

Eastbury Primary School: Computing Progression Map 2023

SUBJECT: COMPUTING						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS See below						
Year 1	<p>Topic Title: Improving mouse skills</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that: “log in” and “log out” means to begin and end a connection with a computer A computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. Passwords are important for security and to keep us safe. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning how to explore and tinker with 	<p>Topic Title: Programming 1: Algorithms unplugged</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that an algorithm is when instructions are put in an exact order. To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. To know that we call errors in an algorithm ‘bugs’ and fixing these ‘debugging’. <p>Key skills:</p>	<p>Topic Title: Skills showcase: Rocket to the Moon</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that when we create something on a computer it can be more easily saved and shared than a paper version. To know some of the simple graphic design features of a piece of online software. To know that a spreadsheet is an electronic ‘table’ for sorting data. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning where keys are located 	<p>Topic Title: Programming 2 – Option 1: Bee-Bot</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand the basic functions of a Bee-Bot. To know that you can use a camera/tablet to make simple videos. To know that algorithms move a Bee-Bot accurately to a chosen destination. <p>Key skills:</p> <ul style="list-style-type: none"> Learning how to explore and tinker with software to find out how it works. 	<p>Topic Title: Creating media: Digital imagery</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that holding the camera or device still and considering angles and light are important to take good pictures. To know that you can edit, crop and filter photographs. To know how to search safely for images online. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning how to explore and tinker with hardware to find out how it works. Learning where keys are located on the keyboard. 	<p>Topic Title: Data handling: Introduction to data</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that charts and pictograms can be created using a computer. To understand that a branching database is a way of classifying a group of objects. To know that computers understand different types of ‘input’. <p>Key Skills:</p>

	<p>hardware to find out how it works.</p> <ul style="list-style-type: none"> • Learning where keys are located on the keyboard. • Using a basic range of tools within graphic editing software. • Developing control of the mouse through dragging, clicking and resizing of images to create different effects. • Developing understanding of different software tools. • Recognising devices that are connected to the internet. • Logging in and out and saving work on their own account. <p>Key vocabulary: account, click, ctrl, cursor, drag, drag and drop, digital photograph, drop, duplicate, keyboard, layers, log on/ in, log out/</p>	<ul style="list-style-type: none"> • Recognising that some devices are input devices and others are output devices. • Learning that decomposition means breaking a problem down into smaller parts. • Using decomposition to solve unplugged challenges. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. • Assembling instructions into a simple algorithm. • Learning to debug instructions when things go wrong. • Learning to debug an algorithm in an unplugged scenario. <p>Key vocabulary: algorithm, automatic, bug, chunks, clear, code, debug, decompose, decomposition, device, directions, input,</p>	<p>on the keyboard.</p> <ul style="list-style-type: none"> • Learning how to operate a camera to take photos and videos. • Using logical reasoning to predict the behaviour of simple programs. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. • Assembling instructions into a simple algorithm. • Learning to debug instructions when things go wrong. 	<ul style="list-style-type: none"> • Learning how to operate a camera to take photos and videos. • Using decomposition to solve unplugged challenges. • Using logical reasoning to predict the behaviour of simple programs. • Developing the skills associated with sequencing in unplugged activities. • Following a basic set of instructions. <p>Key vocabulary: algorithm, artificial intelligence, Bee-Bot, clear, code, debug, demonstration, filming, inputting, instructions, pause, precise, predict, program, tinker, video, video recording</p>	<ul style="list-style-type: none"> • Learning how to operate a camera to take photos and videos. • Developing the skills associated with sequencing in unplugged activities. • Developing control of the mouse through dragging, clicking and resizing of images to create different effects. • Developing understanding of different software tools, • Searching and downloading images from the internet safely. • When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable. • Using a basic range of tools within 	<ul style="list-style-type: none"> • Learning how to explore and tinker with hardware to find out how it works. • Recognising that some devices are input devices and others are output devices. • Learning where keys are located on the keyboard. • Developing control of the mouse through dragging, clicking and resizing of images to create different effects. • Developing understanding of different software tools. • Recognising devices that are connected to the internet. • Understanding that technology can be used to
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	<p>off, menu, mouse, mouse pointer, password, right click, screen (monitor), software, tool, username</p>	<p>instructions, manageable, motion, order, organise, output, precise, programming, problem, robot, sensor, sequence, solution, specific, steps, tasks, virtual assistant</p>	<ul style="list-style-type: none"> • Learning to debug an algorithm in an unplugged scenario. • Recognising devices that are connected to the internet. • Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. • Logging in and out and saving work on their own account. <p>Key vocabulary: annotate, cells, components, create, data, debug, designing, digital content, digital image, document, e-document, edit, editing program, evaluate,</p>		<p>graphic editing software.</p> <ul style="list-style-type: none"> • Taking and editing photographs. <p>Key vocabulary: Fruit, seed, root, smoothie, carton, flavour, vegetable, leaf, stem, healthy, design, peel, slice</p>	<p>represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.</p> <ul style="list-style-type: none"> • Using data representations to answer questions about data. • Using software to explore and create pictograms and branching databases. <p>Key vocabulary: bar chart, block graph, branching database, categorise, chart, click and drag, compare, count, data, data collection, data record, data representation, edit, input, keyboard, line graph, mouse, information, label, pictogram, pie chart, process, record, resize, sort, table, tally, values</p>
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Year 2	<p>Topic Title: <u>Computing systems and networks 1: Using a computer</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know the difference between a desktop and laptop computer. To know that people control technology. To know some input devices that give a computer an instruction about what to do (output). To know that computers often work together. <p>Key Skills:</p> <ul style="list-style-type: none"> Understanding what a computer is and that it's made up of different components. Recognising that buttons cause effects 	<p>Topic Title: <u>Programming 1: Algorithms and debugging</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand what machine learning is and how it enables computers to make predictions. To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. To know that abstraction is the removing of unnecessary detail to help solve a problem. <p>Key skills:</p> <ul style="list-style-type: none"> Developing confidence with the keyboard and the 	<p>Topic Title: <u>Computing systems and networks 2: Word processing</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that touch typing is the fastest way to type. To know that I can make text a different style, size and colour. To know that "copy and paste" is a quick way of duplicating text. <p>Key Skills:</p> <ul style="list-style-type: none"> Developing confidence with the keyboard and the basics of touch typing. Developing word processing skills, including altering text, copying and 	<p>Topic Title: <u>Programming 2: ScratchJr</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that coding is writing in a special language so that the computer understands what to do. To understand that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke. 	<p>Topic Title: <u>Creating media: Stop motion</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that an animation is made up of a sequence of photographs. To know that small changes in my frames will create a smoother looking animation. To understand what software creates simple animations and some of its features e.g. onion skinning. <p>Key Skills:</p> <ul style="list-style-type: none"> Using greater control when taking photos with cameras, tablets or computers. Using logical thinking to explore software, predicting, testing and explaining what it does. 	<p>Topic Title: <u>Data handling: International Space Station</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that you can enter simple data into a spreadsheet. To understand what steps you need to take to create an algorithm. To know what data to use to answer certain questions. To know that computers can be used to monitor supplies.

<p>and that technology follows instructions.</p> <ul style="list-style-type: none"> • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with cameras, tablets or computers. • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. • Using word processing software to type and reformat text. • Creating and labelling images. • Learning how computers are used in the wider world <p>Key vocabulary:</p> <p>battery, buttons, camera, computer, desktop, device, digital, digital recorder, electricity, function, input, invention, keyboard, laptop, monitor, mouse, output,</p>	<p>basics of touch typing.</p> <ul style="list-style-type: none"> • Articulating what decomposition is. • Decomposing a game to predict the algorithms used to create it. • Learning that there are different levels of abstraction. • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does. • Using an algorithm to write a basic computer program. • Developing word processing skills, including altering text, copying and pasting 	<p>pasting and using keyboard shortcuts.</p> <ul style="list-style-type: none"> • Using word processing software to type and reformat text. • Searching for appropriate images to use in a document. • Understanding what online information is. • Identifying whether information is safe or unsafe to be shared online. <p>Key vocabulary:</p> <p>backspace, bold, copy, copyright, cut, delete, forward button, highlight, home row, home screen, image, import, italics, keyboard, keyboard character, keyword, layout, navigate, paste, redo, search, space bar, text, text effects, touch typing, underline, undo, word processing</p>	<p>Key skills:</p> <ul style="list-style-type: none"> • Recognising that buttons cause effects and that technology follows instruction • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does. • Using an algorithm to write a basic computer program. Using loop blocks when programming to repeat an instruction more than once. • Using software (and unplugged means) to 	<p>Key vocabulary:</p> <p>Animation, animator, background, digital device, drawing, flipbook, frames, moving images, opinion skinning, still images</p> <p>(Option 1- as above,plus: decompose, object, plan)</p> <p>(Option 2- as above, plus: decompose, digital camera, duration, focus, import, object, plan, save, upload)</p> <p>(Option 3- as above, plus: debug, effects, evaluate, fluid, pen tool, static)</p>	<p>Key Skills:</p> <ul style="list-style-type: none"> • Developing confidence with the keyboard and the basics of touch typing. • Creating and labelling images. • Collecting and inputting data into a spreadsheet. • Interpreting data from a spreadsheet. • Learning how computers are used in the wider world. <p>Key vocabulary:</p> <p>algorithm , astronaut, data, digital, digital content, experiment, galaxy, insulation, interactive map,</p>
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	<p>paying till, scanner, screen, system, tablet, technology, video, wires</p>	<p>and using keyboard shortcuts.</p> <p>Key vocabulary:</p> <p>abstraction, algorithm, artificial intelligence, bug, clear, correct, data, debug, decompose, error, key features, loop, predict, unnecessary</p>		<p>create story animations.</p> <p>Key vocabulary:</p> <p>algorithm, animation, blocks, bug, button, CGI, computer code, code (verb), debug, fluid, icon, imitate, instructions, loop, 'on tap', programming, repeat, Scratch JR, sequence, sound recording</p>		<p>International Space Centre, International Space Station, interpret, laboratory, monitor, planet, satellite, sensor, space, temperature, thermometer, water reservoir</p>
Year 3	<p>Topic Title: <u>Computing systems and networks 1: Networks</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that a network is a group of interconnected devices. To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices). 	<p>Topic Title: <u>Programming: Scratch</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that Scratch is a programming language and some of its basic functions. To understand how to use loops to improve programming. To understand how decomposition is used in programming. 	<p>Topic Title: <u>Computing systems and networks 2: Emailing</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that email stands for 'electronic mail.' To know that an attachment is an extra file added to an email. To understand that emails should contain appropriate 	<p>Topic Title: <u>Computing systems and networks 3: Journey inside a computer</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know the roles that inputs and outputs play on computers. To know what some of the different components inside a computer are e.g. CPU, RAM, hard 	<p>Topic Title: <u>Creating media: Video trailers (Previously called 'Digital literacy')</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that different types of camera shots can make my photos or videos look more effective. To know that I can edit photos and videos using film editing software. To understand that I can add transitions and text to my video. 	<p>Topic Title: <u>Data handling: Comparison cards databases</u></p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that a database is a collection of data stored in a logical, structured and orderly manner. To know that computer databases can be useful for sorting and filtering data.

<ul style="list-style-type: none"> To know that a server is central to a network and responds to requests made. To know that the internet connects all the networks around the world. To know that a router connects us to the internet. To know what a packet is and why it is important for website data transfer. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning about the purpose of routers. Understanding the role of the key components of a network. Understanding that websites and videos are files that are shared from one computer to another. Learning about the role of packets. Understanding how networks work and their purpose. Identifying the key components within a 	<ul style="list-style-type: none"> To understand that you can remix and adapt existing code. <p>Key Skills:</p> <ul style="list-style-type: none"> Using decomposition to explore the code behind an animation. Using repetition in programs. Using logical reasoning to explain how simple algorithms work. Explaining the purpose of an algorithm. Forming algorithms independently. Using logical thinking to explore more complex software; predicting, testing and explaining what it does. Incorporating loops to make code more efficient. Continuing existing code. 	<ul style="list-style-type: none"> To know that cyberbullying is bullying using electronics such as a computer or phone. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning to log in and out of an email account. Writing an email including a subject, 'to' and 'from'. Sending an email with an attachment. Replying to an email. Understanding the purpose of emails. Learning about cyberbullying. Learning that not all emails are genuine, recognising when an email might be fake and what to do about it. <p>Key vocabulary:</p> <p>attachment, bcc (blind carbon copy) cc (carbon copy), compose,</p>	<ul style="list-style-type: none"> and respectful content. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning to log in and out of an email account. Writing an email including a subject, 'to' and 'from'. Sending an email with an attachment. Replying to an email. Understanding the purpose of emails. Learning about cyberbullying. Learning that not all emails are genuine, recognising when an email might be fake and what to do about it. <p>Key vocabulary:</p> <p>algorithm, assemble, CPU (central processing unit), data, decompose, desktop, disassemble, GPU (graphics processing unit), hard drive, HDD (hard disk drive), infinite loop, input, keyboard,</p>	<ul style="list-style-type: none"> drive, and how they work together. To know what a tablet is and how it is different from a laptop/desktop computer. <p>Key Skills:</p> <ul style="list-style-type: none"> Understanding what the different components of a computer do and how they work together. Drawing comparisons across different types of computers. Using decomposition to explain the parts of a laptop computer. Explaining the purpose of an algorithm <p>Key vocabulary:</p> <p>algorithm, assemble, CPU (central processing unit), data, decompose, desktop, disassemble, GPU (graphics processing unit), hard drive, HDD (hard disk drive), infinite loop, input, keyboard,</p>	<p>Key Skills:</p> <ul style="list-style-type: none"> Using logical thinking to explore more complex software; predicting, testing and explaining what it does. Taking photographs and recording video to tell a story. Using software to edit and enhance their video adding music and text on screen with transitions. <p>Key vocabulary:</p> <p>application, camera angle, clip, edit, film editing software, graphics, import, key events, photo, plan, recording, sound effects, storyboard, time code, trailer, transition, video, voiceover</p> <p>(Option 1 - as above, plus: cross blur, cross fade, cross zoom, desktop, digital device, dip to black, directional wipe, laptop) (Option 2 - as above, plus:</p>	<ul style="list-style-type: none"> To know that different visual representations of data can be made on a computer. <p>Key Skills:</p> <ul style="list-style-type: none"> Using logical thinking to explore more complex software; predicting, testing and explaining what it does. Understanding the vocabulary associated with databases: field, record, data. Learning about the pros and cons of digital versus paper databases. Sorting and filtering databases to easily retrieve information. Creating and interpreting charts and graphs to understand data. <p>Key vocabulary:</p> <p>categorise, category, chart, data, database, fields, filter, graph, information, interpret,</p>
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	<p>network, including whether they are wired or wireless.</p> <ul style="list-style-type: none"> Recognising links between networks and the internet. Learning how data is transferred. <p>Key vocabulary: cables, component, connection, corrupted, data, desktop, device, DSL (digital subscriber line), fibre, file, internet, laptop, network, network map, network switch, packets, radio waves, router, server, submarine cables, tablet, text map, The Cloud, web server, website, website trackers, WiFi, wired, wireless, Wireless Access Points, World Wide Web</p>	<ul style="list-style-type: none"> Making reasonable suggestions for how to debug their own and others' code. <p>Key vocabulary: algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing code, repetition code, review, Scratch, sprite, tinker</p>	<p>content, cyberbullying, document, domain, download, email, email account, email, address, emoji, emotions, fake, font, genuine, hacker, icons, inbox, information, link, log in, log out, negative language, password, personal, information, positive language, reply, responsible digital citizen, scammer, settings, send, sign in, spam email, subject bar, theme, tone, username, virus, WiFi</p>	<p>laptop, memory, microphone, monitor, mouse, output, photocopier, program, QR code, RAM (random access memory), ROM (read only memory), storage, tablet device, technology, touchscreen, touchpad</p>	<p>cross dissolve, fade to black/white, slide, wipe)</p>	<p>PDF, questionnaire, record, representation, sort, spreadsheet</p>
Year 4	<p>Topic Title: Computing systems and networks 1</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that software can be used collaboratively 	<p>Topic Title: Programming Scratch</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that a variable is a value that can change 	<p>Topic Title: Creating media website design</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that a website is a collection of 	<p>Topic Title: Skills showcase HTML</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand and identify examples of HTML tags. 	<p>Topic Title: Computational thinking</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that combining computational thinking 	<p>Topic Title: Data handling: Investigating weather</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that computers can use different forms of

	<p>online to work as a team.</p> <ul style="list-style-type: none"> To know what type of comments and suggestions on a collaborative document can be helpful. To know that you can use images, text, transitions and animation in presentation slides. <p>Key Skills:</p> <ul style="list-style-type: none"> Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration. Use online software for 	<p>(depending on conditions) and know that you can create them in Scratch.</p> <ul style="list-style-type: none"> To know what a conditional statement is in programming. To understand that variables can help you to create a quiz on Scratch. <p>Key Skills:</p> <ul style="list-style-type: none"> Using decomposition to solve a problem by finding out what code was used. Using decomposition to understand the purpose of a script of code. Creating algorithms for a specific purpose. 	<p>pages that are all connected.</p> <ul style="list-style-type: none"> To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. To know that websites should be informative and interactive. <p>Key Skills:</p> <ul style="list-style-type: none"> Building a web page and creating content for it. Designing and creating a webpage for a given purpose. Using software to work collaboratively with others. 	<ul style="list-style-type: none"> To understand what changing the HTML and CSS does to alter the appearance of an object on the web. To understand that copyright means that those images are protected and to understand that we should do a “creative commons” image search if we wish to use images from the internet. To know what “fake news” is and ways to spot websites that carry this type of misinformation. To know what the “inspect” elements tool is and ways of using it to 	<p>skills can help you to solve a problem.</p> <ul style="list-style-type: none"> To understand that pattern recognition means identifying patterns to help them work out how the code works. To understand that algorithms can be used for a number of purposes e.g. animation, games design etc. <p>Key Skills:</p> <ul style="list-style-type: none"> Using decomposition to solve a problem by finding out what code was used. Using decomposition to understand the purpose of a script of code. Identifying patterns through unplugged activities. Using past experiences to help solve new problems. Using abstraction to identify the important parts when completing both plugged and unplugged activities. 	<p>input to sense the world around them so that they can record and respond to data (‘sensor data’).</p> <ul style="list-style-type: none"> To know that a weather machine is an automated machine that respond to sensor data. To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films. <p>Key Skills:</p> <ul style="list-style-type: none"> Using tablets or digital cameras to film a weather forecast. Understanding that weather stations use sensors to gather and record data that predicts the weather. Using keywords to effectively search for information on the internet. Searching the internet for data.
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	<p>documents, presentations, forms and spreadsheets.</p> <ul style="list-style-type: none"> Using software to work collaboratively with others. Understanding that software can be used collaboratively online to work as a team. Recognising what appropriate behaviour is when collaborating with others online. <p>Key vocabulary:</p> <p>animations, average, bar chart, collaboration, comment, conditional formatting, contribution, data, edited, email account, format, freeze, icon, images, insert, link,</p>	<ul style="list-style-type: none"> Coding a simple game. Incorporating variables to make code more efficient. Remixing existing code. <p>Key vocabulary:</p> <p>broadcast block, code blocks, conditional, coordinates, decomposition, features, game, information, negative numbers, orientation, parameters, position, program, project, script, sprite, stage, tinker, variables</p>	<p>Key vocabulary:</p> <p>assessment, audience, collaboration, content, contribution, create, design, embed, evaluate, features, hyperlinks, images, insert, online, plan, progress, review, web page, website, World Wide Web (Google version add in: checklist, Google Sites, hobby, homepage, published, record, style, subpage, tab, theme) (Microsoft version add in: design view, information, Microsoft Sway, stack, storyline view, style, transform, web browser)</p>	<p>explore and alter text and images.</p> <p>Key Skills:</p> <ul style="list-style-type: none"> Remixing existing code. Building a web page and creating content for it. Understanding that information found by searching the internet is not all grounded in fact. Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others. <p>Key vocabulary:</p> <p>code, component, content, copyright, CSS, end tag, fake news, hacking, heading, headline, hex code, HTML, input, internet browser, output, paragraph, permission, remixing, script, start</p>	<ul style="list-style-type: none"> Creating algorithms for a specific purpose. Using abstraction and pattern recognition to modify code. <p>Key vocabulary:</p> <p>accurate, backdrop, climate zone, cold, collaboration, condensation, cylinder, degrees, evaporation, extreme weather, forecast, heat sensor, lightning, measurement, pinwheel, presenter, rain, satellite, script, sensitive, sensor data, solar panel, tablet/digital camera, temperature, thermometer, tornado, warm, weather, weather forecast, wind</p>	<ul style="list-style-type: none"> Designing a device that gathers and records sensor data. Recording data in a spreadsheet independently. Sorting data in a spreadsheet to compare using the 'sort by...' option. Understanding that data is used to forecast weather. <p>Key vocabulary:</p> <p>accuracy, advantages, advertisements, belief, bot, chatbot, computer, distractions, fact, hashtag, implications, in-app purchases, influencer, opinion, program, recommendations, reliable, risks, screen time, search results, snippets, sponsored, trustworthy</p>
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	multiple choice, numerical data, pie chart, presentations, resolved, reviewing comments, share, slides, software, spreadsheets, suggestions, survey, teamwork, themes, transitions (Microsoft version add in: rating)			tag, tags, text, URL, webpage		
Year 5	<p>Topic Title: Programming 1: Music</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. To understand that using loops can make the process of writing music simpler and more effective. To know how to adapt their music while performing. <p>Key Skills:</p>	<p>Topic Title: Computing systems and networks: Search engines</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know how search engines work. To understand that anyone can create a website and therefore we should take steps to check the validity of websites. To know that web crawlers are computer programs that crawl through the internet. To understand what copyright is. <p>Key Skills:</p>	<p>Topic Title: Data handling: Mars Rover 1</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. To know what numbers using binary code look like and be able to identify how messages can be sent in this format. To understand that RAM is Random Access Memory and 	<p>Topic Title: Creating media: Stop motion animation</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that decomposition of an idea is important when creating stop-motion animations. To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that editing is an important feature of making 	<p>Topic Title: Programming 2: Micro:bit</p> <p>Key knowledge:</p> <p>Key Skills:</p> <ul style="list-style-type: none"> Decomposing a program without support. Predicting how software will work based on previous experience. Writing more complex algorithms for a purpose. Programming an animation. Iterating and developing their programming as they work. 	<p>Topic Title: Skills showcase: Mars Rover 2</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand that bit patterns represent images as pixels. To understand that the data for digital images can be compressed. To know the difference between ROM and RAM. To understand various techniques that will improve the design of a 3D object (using CAD software). <p>Key Skills:</p>

<ul style="list-style-type: none"> • Predicting how software will work based on previous experience. • Writing more complex algorithms for a purpose. • Iterating and developing their programming as they work. • Confidently using loops in their programming. • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. • Writing code to create a desired effect. Using a range of programming commands. • Using repetition within a program. Amending code within a live scenario. • Using logical thinking to explore software more independently, making predictions based on their previous experience. Using a software 	<ul style="list-style-type: none"> • Developing searching skills to help find relevant information on the internet. • Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. • Learn about different forms of communication that have developed with the use of technology. • Recognising that information on the Internet might not be true or correct and learning ways of checking validity. <p>Key vocabulary:</p> <p>beat, bugs, coding, command, debug, decompose, error, instructions, loop, melody, mindmap, music, output, performance, pitch, play, predict, programming, rhythm, tempo, timbre, tinker, tutorials, typing</p>	<p>acts as the computer's working memory.</p> <ul style="list-style-type: none"> • To know what simple operations can be used to calculate bit patterns. <p>Key Skills:</p> <ul style="list-style-type: none"> • Learning that external devices can be programmed by a separate computer. • Recognising how the size of RAM affects the processing of data. • Learning the vocabulary associated with data: data and transmit. • Recognising that computers transfer data in binary and understanding simple binary addition. • Relating binary signals (Boolean) to the simple character-based language, ASCII. 	<p>and improving a stop motion animation.</p> <p>Key Skills:</p> <ul style="list-style-type: none"> • Decomposing animations into a series of images. • Decomposing a story to be able to plan a program to tell a story. • Using video editing software to animate. <p>Key vocabulary:</p> <p>algorithm, animation, app, blocks, bluetooth, code block, connection, create, debug, decompose, designing, desktop, device, download, images, input, instructions, laptop, load, loop, Micro:bit, outputs, pairing, pedometer, polling, predict, program, repetition, reset, sabotage, scoreboard, screen, systematic, tablet, tinkering, USB, variables, wifi, wireless, wires</p>	<ul style="list-style-type: none"> • Confidently using loops in their programming. • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. • Writing code to create a desired effect. Using a range of programming commands. • Using repetition within a program. • Using logical thinking to explore software more independently, making predictions based on their previous experience. • Identify ways to improve and edit programs, videos, images etc. <p>Key vocabulary:</p> <p>animation, animator, background, character, decomposition, design, edit, evaluate, flip book, fluid movement, frame, model, moving images, still image, storyboard, thaumatrope, zoetrope</p>	<ul style="list-style-type: none"> • Learning the difference between ROM and RAM. • Recognising how the size of RAM affects the processing of data. • Understanding the fetch, decode, execute cycle. • Learning how the data for digital images can be compressed. • Recognising that computers transfer data in binary and understanding simple binary addition. • Understanding how bit patterns represent images as pixels. • Using logical thinking to explore software more independently, making predictions based on their previous experience. • Independently learning how to use 3D design software package TinkerCAD. • Learn about different forms of communication that have developed with
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	<p>programme (Sonic Pi) to create music.</p> <ul style="list-style-type: none"> Identify ways to improve and edit programs, videos, images etc. <p>Key vocabulary: algorithm, appropriate, copyright, correct, credit, data leak, deceive, fair, fake, inappropriate, incorrect, index, information, keywords, network, privacy, rank, real, search engine, TASK, web crawler, website</p>		<ul style="list-style-type: none"> Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. Understanding how data is collected in remote or dangerous places. Understanding how data might be used to tell us about a location. Learn about different forms of communication that have developed with the use of technology. <p>Key vocabulary: 8-bit binary, addition, ASCII, binary code, boolean, byte, communicate, construction, CPU, data transmission, decimal numbers, design, discovery, distance, hexadecimal, input, instructions, internet, Mars Rover, moon, numerical data, output, </p>		<p>(Option 1 add in: digital device, onion skinning, stop motion)</p> <p>(Option 2 add in: effects, photos, script)</p>	<p>the use of technology.</p> <p>Key vocabulary: 3D, algorithm, binary image, CAD, compression, CPU, data, drag and drop, "Fetch, decode, execute", ID card, input, JPEG, memory, online community, operating system, output, pixels, RAM, responsible, RGB, ROM, safe</p>
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			planet, radio signal, RAM, research, scientist, sequence, signal, simulation, space, subtraction, technology, transmit			
Year 6	<p>Topic Title: Computing systems and networks: Bletchley Park</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To understand the importance of having a secure password and what “brute force hacking” is. To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. To know about some of the historical figures that contributed to technological advances in computing. To understand what techniques are required to create a presentation using appropriate software. 	<p>Topic Title: Programming: Intro to Python</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that there are text-based programming languages such as Logo and Python. To know that nested loops are loops inside of loops. To understand the use of random numbers and remix Python code. <p>Key Skills:</p> <ul style="list-style-type: none"> Decomposing a program into an algorithm. Writing increasingly complex algorithms for a purpose. Debugging quickly and effectively to make a program more efficient. 	<p>Topic Title: Data handling 1: Big Data 1</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that data contained within barcodes and QR codes can be used by computers. To know that infrared waves are a way of transmitting data. To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. To know that data is often encrypted so that even if it is stolen it is not useful to the thief. <p>Key Skills:</p> <ul style="list-style-type: none"> Understanding and identifying 	<p>Topic Title: Creating media: History of computers</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that radio plays are plays where the audience can only hear the action so sound effects are important. To know that sound clips can be recorded using sound recording software. To know that sound clips can be edited and trimmed. <p>Key Skills:</p> <ul style="list-style-type: none"> Learning about the history of computers and how they have evolved over time. Using the understanding of historic computers to design a computer of the future. 	<p>Topic Title: Data handling 2: Big Data 2</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know that data can become corrupted within a network but this is less likely to happen if it is sent in ‘packets’. To know that devices or that are not updated are most vulnerable to hackers. To know the difference between mobile data and WiFi. <p>Key Skills:</p> <ul style="list-style-type: none"> Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files). Understanding that computer networks 	<p>Topic Title: Skills showcase: Inventing a product</p> <p>Key knowledge:</p> <ul style="list-style-type: none"> To know what designing an electronic product involves. To know which programming software/language is best to achieve a purpose. To know the building blocks of computational thinking e.g. sequence, selection, repetition, variables and inputs and outputs. <p>Key Skills:</p> <ul style="list-style-type: none"> Using past experiences to help solve new problems. Writing increasingly

	<p>Key Skills:</p> <ul style="list-style-type: none"> • Learning about the history of computers and how they have evolved over time. • Using past experiences to help solve new problems. • Writing increasingly complex algorithms for a purpose. • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. • Changing a program to personalise it. • Evaluating code to understand its purpose. • Predicting code and adapting it to a chosen purpose. • Using search and word processing skills to create a presentation. • Understanding how search engines work. • Understanding the importance of secure 	<ul style="list-style-type: none"> • Remixing existing code to explore a problem. • Using and adapting nested loops. • Programming using the language Python. • Changing a program to personalise it. • Evaluating code to understand its purpose. • Using logical thinking to explore software independently, iterating ideas and testing continuously. <p>Key vocabulary: algorithm, code, command, design, import, indentation, input, instructions, loop, output, patterns, random, remix, repeat, shape</p>	<p>barcodes, QR codes and RFID.</p> <ul style="list-style-type: none"> • Identifying devices and applications that can scan or read barcodes, QR codes and RFID. • Understanding how barcodes, QR codes and RFID work. • Gathering and analysing data in real time. • Creating formulas and sorting data within spreadsheets. • Learning how 'big data' can be used to solve a problem or improve efficiency. <p>Key vocabulary: algorithms, barcode, binary, Boolean, brand, chips, commuter, contactless, data, encrypted, infrared, MagicBand, privacy, proximity, QR code, QR, scanner, radio waves, RFID, signal, systems/data analyst, transmission, wireless</p>	<ul style="list-style-type: none"> • Using search and word processing skills to create a presentation. • Planning, recording and editing a radio play. • Creating and editing sound recordings for a specific purpose. <p>Key vocabulary: background noise, byte, computer, devices, file, FX, gigabyte, graphics, hard drive, hardware, kilobytes, megabyte, memory storage, mouse, operating system, overlay, play, processor, radio play, RAM, Raspberry Pi, record, reverb, ROM, script, smartphone, sound, sound effects, terrabytes, touch screen, track, trackpad, trailer</p>	<p>provide multiple services.</p> <ul style="list-style-type: none"> • Using search and word processing skills to create a presentation. • Creating formulas and sorting data within spreadsheets. • Learning about the Internet of Things and how it has led to 'big data'. • Learning how 'big data' can be used to solve a problem or improve efficiency. <p>Key vocabulary: Big Data, bluetooth, corrupted, data, energy, GPS, improve, infrared, Internet of Things, personal, privacy, QR codes, revolution, RFID, SIM, simulation, Smart city, Smart school, stop motion, threat, wifi, wireless</p>	<p>complex algorithms for a purpose.</p> <ul style="list-style-type: none"> • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. • Changing a program to personalise it. Evaluating code to understand its purpose. • Predicting code and adapting it to a chosen purpose. • Using logical thinking to explore software independently, iterating ideas and testing continuously. • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. • Using design software TinkerCAD to design a product. • Creating a website with embedded links and multiple pages. • Understanding how search engines work.
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	<p>passwords and how to create them.</p> <ul style="list-style-type: none"> Using search engines safely and effectively. <p>Key vocabulary: acrostic code, brute force hacking, caesar cipher, chip and pin system, cipher, code, combination, contribute, convince, date shift cipher, discovery, hero, invention, Nth Letter Cipher, password, Pig Latin, Pigpen cipher, present, scrambled, secret, secure, technological advancement, trial and error</p>					<ul style="list-style-type: none"> Using search engines safely and effectively. <p>Key vocabulary: adapt, advert, algorithm, bugs, coding, debugging, design, edit, electronic, evaluate, facts, image rights, images, influence, information, inputs, loops, manipulation, opinions, output, photos, product, program, repetition, screenshot, search engine, selection, sequence, snippets, software, structures, variables, video, website</p>
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EYFS:

Our Computing scheme for the EYFS is centred around play-based, unplugged (no computer) activities that focus on building children’s listening skills, curiosity and creativity and problem solving.

Technology in the Early Years involves:

- taking a photograph with a camera or tablet
- searching for information on the internet
- playing games on the interactive whiteboard

- exploring an old typewriter or other mechanical toys
- using a Beebot
- watching a video clip
- listening to music

Allowing children the opportunity to explore technology in this 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.