in the home<br>- To identify information technology beyond school<br>- To explain how information technology benefits us | CREATING MEDIA - DIGITAL PHOTOGRAPHY<br>- To use a digital device to take a photograph<br>- To make choices when taking a photograph<br>- To describe what makes a good photograph<br>- To decide how photographs can be improved<br>- To use tools to change an image | CREATING MEDIA – MAKING MUSIC<br>- To say how music can make us feel<br>- To identify that there are patterns in music<br>- To describe how music can be used in different ways<br>- To show how music is made from a series of notes<br>- To create music for a | DATA & INFORMATION - PICTOGRAMS<br>- To recognise that we can count and compare objects using tally charts<br>- To recognise that objects can be represented as pictures<br>- To create a pictogram<br>- To select objects by attribute and make comparisons<br>- To recognise that people | PROGRAMMING A – ROBOT ALGORITHMS<br>- To describe a series of instructions as a sequence<br>- To explain what happens when we change the order of instructions<br>- To use logical reasoning to predict the outcome of a program (series of commands)<br>- To explain that | PROGRAMMING B – PROGRAMMING QUIZZES<br>- To explain that a sequence of commands has a start<br>- To explain that a sequence of commands has an outcome<br>- To create a program using a given design<br>- To change a given design |

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| | - To show how to use information technology safely<br>- To recognise that choices are made when using information technology | - To recognise that photos can be changed | purpose<br>To review and refine our computer work | can be described by attributes<br>- To explain that we can present information using a computer | programming projects can have code and artwork<br>- To design an algorithm<br>- To create and debug a program that I have written | - To create a program using my own design<br>- To decide how my project can be improved |
| **Year 3 & 4** | COMPUTING SYSTEMS AND NETWORKS - THE INTERNET<br>- To describe how networks physically connect to other networks<br>- To recognise how networked devices make up the internet<br>- To outline how websites can be shared via the World Wide Web (WWW)<br>- To describe how content can be added and accessed on the World Wide Web (WWW)<br>- To recognise how the content of the WWW is created by people<br>- To evaluate the consequences of unreliable content | CREATING MEDIA AUDIO EDITING<br>- To identify that sound can be digitally recorded<br>- To use a digital device to record sound<br>- To explain that a digital recording is stored as a file<br>- To explain that audio can be changed through editing<br>- To show that different types of audio can be combined and played together | CREATING MEDIA PHOTO EDITING<br>- To explain that digital images can be changed<br>- To change the composition of an image<br>- To describe how images can be changed for different uses<br>- To make good choices when selecting different tools<br>- To recognise that not all images are real | DATA AND INFORMATION DATA LOGGING<br>- To explain that data gathered over time can be used to answer questions<br>- To use a digital device to collect data automatically<br>- To explain that a data logger collects 'data points' from sensors over time<br>- To use data collected over a long duration to find information | PROGRAMMING A REPETITION IN SHAPES<br>- To identify that accuracy in programming is important<br>- To create a program in a text-based language<br>- To explain what 'repeat' means<br>- To modify a count-controlled loop to produce a given outcome<br>- To decompose a program into parts<br>- To create a program that uses count-controlled loops to produce a given outcome | PROGRAMMING B REPETITION IN GAMES<br>- To develop the use of count-controlled loops in a different programming environment<br>- To explain that in programming there are infinite loops and count controlled loops<br>- To develop a design which includes two or more loops which run at the same time<br>- To modify an infinite loop in a given program |
| **Year 5 & 6** | COMPUTING SYSTEMS AND NETWORKS COMMUNICATION<br>- To identify how to use a search engine<br>- To describe how search engines select results<br>- To explain how search results are ranked<br>- To recognise why the order of results is important, and to whom<br>- To recognise how we communicate using technology<br>- To evaluate different methods of online | 3D MODELLING<br>- To use a computer to create and manipulate three-dimensional (3D) digital objects<br>- To compare working digitally with 2D and 3D graphics<br>- To construct a digital 3D model of a physical object<br>- To identify that physical objects can be broken down into a collection of 3D shapes<br>- To design a digital model by combining 3D | CREATING MEDIA - WEB PAGE CREATION<br>- To review an existing website and consider its structure<br>- To plan the features of a web page<br>- To consider the ownership and use of images (copyright)<br>- To recognise the need to preview pages<br>- To outline the need for a navigation path<br>- To recognise the implications of linking to content owned by other | DATA AND INFORMATION INTRODUCTION TO SPREADSHEETS<br>- To identify questions which can be answered using data<br>- To explain that objects can be described using data<br>- To explain that formula can be used to produce calculated data<br>- To apply formulas to data, including duplicating<br>- To create a spreadsheet | PROGRAMMING A VARIABLES IN GAMES<br>- To define a 'variable' as something that is changeable<br>- To explain why a variable is used in a program<br>- To choose how to improve a game by using variables<br>- To design a project that builds on a given example<br>- To use my design to create a project<br>- To evaluate my project | PROGRAMMING B SENSING<br>- To create a program to run on a controllable device<br>- To explain that selection can control the flow of a program<br>- To update a variable with a user input<br>- To use an conditional statement to compare a variable to a value<br>- To design a project that uses inputs and outputs on a controllable device<br>- To develop a program to |

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| | communication | objects<br>- To develop and improve a digital 3D model | people | to plan an event<br>- To choose suitable ways to present data | | use inputs and outputs on a controllable device |

**Cycle B 24-25; 26-27**

| Year group(s) | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| **Early Years** | The use of technology is on-going throughout EYFS. Technology can be seen in a number of different circumstances.<br>Personal, Social and Emotional Development - showing resilience and perseverance in the face of a challenge. So be confident to try new activities and show independence, resilience and perseverance.<br>Physical Development - Develop their small motor skills so they can use a range of tools competently, safely and confidently. Know and talk about the different factors that support their overall health and wellbeing. Sensible amounts of screen time.<br>Expressive Arts & Design - Explore, use and refine a variety of artistic effects to express. Their ideas and feelings.<br>Children are exposed to some of the skills and equipment used in computing through linked provision and access to technological toys in the classroom:<br>taking a photograph with a camera or tablet<br>searching for information on the internet<br>playing games on the interactive whiteboard<br>exploring an old typewriter or other mechanical toys – Linking with the technology around us unit in Year 1<br>using a Beebot –Links with Year 1 unit – Programming A – Moving a Robot unit<br>watching a video clip – learning that the internet can be used to support the learning. This links in with Computer systems & Networks Units. Developing mouse skills, keyboard, as well as using a computer responsibly<br>listening to music – link to the units in Year 2 Digital Media – Making Music<br>Using the interactive whiteboard to enhance their learning. This links with the Creating media – Digital painting unit in Year 1. Where children learn to use IPads and be able use a computer/IPad to paint<br>Allowing children the opportunity to explore technology in this carefree and often child-led way, means that not only will they develop a familiarity with equipment and vocabulary but they will have a strong start in Key Stage 1 Computing and all that it demands. Children develop a greater understanding of the world by recognising a range of technology that is used in their homes and In EYFS, having open ended activities that encourage the children to use all their senses to observe, discover and engage with the world, encouraging them to tinker, play and explore. Opportunities to take things apart, to build and make models help children to be creative. Getting children to recreate a pattern or draw a<br>picture can all encourage them to debug.<br>Computational thinking in EYFS:<br>Logical reasoning - What will happen if I do this? How do you know?<br>Algorithms - What do I need to do to solve this? Is there a better way?<br>Decomposition - Can we break this problem up? Could we each do different jobs to solve a problem?<br>Patterns - Have you solved something like this before? What did you do then and what's changed? Abstraction - What's the most important thing here? Maybe we can draw a picture of this?<br>Evaluation - What went well? Which way worked best? What would you do differently next time | | | | | |
| **Year 1 & 2** | COMPUTING SYSTEMS & NETWORKS<br>TECHNOLOGY AROUND US<br>- To identify technology<br>- To identify a computer and its main parts<br>- To use a mouse in different ways | CREATING MEDIA<br>DIGITAL PAINTING<br>- To describe what different freehand tools do<br>- To use the shape tool and the line tools<br>- To make careful choices when painting a digital | PROGRAMMING A<br>MOVING A ROBOT<br>- To explain what a given command will do<br>- To act out a given word<br>- To combine forwards and backwards commands to make a sequence | DATA & INFORMATION<br>GROUPING DATA<br>- To label objects<br>- To identify that objects can be counted<br>- To describe objects in different ways<br>- To count objects with the same properties | PROGRAMMING B<br>INTRODUCTION TO ANIMATIONS<br>- To choose a command for a given purpose<br>- To show that a series of commands can be joined together<br>- To identify the effect of | DIGITAL WRITING<br>- To explore the keyboard<br>- To add and remove text<br>- To explore the toolbar<br>- To make changes to text<br>- To explain my choices |

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| | - To use a keyboard to type on a computer<br>- To use the keyboard to edit text<br>- To create rules for using technology responsibly | picture<br>- To explain why I chose the tools I used<br>- To use a computer on my own to paint a picture<br>- To compare painting a picture | - To combine four direction commands to make sequences<br>- To plan a simple program<br>- To find more than one solution to a problem | - To compare groups of objects<br>- To answer questions about groups of objects | changing a value<br>- To explain that each sprite has its own instructions<br>- To design the parts of a project<br>- To use my algorithm to create a program | |
| **Year 3 & 4** | NETWORKS CONNECTING COMPUTERS<br>- To explain how digital devices function<br>- To identify input and output devices<br>- To recognise how digital devices can change the way we work<br>- To explain how a computer network can be used to share information<br>- To explore how digital devices can be connected<br>- To recognise the physical components of a network | CREATING MEDIA STOP-FRAME ANIMATION<br>- To explain that animation is a sequence of drawings or photographs<br>- To relate animated movement with a sequence of images<br>- To plan an animation<br>- To identify the need to work consistently and carefully<br>- To review and improve an animation<br>- To evaluate the impact of adding other media to an animation | PROGRAMMING A SEQUENCE IN MUSIC<br>- To explore a new programming environment<br>- To identify that each sprite is controlled by the commands I choose<br>- To explain that a program has a start<br>- To recognise that a sequence of commands can have an order<br>- To change the appearance of my project<br>- To create a project from a task description | DATA AND INFORMATION BRANCHING DATABASES<br>- To create questions with yes/no answers<br>- To identify the object attributes needed to collect relevant data<br>- To create a branching database<br>- To identify objects using a branching database<br>- To explain why it is helpful for a database to be well structured<br>- To compare the information shown in a pictogram with a branching database | PROGRAMMING B EVENTS AND ACTIONS<br>- To explain how a sprite moves in an existing project<br>- To create a program to move a sprite in four directions<br>- To adapt a program to a new context<br>- To develop my program by adding features<br>- To identify and fix bugs in a program<br>- To design and create a maze-based challenge | CREATING MEDIA - DESKTOP PUBLISHING<br>-To recognise how text and images convey information<br>-To recognise that text and layout can be edited<br>-To choose appropriate page settings<br>-To add content to a desktop publishing publication<br>-To consider how different layouts can suit different purposes<br>-To consider the benefits of desktop publishing |
| **Curriculum Audit**<br>What do we need to teach this unit? Hardware / software? | | | | | | |
| **Year 5 & 6** | COMPUTING SYSTEMS AND NETWORKS - SHARING INFORMATION<br>- To explain that computers can be connected together to form systems<br>- To recognise the role of computer systems in our lives<br>- To recognise how information is transferred over the internet<br>- To explain how sharing information online lets | CREATING MEDIA VIDEO EDITING<br>- To recognise video as moving pictures, which can include audio<br>- To identify digital devices that can record video<br>- To capture video using a digital device<br>- To recognise the features of an effective video<br>- To identify that video can be improved through | PROGRAMMING A SELECTION IN PHYSICAL COMPUTING<br>- To control a simple circuit connected to a computer<br>- To write a program that includes count-controlled loops<br>- To explain that a loop can stop when a condition is met, eg number of times<br>- To conclude that a loop can be used to | DATA & INFORMATION - FLAT FILE DATABASES<br>- To create a paper-based database<br>- To use a computer based database<br>- To group and sort data<br>- To use search tools<br>- To compare data visually<br>- To use a real-life database to answer questions | CREATING MEDIA VECTOR DRAWING<br>- To identify that drawing tools can be used to produce different outcomes<br>- To create a vector drawing by combining shapes<br>- To use tools to achieve a desired effect<br>- To recognise that vector drawings consist of layers<br>- To group objects to make them easier to work | PROGRAMMING B SELECTION IN QUIZZES<br>- To explain how selection is used in computer programs<br>- To relate that a conditional statement connects a condition to an outcome<br>- To explain how selection directs the flow of a program<br>- To design a program which uses selection<br>- To create a program |

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| | people in different places work together<br>- To contribute to a shared project online<br>- To evaluate different ways of working together online | reshooting and editing<br>- To consider the impact of the choices made when making and sharing a video | repeatedly check whether a condition has been met<br>- To design a physical project that includes selection<br>- To create a controllable system that includes selection | | with<br>- To evaluate my vector drawing | which uses selection<br>- To evaluate my program |

## Knowledge, Skills & Vocabulary Progression

| Strand | Computing Systems & Networks | Creating Media | Programming A | Data & Information | Programming B | Creating Media/ |
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| **EYFS** | • Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions<br>• Make comments about what they have heard and ask questions to clarify their understanding<br>• Offer explanations for why things might happen<br>• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function | | | | | |
| **KS1** | **Skills**<br><br>Develop understanding of technology and how it can help us<br><br>**Knowledge**<br><br>• Recognise common uses of information technology beyond school<br>• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content<br>• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies<br><br>**Vocabulary**<br><br>Year 1<br>technology, computer, mouse, trackpad, keyboard, screen, double-click, typing. | **Skills**<br><br>Develop understanding of a range of tools used for digital painting<br><br>**Knowledge**<br><br>• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content<br>• To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space<br>• About the work of a range of artists, craft makers, and designers, describing the differences and similarities between different practices and disciplines and making links to their own work<br><br>**Vocabulary**<br><br>Year 1<br>Digital Painting<br>paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, | **Skills**<br><br>Develop early programming concepts, including algorithms.<br><br>**Knowledge**<br><br>• Understand what algorithms are; how they are implemented as programs on digital<br>• devices; and that programs execute by following precise and unambiguous instructions<br>• Create and debug simple programs<br>• Use logical reasoning to predict the behaviour of simple programs<br>• Recognise common uses of information technology beyond school<br><br>**Vocabulary**<br><br>Year 1<br>Moving a robot<br>Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.<br><br>Year 2 | **Skills**<br><br>Labelling, grouping, and searching data and information.<br><br>**Knowledge**<br><br>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content<br>• Use technology safely and respectfully<br><br>**Vocabulary**<br><br>Year 1<br>Grouping<br>object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same<br><br>Year 2<br>Pictograms<br>more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing | **Skills**<br><br>Develop knowledge of on-screen programming and program design.<br>**Knowledge**<br><br>• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions<br>• Create and debug simple programs<br>• Use logical reasoning to predict the behaviour of simple programs<br><br>**Vocabulary**<br><br>Year 1<br>Programming Animations<br>ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design | **Skills**<br><br>Develop understanding of the various aspects of using a computer to create and manipulate text.<br><br>**Knowledge**<br><br>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content<br>• Use technology safely and respectfully, keeping personal information private<br><br>**Vocabulary**<br><br>Year 1<br>Digital Writing<br>word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing |

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| | Year 2<br>information technology (IT), computer, barcode, scanner/scan | painting, computers<br><br>Year 2<br>Digital Music<br>music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit | Robot Algorithms<br>instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition | | Year 2<br>Programming Quizzes<br>sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code | Year 2<br>Digital Photography<br>device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting |
| **LKS2** | **Skills**<br><br>Develop their understanding of digital devices, focussing on inputs, processes, and outputs<br><br>**Knowledge**<br><br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• 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<br>• 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<br>• Solve number problems and practical problems<br>• To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials<br><br>**Vocabulary** | **Skills**<br><br>Develop a range of techniques to create a stop-frame animation.<br><br>**Knowledge**<br><br>• 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<br>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.<br><br>**Vocabulary**<br><br>Year 3<br><br>text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.<br><br>Year 4<br><br>audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, | **Skills**<br><br>Sequence programming through Scratch.<br><br>**Knowledge**<br><br>• Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs<br>• 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<br><br>**Vocabulary**<br><br>Year 3<br><br>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.<br><br>Year 4 | **Skills**<br><br>Develop understanding of branching databases.<br><br>**Knowledge**<br><br>• 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<br>• Use technology safely, respectfully, and responsibly<br><br>**Vocabulary**<br><br>Year 3<br><br>attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.<br><br>Year 4<br><br>data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion. | Skills<br><br>Explore the links between events and actions.<br><br>**Knowledge**<br><br>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs<br>• 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 | Skills<br><br>Use desktop publishing software and become familiar with ‘templates’, ‘orientation’ and ‘placeholders’.<br><br>**Knowledge**<br><br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content<br>• 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<br><br>**Vocabulary**<br><br>Year 3<br><br>animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, |

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| | Year 3<br><br>digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets<br><br>Year 4<br><br>internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts | export, MP3, evaluate, feedback. | Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure | | presenting data and information<br><br>**Vocabulary**<br><br>Year 3<br><br>motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.<br><br>Year 4<br><br>Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate. | import, transition.<br><br>Year 4<br><br>image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font. |
| **UKS2** | **Skills**<br><br>Explore how computer systems and information is transferred between systems and devices.<br><br>**Knowledge**<br><br>• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• 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<br>• Select, use and combine | **Skills**<br><br>Use a range of drawings tools to create images in layers.<br><br>**Knowledge**<br><br>• 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.<br><br>**Vocabulary**<br><br>Year 5<br><br>vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection<br><br>Year 6 | **Skills**<br><br>Use physical computing to explore the concept of selection in programming through the Crumble environment.<br><br>**Knowledge**<br><br>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs<br>• 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 | **Skills**<br><br>Use flat-file databases to organise data in records.<br><br>**Knowledge**<br><br>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content<br>• 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<br><br>**Vocabulary**<br><br>Year 5<br><br>database, data, information, record, field, sort, order, group, | **Skills**<br><br>Explore If, Then, Else structure to select different outcomes depending on conditions.<br><br>**Knowledge**<br><br>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts<br>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output<br>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and | **Skills**<br><br>To develop capturing, editing and manipulating video.<br><br>**Knowledge**<br><br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content<br>• 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 |

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| | 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<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact<br><br>**Vocabulary**<br><br>Year 5<br><br>image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.<br><br>Year 6<br><br>communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many. | website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed. | and information<br><br>**Vocabulary**<br><br>Year 5<br><br>microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer<br><br>Year 6<br><br>variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare | search, value, criteria, graph, chart, axis, compare, filter, presentation.<br><br>Year 6<br><br>data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools. | programs.<br><br>**Vocabulary**<br><br>Year 5<br><br>Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator<br><br>Year 6<br><br>Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug. | information<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.<br>• Recognise inappropriate content, contact, and conduct and know how to report concerns<br>• Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour<br>• Identify a range of ways to report concerns about content and contact.<br><br>**Vocabulary**<br><br>Year 5<br><br>video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.<br><br>Year 6<br><br>Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator |