Greenleys Junior School

Computing Curriculum - skills, knowledge and progression map 2021-2022

	Autumn			Spring			Summer		
3	**3.1 Coding** Co. 1 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Co.2 - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Co.3 – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	**3.2 Online Safety** Co. 7 - Use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of recognising cyberbullying	**3.3 Spreadsheets** Co.6- 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	**3.4 Touch typing** Co.6- 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	**3.5 Email** Co.4 - 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 Co.6- 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 Co. 7 - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	**3.6 Branching Databases** Co.6- 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	**3.7 Simulations** Co.6- 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	**3.8 Graphing** Co.6- 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	**3.9 Presenting** Co.6- 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 Co. 7 - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
	Skills								
	I can make a real-life situation into an algorithm for a program. I can design an algorithm carefully, thinking about what I want it to do and how I can turn it into code. I can identify an error in my program and fix it. I can experiment with timers in my programs. I can identify the difference in using between the effect of a timer or repeat command in my code. I know that a variable stores information while a program is running (executing). I can identify 'If' statements, repetition and variables.	I can create a secure password. I can explain the importance of having a secure password and not sharing it with others. I can explain the negative consequences of not keeping passwords safe and secure. I understand the importance of keeping safe online and behaving respectfully. I can use communication tools	I can collect data and input it into software. I can analyse data using features within software to help such as, formula in 2Calculate (spreadsheets). I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). I can consider what the most appropriate software to use when	I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. I can consider what the most appropriate software to use when given a task by my teacher.	I can identify different ways that the internet can be used for communication. I can use email such as 2Email to respond to others appropriately and attach files. I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. I can consider what the most appropriate software to use when given a task by my teacher. I can create purposeful (appropriate) content and attach this to emails.	I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. I can collect data and input it into software. I can analyse data using features within software to help such as, formula in 2Calculate (spreadsheets) I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). I can consider what the most appropriate software to use when given a task by my teacher. I can create purposeful (appropriate) content and attach this to emails.	I can consider what the most appropriate software to use when given a task by my teacher. I can create purposeful (appropriate) content and attach this to emails. I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine.	I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. I can collect data and input it into software. I can analyse data using features within software to help such as, formula in	I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). I can consider what the most appropriate software to use when given a task by my teacher.

	I can read programs with several steps and predict what it will do.	such as 2Email respectfully and use good etiquette. I can report unacceptable content and contact online in more than one way to a trusted adult.	given a task by my teacher. I can create purposeful (appropriate) content and attach this to emails.		I can explain the importance of having a secure password and not sharing it with others. I can explain the negative consequences of not keeping passwords safe and secure. I can use communication tools such as 2Email respectfully and use good etiquette.			2Calculate (spreadsheets). I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). I can consider what the most appropriate software to use when given a task by my teacher. I can create purposeful (appropriate) content and attach this to emails.	I can create purposeful (appropriate) content and attach this to emails.
	Key vocabulary and Concepts								
	Action, algorithm, bug, output information, command, input, debug/debugging, repeat,timer, properties, code block, design mode, code design, event, object, sequence, event command, computer simulation, nesting, control, alert, flowchart	Password, Internet, username blog, concept map, website, webpage, spoof website, PEGI rating	Advance mode, copy and paste, columns, cells, rows, delete, equals tool, move cell tool, spin tool, spreadsheet	Posture, top row keys, home row keys, bottom row keys, space bar	Communication, formatting, email, compose, address book, save to draft, send, attachment, CC, report to the teacher, password	Branching database, data, database, question	Simulation	Graph, field, data, bar chart, block graph, line graph	Animation, audio, design templates, entrance animation, font, media, presentation, slide, slideshow, presentation program, stock image, text formatting, transition
	Key Knowledge								
	Children to learn to: • read and explain a flowchart • use a flowchart to create a computer program. • create a computer program that uses click events and timers. • create a program that uses a timer-after command • create a program that uses a timer-every command • understand there can be different ways to solve a problem • understand how the turtle object moves. • use the repeat command with an object. • create a computer program that includes use of the repeat command. • create computer programs using prior knowledge. • run, test and debug their programs. • consider nesting when debugging their programs.	Children to learn to: • understand what makes a good password for use on the Internet. • contribute to a concept map of all the different ways they know that the Internet can help us to communicate. • contribute to a class blog with clear and appropriate messages. • understand that passwords help to limit who can see personal / private / confidential information. • understand that some information held on websites may not be accurate or true. • to understand how to search the Internet and	Children to learn to: • create a table of data on a spreadsheet. • can use a spreadsheet program to automatically create charts and graphs from data. • use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations. • use the 'spin' tool to count through times tables. • describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.	Children to learn to: • understand the names of the fingers. • understand what is meant by the home, bottom, and top rows. • develop the ability to touch type the home, bottom, and top rows. • use two hands to type the letters on the keyboard. • touch type using the left hand. • touch type using the right hand.	Children to learn to: • list a range of different ways to communicate. • use 2Connect to highlight the strengths and weaknesses of each method. • order the various types of communication that have been used through history. • open an email and respond to it. • send emails to other children in the class. • use the search option in the address book to find a classmate when sending an email. •have written rules about how to stay safe using email. • contribute to classmates' rules. • understand the importance of draft.	Children to learn to: • understand how YES/NO questions are structured and answered. • use YES/NO questioning to play a simple game with a friend. • explain why they choose a particular question to split their database. • begin to use 'or more' and 'or less' in their questioning • contribute to a class branching database. • complete a branching database. • edit and adapt a branching database to accommodate new entries. • choose a suitable topic for a branching database. • select and save appropriate images. • create a branching database. • how to use and debug their own and others branching databases.	Children to learn to: • know that a computer simulation can represent real and imaginary situations. • give some examples of simulations used for fun and for work. • give suggestions of advantages and problems of simulations. • explore a simulation. • use a simulation to try out different options and to test predictions. • begin to evaluate simulations by comparing them with real situations and considering their usefulness. • analyse choices made using a branching database. •recognise patterns within simulations and make and test predictions. • identify the relationships and rules on which the simulations are based • evaluate a simulation to determine its usefulness for purpose. • create their own simple simulation (extension).	Children to learn to: •set up a graph with a given number of fields. • center data for a graph. • produce and share graphs made on the computer. • select most appropriate style of graph for their data and explain their reasoning (extension). • solve a maths investigation. • present the results in a range of graphical formats. • use the sorting option to make analysis of	Children to learn to: • know what PowerPoint is. • open PowerPoint. • add text to a page and format it. • add shapes to a page • change the design of the slides. • insert a new slide. • insert pictures. • edit pictures. • insert video and audio. • use animations in a presentation. • use transitions in a presentation. • add timings to a presentation. • present effectively using PowerPoint • create a presentation including formatted text. • include different media.

	• use the properties table to set the properties of objects. • plan their scene and code before they create their program. •confidently make several different things happen in a program.	how to think critically about the results that are returned. • access and assess a 'spoof' website. • create their own 'spoof' webpage mock-up. • share their 'spoof' web page on a class display board. • evaluate facts from a website and explain how they fact checked the information that was presented. • identify some physical and emotional effects of playing/watching inappropriate content/games. • relate cyberbullying to bullying in the real-world and have strategies for dealing with online bullying including screenshot and reporting	• find specified locations in a spreadsheet.		• create a quiz about email safety which explores scenarios that they could come across in the future. • create title screens for their quizzes explaining what the quiz is about, and how to play it. • attach work to an email. • know what CC means and how to use it. • read and respond to a series of email communications. • attach files appropriately and use email communication to explore ideas. • know why the terms CC and BCC are used • understand when to use CC or BCC			their data easier. • select most appropriate style of graph for their data and explain their reasoning (extension)	• add transitions and animations. • add timings to the presentation. • present effectively.
	Prior Learning – skills progression									
	YR2: Children can: • explain that an algorithm is a set of instructions. • describe the algorithms they created. • explain that for the computer to make something happen, it needs to follow clear instructions. • plan an algorithm that includes collision detection. • create a program using collision detection. • read blocks of code and predict what will happen when it is run. • create a program that uses a timerafter command. • explain what the timer-after command does in their program. • predict what will happen in a program that includes a timer-after command. • create a computer program that includes different objects types. • modify the properties of an object. • use different events in their program to make objects move. • create a computer program that includes a button object.	YR2: Children can: • use the search facility to refine searches on Purple Mash by year group and subject. • share the work they have created to a display board. •understand that the teacher approves work before it is displayed. • understand how things can be shared electronically for others to see both on Purple Mash and the Internet. • know that Email is a form of digital communication. • understand how 2Repond can teach them how to use email. • open and send an email to a 2Respond character. • discuss their own experiences and understanding of what email is used for.	YR2: Children can: • explain what rows and columns are in a spreadsheet. • open, save and edit a spreadsheet. • add images from the image toolbox and allocate them a value. • add the count tool to count items. • use copying, cutting and pasting to help make spreadsheets. • use tools in a spreadsheet to automatically total rows and columns. • use a spreadsheet to solve a mathematical puzzle. • use images in a spreadsheet. • work out how much they need to pay using coins by using a spreadsheet to help calculate.			YR2: Children can: • understand that the information on pictograms cannot be used to answer more complicated questions. • use a range of yes/no questions to separate different items. • understand what is meant by a binary tree. • design a binary tree • understand that questions are limited to 'yes' and 'no' in a binary tree. • understand that the user cannot use 2Question to find out answers to more complicated questions. • match 2Simple item pictures to names using a binary tree. • understand what is meant by a database. • use a database to answer simple and more complex search questions.	YR3: Children can: • sort objects using just 'yes' or 'no' questions. • complete a branching database using 2Question. • create a branching database of the children's choice.		

	• explain what a button does in their program. • modify the properties of a button to fit their program design.	• discuss what makes us feel happy and what makes us feel sad • explain what a digital footprint is. • give examples of things that they would not want to be in their digital footprint	• create a table of data on a spreadsheet. • use the data to create a block graph manually.						

	Autumn			Spring			Summer		
4	**4.1 Coding** Co. 1 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Co.2 - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Co.3 – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Co.6- 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.	**4.2 Online Safety** Co 4 - 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. Co. 7 - Use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of recognising cyberbullying.	**4.3 Spreadsheets** Co.6- 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.	**4.4. Writing for different audiences** Co.6- 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.	**4.5 Logo** Co. 1 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Co.2 - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Co.3 – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	**4.6 Animation** Co.6- 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.	**4.7 Effective search** Co. 5 - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of identifying advertisements online.	**4.8 Hardware investigators** Co 4 - 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.	**4.9 Making Music** Co.6- 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.
	Skills								
	I can turn a real-life situation to solve into an algorithm, using a design that shows how I can accomplish this in code. I can use repetition in my code. For example, using a loop that continues until a condition is met such as the correct answer being entered. I can use timers within my program designs more accurately to create repetition effects. For example, I can create a counting machine. I can use selection (decision) in my programming. For example, using an 'if statement' for a question being asked and the program takes one of two paths. I can use variables within my program and know how to change the value of variables. I can use the user inputs and output features within my program, such as 'Print to screen'. I can identify errors in my code by using different methods, such as steeping through lines of code and fixing them.	I understand that network and communication components can be found in many different devices which allow them to join the internet. I can review solutions that others have created, using a checklist of criteria. I have a good understanding of the online safety rules we learn at school. I can demonstrate how to use different online technologies safely.I can demonstrate how to use a few different online services safely. I know I have a right to privacy both on and offline. I recognise that my wellbeing can be affected by how I use technology. I can report with ease any concerns with content and contact online and	I can work collaboratively to create content and solutions. I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards.	I can work collaboratively to create content and solutions. I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards.	I can turn a real-life situation to solve into an algorithm, using a design that shows how I can accomplish this in code. I can read programs that contain several steps and predict the outcomes with increasing accuracy.	I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards.	I understand that network and communication components can be found in many different devices which allow them to join the internet. I understand the purpose of a search engine and the main features within it. I can look at information on a webpage and make predictions about the accuracy of information contained within it. I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards.	I recognise the main component parts of hardware which allow computers to join and form a network. I understand that network and communication components can be found in many different devices which allow them to join the internet.	I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards. I can work collaboratively to create content and solutions.

	I can read programs that contain several steps and predict the outcomes with increasing accuracy. I can create and improve my solutions to a problem based on feedback. For example, create a program using 2Code. I can review solutions that others have created, using a checklist of criteria. I can work collaboratively to create content and solutions. I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards.	know immediate strategies to keep safe.							
	Key vocabulary and Concepts								
	Action, debug/debugging, repeat, repeat until, code design, flowchart, algorithm, input, selection, timer, design mode, event, if, object, variable, alert, get input, if/else, bug, co-ordinates, repeat, sequence, prompt, output, nesting	Computer virus, copyright, cookies, digital footprint, malware, email, phishing, spam, plagiarism, identity theft	Average, copy and paste, advance mode, columns, charts, cells, equals tool, formula wizard, formula, move cell tool, rows, random tool, spin tool, timer, spreadsheet	Font, bold, italic, underline	LOGO, FD, BK, RT, LT, SETPC, PU, SETPS, PD	Animation, frame, background, play, sound, video clip, flipbook, onion skinning, stop motion	Easter egg, internet browser, internet, search, spoof website, search engine, website	Motherboard, RAM, CPU, graphics card, monitor, network card, speakers, keyboard and mouse	Pitch, rippler, tempo, pulse, melody, house music, dynamics, rhythm, texture
	Key Knowledge								
	Children learn to: • explore different object types in 2Code. • use a background and objects to create a scene. • plan an algorithm for their scene and use 2Code to program it. • create a program that includes an IF statement. • interpret a flowchart that depicts an IF statement. • make use of the X and Y properties of objects in their coding. • create a program that includes an IF statement. • read code that includes repeat until and IF/ ELSE and explain how it works. • create a program that includes an IF/ ELSE statement. • interpret a flowchart that depicts an IF/ ELSE statement. • explain what a variable is in programming. • create and use variables when programming. • read code that includes repeat until and IF/ ELSE and explain how it works. • create a program that includes and IF/ ELSE statement. • interpret a flowchart that depicts an IF/ ELSE statement.	Children learn to: •know that security symbols such as a padlock protect their identity online •know the meaning of the term 'phishing' and are aware of the existence of scam websites • explain what a digital footprint is and how it relates to identity theft. • give examples of things that they would not want to be in their digital footprint. • identify possible risks of installing free and paid for software. • know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer. • know what a computer virus is. • determine whether activities that they undertake online, infringe another's' copyright. • know the difference between researching and	Children learn to: • use the number formatting tools within 2Calculate to appropriately format numbers • add a formula to a cell to automatically make a calculation in that cell. • use the timer, random number and spin button tools. • combine tools to make fun ways to explore number. • use a series of data in a spreadsheet to create a line graph. • use a line graph to find out specific information. • make practical use of a spreadsheet to help them plan actions. • use the currency formatting in 2Calculate. • allocate values to images and use these to explore place value • use a spreadsheet made in 2Calculate to	Children learn to: • look at and discuss a variety of written material where the font size and type are tailored to the purpose of the text. • use text formatting to make a piece of writing fit for its audience and purpose. • can interpret a variety of incoming communications and use these to build up the details of a story. • use the incoming information to write their own newspaper report. • can use 2Connect to mind-map ideas for a community campaign. • use these ideas to write a persuasive letter	Children learn to: •know what the common instructions are in 2Logo and how to type them. • follow simple 2Logo instructions to create shapes on paper. • follow simple instructions to create shapes in 2Logo. • create 2Logo instructions to draw patterns of increasing complexity. • understand the PU and PD commands. • write 2Logo instructions for a word of four letters. • follow 2Logo code to predict the outcome. • create shapes using the Repeat command. • find the most efficient way to draw shapes. • use the Procedure feature. • create 'flowers' or 'crystals' using 2Logo.	Children learn to: • put together a simple animation using paper to create a flick book. • understand animation frames • make a simple animation using 2Animate. • know what the Onion Skin tool does in animation. • use the Onion Skin tool to create an animated image. • use backgrounds and sounds to make more complex and imaginative animations. • know what 'stop motion' animation is and how it is created. • use ideas from existing 'stop motion' films to recreate their own animation. • share their animations and comment on each other's work using display boards and blogs in Purple Mash.	Children learn to: • structure search queries to locate specific information. • use search to answer a series of questions. • write search questions for a friend to solve. • analyse the contents of a web page for clues about the credibility of the information.	Children learn to: • name the different parts of a desktop computer. • know what the function of the different parts of a computer is.	Children learn to: • create their own simple rhythm using Busy Beats • create a simple melodic pattern using 2Sequence and Busy Beats. • experiment with pitch, rhythm, and melody to create a piece of house music on Busy Beats.

		using information and copying it. • know about citing sources that they have used. • take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. • give reasons for limiting screen time.	check their understanding of a mathematical concept	or poster as part of the campaign. • assess their texts using criteria to judge their suitability for the intended audience.					
	Prior Learning – skills progression								
	YR3 Children can: • read and explain a flowchart • use a flowchart to create a computer program. • create a computer program that uses click events and timers. • create a program that uses a timer-after command • create a program that uses a timer-every command • understand there can be different ways to solve a problem • understand how the turtle object moves. • use the repeat command with an object. • create a computer program that includes use of the repeat command. • create computer programs using prior knowledge. • run, test and debug their programs. • consider nesting when debugging their programs. • use the properties table to set the properties of objects. • plan their scene and code before they create their program. •confidently make several different things happen in a program.	YR3 Children can: • know what makes a safe password. • know methods for keeping passwords safe. • understand how the Internet can be used in effective communication. • understand how a blog can be used to communicate with a wider audience. • consider the truth of the content of websites. • understand the meaning of age restrictions symbols on digital media and devices.	YR3 Children can: • create a table of data on a spreadsheet. • can use a spreadsheet program to automatically create charts and graphs from data. • use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations. • use the 'spin' tool to count through times tables. • describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row. • find specified locations in a spreadsheet.				YR2 Children can: • recall the meaning of key Internet and searching terms. • identify the basic parts of a web search engine search page. • read a web search results page. • search the Internet for answers to a given task		YR2 Children can: • understand what 2Sequence is and how it works. • use the different sounds within 2Sequence to create a tune. • speed up and slow down tunes. • understand what happens to the tune when sounds are moved. • add sounds to a tune they have already created to change it. • consider how music can be used to express feelings. • change the volume of the background sounds. • create two tunes which depict two feelings • upload and use their own sound chosen from a bank of sounds. • create, upload and use their own recorded sound. • create their own tune using some of the chosen sounds

	Autumn			Spring			Summer	
5	**5.1 Coding** Co. 1 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Co.2 - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Co.3 – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs Co.6- 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	**5.2 Online Safety** Co 4 - 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 Co. 7 - Use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of recognising cyberbullying.	**5.3 Spreadsheets** Co.6- 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.	**5.4 Databases** Co.6- 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.	**5.5 Game Creator** Co. 1 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Co.6- 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.	**5.6 3D Modelling** Co.6- 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.	**5.7 Concept Maps** Co.6- 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.	**5.8 Word Processing** Co.6- 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.
	Skills							
	• I can make more complex real-life problems into algorithms for a program. • I can convert (translate) algorithms that contain sequence, selection and repetition into code that works. I can use sequence, selection, repetition, and some other coding structures in my code. • I can organise my code carefully for example, naming variables and using tabs. I know this will help me debug more efficiently. • I can use logical methods to identify the cause of any bug with support to identify the specific line of code. • I can test and debug my programs as I work. • I can make appropriate improvements to digital work I have created.	• I know the importance of computer networks and how they help solve problems and enhance communication. • I recognise the main dangers that can be perpetuated via computer networks. • I can explain what personal information is and know strategies for keeping this safe. • I can use the most appropriate form of online communication according to the digital content. • I can search precisely when using a search engine. For example, I know I can add additional words or removes words to help find better results. • I can explain in detail how accurate, safe and reliable the content is on a webpage. • I can make appropriate improvements to digital work I have created.	• I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.	• I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.	• I can test and debug my programs as I work. • I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.	• I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.	• I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software. • I can use collaborative modes such as within 2Connect to work with others and share it.	• I can make appropriate improvements to digital work I have created. • I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.

	• I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software.	• I can comment on how successful a digital solution is that I have created. • I can work collaboratively with others creating solutions to problems using appropriate software. • I have a secure knowledge of online safety rules taught at school. • I can demonstrate the safe and respectful use of different online technologies and online services. • I always relate appropriate online behaviour to my right to have personal privacy. •I know how to not let my mental wellbeing or others be affected by use of online technologies and services.						
	Key vocabulary and Concepts							
	Action, timer, variable, selection, sequence, string, bug, output, command, input, debug/debugging, repeat, physical system, design mode, event, if, object, control, alert, get input, if/else, simulation, abstraction, concatenation, decomposition	Online safety, password, SMART rules, reputable, encryption, identity theft, shared image, plagiarism, citation, reference, bibliography	Average, advance mode, copy and paste, columns, cells, charts, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer	Avatar, binary tree (branching database), charts, collaborative, data, database, find, record, sort, group and arrange, statistcs and reports, table	animation, computer game, perspective, customise, evaluation, image, instructions, interactive, screenshot, texture, playability	CAD, 2D, 3D, viewpoint, 3D printing, polygon, net, points, template	audience, collaboratively, concept, concept map, connection, idea, node, thought, visual	copyright, cursor, document, font, in-built-styles, merge cells, paragraph formatting, readibility, template, text formatting, text wrapping, word art, word processing tool
	Key Knowledge							
	Children learn to: • use simplified code to make their programming more efficient. • use variables in their code. • create a simple playable game. • plan an algorithm modelling the sequence of traffic lights. • select the right images to reflect the simulation they are making. • use their plan to program the simulation to work in 2Code. • make good attempts to break down their task into smaller achievable steps. • recognise the need to start coding at a basic level of abstraction to remove superfluous details from their program that do not contribute to the aim of the task.	Children learn to: • think critically about the information that they share online both about themself and others. • know who to tell if they are upset by something that happens online. • use the SMART rules as a source of guidance when online. • think critically about what they share online, even when asked by a usually reliable person to share something. • have clear ideas about good passwords. • see how they can use images and digital technology to create effects not possible without technology. • how image manipulation could be used to upset them or	Children learn to: • create a formula in a spreadsheet to convert m to cm. • apply this to creating a spreadsheet that converts miles to km and vice versa. • use a spreadsheet to work out which letters appear most often. • use the 'how many' tool. • use a spreadsheet to work out the area and perimeter of rectangles. • use these calculations to solve a reallife problem. • create simple formulae that use different variables. • create a formula that will work out how many days there are in x number of weeks or years. • use a spreadsheet to model a real-life situation and come up with solutions that can be practically applied.	Children learn to: • understand the different ways to search a database. • search a database to answer questions correctly. • design an avatar for a class database. • successfully enter information into a class database. • create their own database on a chosen topic. • add records to their database. • know what a database field is and can correctly add field information. • understand how to word questions so that they can be effectively answered using a search of their database.	Children learn to: • review and analyse a computer game. • describe some of the elements that make a successful game. • begin the process of designing their own game. • design the setting for their game so that it fits with the selected theme. • upload images or use the drawing tools to create the walls, floor, and roof. • design characters for their game. • decide upon, and change, the animations and sounds that the characters make. • make their game more unique by selecting the appropriate options to maximise the playability.	Children learn to: • know what the 2Design and Make tool is for. • explore the different viewpoints in 2Design and Make whilst designing a building. • adapt one of the vehicle models by moving the points to alter the shape of the vehicle while still maintaining its form. • explore how to edit the polygon 3D models to design a 3D model for a purpose. • refine one of their designs to prepare it for printing. • print their design as a 2D net and then create a 3D model. • explore the possibilities of 3D printing.	Children learn to: • make connections between thoughts and ideas. • see the importance of recording concept maps visually. • understand what is meant by 'concept maps', 'stage', 'nodes' and 'connections.' • create a basic concept map. • used 2Connect Story Mode to create an informative text. • use 2Connect collaboratively to create a concept map. • use Presentation Mode to present their concept maps to an audience.	Children learn to: • know what a word processing tool is for. • be able to create a word processing document altering the look of the text and navigating around the document. • how to add images to a word document. • edit images to reduce their file size. • know the correct way to search for images that they are permitted to reuse. • know how to attribute the original artist of an image. • edit their images within Word to best present them alongside text. • understand wrapping of images and text.

	• create a program which represents a physical system. • create and use functions in their code to make their programming more efficient. • create and use strings in programming. • set/change variable values appropriately. • know some ways that text variables can be used in coding.	others even using simple, freely available tools and little specialist knowledge. • cite all sources when researching and explain the importance of this. • select keywords and search techniques to find relevant information and increase reliability. • show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each.			• write informative instructions for their game so that other people can play it. • evaluate my their own and peers' games to help improve their design for the future.			• add appropriate text to their document, formatting in a suitable way. • use a style set in Word. • use bullet points and numbering. • add text boxes and shapes. • consider paragraph formatting such as line spacing, drop capitals. • add hyperlinks to an external website. • add an automated contents page.
	Prior Learning – skills progression							
	YR4 Children can: • begin to understand selection in computer programming. • understand how an IF statement works. • understand how to use co-ordinates in computer programming. • understand the 'repeat until' command. • understand how an IF/ELSE statement works. • understand what a variable is in programming. • use a number variable. • create a playable game.	YR4 Children can: • understand how children can protect themselves from online identity theft. • understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • identify the risks and benefits of installing software including apps. • understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • identify the positive and negative influences of technology on health and the environment. • understand the importance of balancing game and screen time with other parts of their lives.	YR4 Children can: • format cells as currency, percentage, decimal to different decimal places or fraction. • use the formula wizard to calculate averages. • combine tools to make spreadsheet activities such as timed times tables tests. • use a spreadsheet to model a reallife situation. • add a formula to a cell to automatically make a calculation in that cell.	YR3 Children can: • sort objects using just 'yes' or 'no' questions. • complete a branching database using 2Question. • create a branching database of the children's choice	YR4 Children can: • discuss what makes a good animated film or cartoon. • understand how animations are created by hand. • find out how 2Animate can be created in a similar way using the computer. • understand onion skinning in animation. • add backgrounds and sounds to animations.		YR3 Chlidren can: • sort objects using just 'yes' or 'no' questions. • complete a branching database using 2Question. • create a branching database of the children's choice. • consider what simulations are. • explore a simulation. • analyse and evaluate a simulation.	

	Autumn			Spring			Summer		
	Coding	**Online safety**	**Spreadsheets**	**Blogging**	**Text adventures**	**Networks**	**Quizzing**	**Understanding Binary**	**Spreadsheets**
	Skills								
6	• I can turn a complex programming task into an algorithm. • I can identify the important aspects of a programming task (abstraction). • I can decompose important aspects of a programming task in a logical way, identifying appropriate coding structures that would work. • I can test and debug my program as I work on it and use logical methods to identify a cause of a bug. • I can identify a specific line of code that is causing a problem in my program and attempt a fix. • I can translate algorithms that include sequence, selection and repetition into code and nest these structures within each other. • I can use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object • I can interpret (understand) a program in parts and can make logical attempts to put the separate parts together in an algorithm to explain the program as a whole. • I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements.	• I can explain the difference between the internet and the World Wide Web. • I can explain what a WAN and LAN is and describe the process of how access to the internet in school is possible. • I can use filters when searching for digital content. • I can explain in detail how accurate and reliable a webpage and its content is. • I can demonstrate safe and respectful use of a range of different technologies and online services. • I can identify more discrete inappropriate behaviours online. For example, someone who may be trying to groom me or someone else. • I can use critical thinking to help me stay safe online. • I know the value of protecting my privacy and others online.	• I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements.	• I can explain the difference between the internet and the World Wide Web. • I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can design and create my own online blogs. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. • I can demonstrate safe and respectful use of a range of different technologies and online services. • I know the value of protecting my privacy and others online.	• I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements.	• I can explain the difference between the internet and the World Wide Web. • I can explain what a WAN and LAN is and describe the process of how access to the internet in school is possible.	• I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements.	• I can use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object.	• I can use filters when searching for digital content. • I can compare a range of digital content sources and rate them in terms of content quality and accuracy. • I can consider the intended audience carefully when I design and make digital content. • I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements.
	Key vocabulary and Concepts								

	action, alert, algorithm, code desing, command, concatention, control, debug/debugging, developer, decomposition, event, function, get input, if, if/else, input, launch command, output, object, procedure, repeat, sequence, selection, simulation, string, timer, user input, valuable	digital footprint, PEGI rating, password, screen time, phishing, spoof website	average, advance mode, copy and paste, columns, cells, charts, count (how many) tool, dice, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer	audience, blog, blog page, blog post, collaborative, icon	text-based adventure, concept map, debug, sprite, function	internet, World Wide Web, router, network, Local Area Network (LAN), Wide Area Network (WAN), network cables, wireless	audience, collaboration, quiz, concept map, database	base 10, base 2, binary, bit, byte, decimal, denary, digit, gigabyte (GB), integer, kilobyte (KB), machine code, megabyte (MB), nibble, switch, tetrabyte (TB), transistor, variable	allignment, calculate, cell, cell reference, chart, formula, function, column, row, range, spreadsheet, style, sum, text wrapping, value, workbook
	Key Knowledge								
	Children learn to: • design a playable game with a timer and a score. • plan and use selection and variables. • understand how the launch command works. • use functions and understand why they are useful. • understand how functions are created and called. • use flowcharts to create and debug code. • create a simulation of a room in which devices can be controlled. • understand how user input can be used in a program. • understand how 2Code can be used to make a text-adventure game.	Children learn to: • identify benefits and risks of mobile devices broadcasting the location of the user/device. • identify secure sites by looking for privacy seals of approval. • identify the benefits and risks of giving personal information. • review the meaning of a digital footprint. • have a clear idea of appropriate online behaviour. • begin to understand how information online can persist. • understand the importance of balancing game and screen time with other parts of their lives. • identify the positive and negative influences of technology on health and the environment.	Children learn to: • use a spreadsheet to investigate the probability of the results of throwing many dice. • use a spreadsheet to calculate the discount and final prices in a sale. • use a spreadsheet to plan how to spend pocket money and the effect of saving money. • use a spreadsheet to plan a school charity day to maximise the money donated to charity.	Children learn to: • identify the purpose of writing a blog. • identify the features of a successful blog. • plan the theme and content for a blog. • understand how to write a blog and a blog post. • consider the effect upon the audience of changing the visual properties of the blog. • understand how to contribute to an existing blog. • understand how and why blog posts are approved by the teacher. • understand the importance of commenting on blogs.	Children learn to: • find out what a text adventure is. • use 2Connect to plan a story adventure. • make a story-based adventure using 2Create a Story. • introduce an alternative model for a text adventure which has a less sequential narrative. • use written plans to code a mapbased adventure in 2Code.	Children learn to: • know what the Internet consists of. • find out what a LAN and a WAN are. • find out how the Internet is accessed in school. • research and find out about the age of the Internet. • think about what the future might hold.	Children learn to: • create a picture-based quiz for young children. • learn how to use the question types within 2Quiz. • explore the grammar quizzes. • make a quiz that requires the player to search a database. • make a quiz to test your teachers or parents.	Children learn to: • examine how whole numbers are used as the basis for representing all types of data in digital systems. • recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). • understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.	Children learn to: • know what a spreadsheet looks like. • navigate and enter data into cells. • introduce some basic data formulae for percentages, averages and max and min numbers. • demonstrate how the use of spreadsheets can save time and effort when performing calculations. • use a spreadsheet to model a situation. • demonstrate how a spreadsheet can make complex data clear by manipulating the way it is presented. • create a variety of graphs in sheets. • apply spreadsheet skills to solving problems.
	Prior Learning – skills progression								
	YR5 Children can: • begin to simplify code. • create a playable game. • understand what a simulation is. • program a simulation using 2Code. • know what decomposition and abstraction are in computer science. • a take a real-life situation, decompose it and think about the level of abstraction. • understand how to use friction in code • begin to understand what a function is and how functions work in code.	YR5 Children can: • show greater understanding of the impact that sharing digital content can have. • review sources of support when using technology and children's responsibility to one another in their online behaviour. • know how to maintain secure passwords. • understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. • be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.	YR5 Children can: • use formulae within a spreadsheet to convert measurements of length and distance. • use the count tool to answer hypotheses about common letters in use. • use a spreadsheet to model a reallife problem. • use formulae to calculate area and perimeter of shapes. • create formulae that use text variables. • use a spreadsheet to help plan a school cake sale.	Yr3 Children can: • understand how the Internet can be used in effective communication. • understand how a blog can be used to communicate with a wider audience. YR4 Children can: • look at and discuss a variety of written material where the font size and type are tailored to the purpose of the text.	YR5 Children can: • understand how to search for information in a database. • contribute to a class database. • create a database around a chosen topic.	YR4 Children can: • understand the different parts that make up a computer. • recall the different parts that make up a computer.	YR5 Children can: • understand how to search for information in a database. • contribute to a class database. • create a database around a chosen topic.		YR5 Children can: • use formulae within a spreadsheet to convert measurements of length and distance. • use the count tool to answer hypotheses about common letters in use. • use a spreadsheet to model a reallife problem. • use formulae to calculate area and perimeter of shapes. • create formulae that use text variables. • use a spreadsheet to help plan a school cake sale. YR6 Children can:

	• understand what the different variables types are and how they are used differently. • understand how to create a string. • understand what concatenation is and how it works.	• understand how to reference sources in their work. • search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. • ensure reliability through using different methods of communication.		• use text formatting to make a piece of writing fit for its audience and purpose. • can interpret a variety of incoming communications and use these to build up the details of a story.					• use a spreadsheet to investigate the probability of the results of throwing many dice. • use a spreadsheet to calculate the discount and final prices in a sale. • use a spreadsheet to plan how to spend pocket money and the effect of saving money. • use a spreadsheet to plan a school charity day to maximise the money donated to charity.