

Computing Long Term Plan

	AUTUMN	SPRING	SUMMER
YEAR 1 – KS1	<p>Autumn 1 – Using programmable toys</p> <ul style="list-style-type: none"> Understand what algorithms are Create and debug simple programs <p>Software: programming interface for programmable toy Bee-Bot simulator</p> <p>Apps: Bee-Bot app, Daisy the Dinosaur, Blue-Bot app</p> <p>Hardware: Bee-Bots, audio-recorders</p> <p>Autumn 2 – Filming the steps of a recipe</p> <ul style="list-style-type: none"> Use technology to create, organise, store, manipulate and retrieve digital content <p>Software: Microsoft Windows Live Movie Maker</p> <p>Apps: Brushes Redux</p> <p>Hardware: laptops, tablets/cameras with movie mode</p>	<p>Spring 1 – Illustrating an eBook</p> <ul style="list-style-type: none"> Use the web safely Save, retrieve and change their work Use technology safely, keeping personal information private <p>Software: Tux Paint/ Microsoft Paint/2Simple 2Paint A Picture/Fresh Paint, IWB software, Microsoft Word®, Microsoft PowerPoint®</p> <p>Apps: SketchBook Express</p> <p>Hardware: Laptop/desktop computers or tablets</p> <p>Spring 2 – Finding images using the web</p> <ul style="list-style-type: none"> Use technology safely. Recognise common uses of information technology beyond school. Sort (order) images according to some criteria. <p>Software: Web browser, Microsoft PowerPoint® or IWB Software</p> <p>Apps: Web browser, Keynote or Explain Everything</p> <p>Hardware: Internet connection, laptop/ desktop computers</p>	<p>Summer 1 – Producing a talking book</p> <ul style="list-style-type: none"> Use sound recording equipment Save and store sounds on a computer Share recordings with an audience Ask and answer binary (yes/no) questions about their images. <p>Software: Microsoft PowerPoint®/2Create A Story/IWB software</p> <p>Apps: Keynote/Explain Everything/Book Creato</p> <p>Hardware: Computers/tablets, MP3 recorders/microphone</p> <p>Summer 2 – Creating a card digitally</p> <ul style="list-style-type: none"> Develop basic keyboard skills, through typing and formatting text. Discuss their work and think about whether it could be improved. Develop skills in combining text and images. <p>Software: Microsoft PowerPoint®/Microsoft Word®/Clicker 7</p> <p>Apps: Pages/Keynote, Brushes Redux/Sketchbook Express. WPS office</p> <p>Hardware: Laptops/computers/tablets, printer</p>
YEAR 2 - KS1	<p>Autumn 1 – Programming on screen</p> <ul style="list-style-type: none"> Have a clear understanding of algorithms as sequences of instructions. Convert simple algorithms to programs. Predict what a simple program will do. Spot and fix (debug) errors in their programs. <p>Software: Scratch, Kodu, Snap</p> <p>Apps: Hopscotch, Daisy the Dinosaur, Pyonkee</p> <p>Hardware: Programmable toy, such as a Bee-Bot or Roamer Too</p> <p>Autumn 2 – Exploring how computer games work</p> <ul style="list-style-type: none"> Describe carefully what happens in computer games. Be aware of how to use games safely and in balance with other activities. Use logical reasoning to make predictions of what a program will do <p>Software: Scratch, Screencast-o-matic, web-based or open source games, pupils' games, Snap</p> <p>Apps: Pyonkee free game apps, Light-bot</p> <p>Hardware: Desktop/laptop computers, IWB, internet connection; optionally, MP3 recorders,</p>	<p>Spring 1 – Taking better photos</p> <ul style="list-style-type: none"> Consider the technical and artistic merits of photographs. Use a digital camera or camera app. Take digital photographs. Review and reject or rate the images they take. Edit and enhance their photographs. <p>Software: Picasa, Pixlr</p> <p>Apps: Snapseed or alternative free photo editing app.</p> <p>Hardware: Desktop or laptop computers and digital cameras/tablets/ smartphone</p> <p>Spring 2 – Researching a topic</p> <ul style="list-style-type: none"> Develop collaboration skills through working as part of a group. Develop research skills through searching for information on the internet. Improve note-taking skills through the use of mind mapping. <p>Software: FreeMind, bubbl.us, Google Custom Search, web browser, Microsoft PowerPoint</p> <p>Apps: Keynote, Popplet Lite, bubbl.us</p>	<p>Summer 1 – Collecting clues</p> <ul style="list-style-type: none"> Sort and classify a group of items by answering questions. Collect data using tick charts or tally charts. Use simple charting software to produce pictograms and other basic charts. Take, edit and enhance photographs. <p>Software:</p> <p>Apps: Your school's email system (Children will need an account), Microsoft Excel® Google Sheets</p> <p>Hardware: Mail, Numbers, Google Sheets</p> <p>Summer 2 – Collecting data about bugs</p> <ul style="list-style-type: none"> Sort and classify a group of items by answering questions. Collect data using tick charts or tally charts. Use simple charting software to produce pictograms and other basic charts. Take, edit and enhance photographs. <p>Software: Microsoft Excel®/Google Sheets/IWB software, Picasa/Photo Gallery, Google My Maps/Google Earth</p> <p>Apps: Numbers/Google Sheets, Snapseed, RunKeeper</p>

		Hardware: Laptop or desktop computers or tablets, internet connection	Hardware: Desktop or laptop computers with digital cameras/tablets, internet connection
YEAR 3 – KS2	<p>Autumn 1 – Programming an animation</p> <ul style="list-style-type: none"> • Create an algorithm for an animated scene in the form of a storyboard. • Write a program in Scratch to create the animation. • Correct mistakes in their animation programs. <p>Software: Scratch (recommended), Snap!, Microsoft PowerPoint®, Tux Paint, Scratch Jnr</p> <p>Apps: Pyonkee</p> <p>Hardware: Laptop or desktop computers (recommended) or tablets, cameras (optional), microphones (optional)</p> <p>Autumn 2 – Finding and correcting bugs in programs</p> <ul style="list-style-type: none"> • Debug programs that accomplish specific goals. • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. <p>Software: Scratch, Snap!, Screencast-o-matic (if appropriate)</p> <p>Apps: Snap and Pyonkee</p> <p>Hardware: Laptop/desktop computers, microphone</p>	<p>Spring 1 – Videoining performance</p> <ul style="list-style-type: none"> • 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. • Work with various forms of input and output. <p>Software: Microsoft Windows Movie Maker® or iMovie, Kinovea/Darffish.</p> <p>Apps: Coach's Eye or alternative free movie making app for Android.</p> <p>Hardware: Digital cameras, flip cameras (or similar), tablet computers/iPod Touch or similar</p> <p>Spring 2 – Making and sharing a short screencast presentation</p> <ul style="list-style-type: none"> • Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web • Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content that accomplish given goals, including collecting, analysing, evaluating and presenting information <p>Software: Google, creative commons search engines, PowerPoint / Google Presentation, screencast-omatic / QuickTime Player</p> <p>Apps: Explain Everything, Adobe Voice</p> <p>Hardware: Laptops/desktop PCs with microphones/tablet computers</p>	<p>Summer 1 – Communicating safely on the internet</p> <ul style="list-style-type: none"> • Develop a basic understanding of how email works. • Gain skills in using email. • Be aware of broader issues surrounding email, including 'netiquette' and online safety. • Experience video conferencing. <p>Software: Email system (your school's own system, Gmail or another system – need to allocate school emails), video conferencing software (Skype, Google Hangouts or Janet video conferencing), presentation software.</p> <p>Apps: Skype, Hangouts, Zoom</p> <p>Hardware: Webcam and speakers</p> <p>Summer 2 – Collecting and analysing data</p> <ul style="list-style-type: none"> • Understand some elements of survey design. • Understand some ethical and legal aspects of online data collection. • Use the web to facilitate data collection. • Gain skills in using charts to analyse data. • Gain skills in interpreting results. <p>Software: Web browser, Google Forms, Google Sheets and Google Slides/ InspireData®/Microsoft Excel® and Microsoft Word®/ Freemind</p> <p>Apps: Google Drive/web browser</p> <p>Hardware: Laptop or desktop computer with internet connection</p>
YEAR 4 - KS2	<p>Autumn 1 – Developing a simple educational game</p> <ul style="list-style-type: none"> • Develop an educational computer game using selection and repetition. • Understand and use variables. • Start to debug computer programs. • Recognise the importance of user interface design, including consideration of input and output. <p>Software: Scratch/Snap!</p> <p>Apps: Pyonkee</p> <p>Hardware: Laptop/desktop computer, microphones (not essential)</p> <p>Autumn 2 – Prototyping an interactive toy</p> <ul style="list-style-type: none"> • Design and make an on-screen prototype of a computer-controlled toy. • Understand different forms of input and output (such as sensors, switches, motors, lights and speakers). 	<p>Spring 1 – Producing digital music</p> <ul style="list-style-type: none"> • Use one or more programs to edit music. • Create and develop a musical composition, refining their ideas through reflection and discussion. • Develop collaboration skills. • Develop an awareness of how their composition can enhance work in other media. <p>Software: Isle of Tune, Audacity®, LMMS/ GarageBand, MuseScore (optional), SoundBox</p> <p>Apps: Isle of Tune</p> <p>Hardware: Computers or tablets, microphones, midi instruments, if available.</p> <p>Spring 2 – Editing and writing HTML</p> <ul style="list-style-type: none"> • Understand some technical aspects of how the internet makes the web possible. • Use HTML tags for elementary mark up. 	<p>Summer 1 – Producing a wiki</p> <ul style="list-style-type: none"> • Understand the conventions for collaborative online work, particularly in wikis. • Write for a target audience using a wiki tool. • Develop collaboration skills. • Develop proofreading skills. <p>Software: Learning platform wiki tools/ MediaWiki/Google Sites/ other hosted wiki</p> <p>Apps: Web browser (e.g. Safari), Wikipedia ap</p> <p>Hardware: Computers and internet connection, web server (if hosting MediaWiki)</p> <p>Summer 2 – Presenting the weather</p> <ul style="list-style-type: none"> • Understand different measurement techniques for weather, both analogue and digital. • Use computer-based data logging to automate the recording of some weather data.

	<ul style="list-style-type: none"> Design, write and debug the control and monitoring program for their toy. <p>Software: Scratch/Snap! Apps: Pyonkee Hardware: Laptops/computers, microphones and speakers</p>	<ul style="list-style-type: none"> Use hyperlinks to connect ideas and sources. Code up a simple web page with useful content. Understand some of the risks in using the web. <p>Software: Firefox, Brackets, Chrome developer tools, Microsoft Notepad – See Sean Apps: Koder Hardware: Laptop/desktop computers</p>	<ul style="list-style-type: none"> Use spreadsheets to create charts Analyse data, explore inconsistencies in data and make predictions Practise using presentation software and, optionally, video. <p>Software: Microsoft Excel@/Google Sheets, web browser, Microsoft PowerPoint@/IWB software Apps: Weather Station by Netatmo, Weather Station.UK, Numbers, Keynote/Explain Everything Hardware: Scientific equipment for measuring weather</p>
YEAR 5 – KS2	<p>Autumn 1 – Equipment for measuring weather</p> <ul style="list-style-type: none"> Create original artwork and sound for a game. Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. Detect and correct errors in their computer game. Use iterative development techniques (making and testing a series of small changes) to improve their game. <p>Software: Scratch/ Snap! (or Kodu) Apps: Pyonkee Hardware: Desktop/laptop computers, microphones</p> <p>Autumn 2 – Cracking codes</p> <ul style="list-style-type: none"> Be familiar with semaphore and Morse code. Understand the need for private information to be encrypted. Encrypt and decrypt messages in simple ciphers. Appreciate the need to use complex passwords and to keep them secure. Have some understanding of how encryption works on the web. <p>Software: Scratch 2.0/Snap!, The Black Chamber (website) Apps: The Black Chamber in the web browser, Pyonkee Hardware: Laptop/desktop computers</p>	<p>Autumn 1 – Fusing geometry and art</p> <ul style="list-style-type: none"> Develop an appreciation of the links between geometry and art. Become familiar with the tools and techniques of a vector graphics package. Develop an understanding of turtle graphics. <p>Software: Inkscape/ Adobe Illustrator/ CorelDRAW, Scratch/ Snap!, Terragen, Logo Apps: Adobe Ideas/neu. draw, Pyonkee Hardware: Laptop or desktop computers/tablets</p> <p>Autumn 2 – Creating a website about cyber safety</p> <ul style="list-style-type: none"> Develop their research skills to decide what information is appropriate. Understand some elements of how search engines select and rank results. Question the plausibility and quality of information. Develop and refine their ideas and text collaboratively. Develop their understanding of online safety and responsible use of technology. <p>Software: Google, Bing, Google Sites/wiki tool in the school's learning platform/WordPress/ Adobe Slate Apps: Google Search app, Google Sites via browser/WordPress/ Adobe Slat Hardware: Desktop or laptop computers/tablets</p>	<p>Summer 1 – Sharing experiences and opinions</p> <ul style="list-style-type: none"> Become familiar with blogs as a medium and a genre of writing. Create a sequence of blog posts on a theme. Incorporate additional media. Comment on the posts of others. Develop a critical, reflective view of a range of media, including text. <p>Software: WordPress/ Blogger/learning platform blogging tool or similar, GIMP, Audacity@, Microsoft Windows Movie Maker@ Apps: WordPress, Camera, Snapseed Hardware: Computers, digital cameras, audio recorders/tablets</p> <p>Summer 2 – Creating a virtual space</p> <ul style="list-style-type: none"> Understand the work of architects, designers and engineers working in 3D. Develop familiarity with a simple CAD (computer aided design) tool. Develop spatial awareness by exploring and experimenting with a 3D virtual environment. Develop greater aesthetic awareness. <p>Software: Trimble SketchUp (used for 3D modelling), Screencasto-matic (for final screencast), Minecraft Apps: Home Design 3D/3dVAS, Sketchup Viewer Hardware: Laptops/ computers</p>
YEAR 6 – KS2	<p>Autumn 1 – Making a text-based adventure game</p> <ul style="list-style-type: none"> Learn some of the syntax of a text-based programming language. Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list. Plan a text-based adventure with multiple 'rooms' and user interaction. Thoroughly debug the program. <p>Software: Python (using the IDLE editor) or trinket.io Apps: Pythonista or Python 3.4 for iOS (iOS), SL4A (Android), or trinket.io via Safari or other browser Bluetooth keyboards are recommended for tablet Hardware: Laptop/desktop computers. Python is installed as standard on the Raspberry Pi.</p>	<p>Spring 1 – Creating a short television advert</p> <ul style="list-style-type: none"> Think critically about how video is used to promote a cause. Storyboard an effective advert for a cause. Work collaboratively to shoot suitable original footage and source additional content, acknowledging intellectual property rights. Work collaboratively to edit the assembled content to make an effective advert. <p>Software: Movie Maker@/iMovie or alternative free movies maker for Android. Apps: imovie or alternative movie making app for Android. Hardware: Desktop/laptop computers; digital video cameras/digital cameras/tablet computers.</p>	<p>Summer 1 – Using media and mapping to document a trip.</p> <ul style="list-style-type: none"> Research a location online using a range of resources appropriately. Understand the safe use of mobile technology, including GPS. Capture images, audio and video while on location. Showcase shared media content through a mapping layer. <p>Software: Google Maps/Google Earth, Pixlr, Movie Maker@, Audacity, Google Sites, Apps: Google Earth, Snapseed, iMovie, Garageband, TrackRec</p>

	<p>Autumn 2 – Mastering algorithms for searching, sorting and mathematics.</p> <ul style="list-style-type: none"> • Develop the ability to reason logically about algorithms. • Understand how some key algorithms can be expressed as programs. • Understand that some algorithms are more efficient than others for the same problem. • Understand common algorithms for sorting and searching. • Appreciate algorithmic approaches to problems in mathematics <p>Software: Scratch and Snap! Apps: Pyonkee, and Snap! Hardware: Laptop/desktop computers; some 'unplugged' resources</p>	<p>Spring 2 – Exploring computer networks including the internet.</p> <ul style="list-style-type: none"> • Appreciate that computer networks transmit and receive information digitally. • Understand the basic hardware needed for computer networks to work. • Understand key features of internet communication protocols. • Develop a basic understanding of how domain names are converted to numerical IP addresses. <p>Software: For Extension activities: the pupils could use the Command Prompt in Windows to access simple tools such as ping, ipconfig, nslookup, tracert. Open Visual Traceroute (or webbased equivalents) and/or a network emulator (GS3). Apps: Web-based equivalent tools via the browser, CISCO Packet Tracer Mobile. Hardware: Desktop/laptop computers</p>	<p>Hardware: Tablet computers and/ or smartphones, desktop/laptop computers, web server or online hosting.</p> <p>Summer 2 – Creating a yearbook or magazine.</p> <ul style="list-style-type: none"> • Manage or contribute to large collaborative projects, facilitated using online tools. • Write and review content. • Source digital media while demonstrating safe, respectful and responsible use. • Design and produce a high-quality print document. <p>Software: Microsoft Publisher/Scribus/ iBook Author, Pixlr, Microsoft Word/ Google Docs, Adobe Acrobat, Google Drive Apps: Pages/Book Creator, Snapseed, Google Drive Hardware: Laptop/desktop computers, digital cameras, iPads</p>
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