



What are the aims and intentions of this curriculum?

That children:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Term	Topic	Key Learning (Knowledge & Skills)	Key Vocabulary
Autumn 1	Computing Systems: Search engines	<ul style="list-style-type: none">• Know how search engines work.• Understand that anyone can create a website and therefore we should take steps to check the validity of websites.• Know that web crawlers are computer programs that crawl through the internet.• Understand what copyright is.• Develop searching skills to help find relevant information on the internet.• Learn 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.• Recognise that information on the Internet might not be true or correct and learning ways of checking validity	algorithm, logo, data leak, privacy, inaccurate information, index, keywords, network, online, page rank, TASK, web crawler



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Autumn 2	Programming: Music	<ul style="list-style-type: none">• Know that a soundtrack is music for a film/video and that one way of composing these is on programming software.• Understand that using loops can make the process of writing music simpler and more effective.• Know how to adapt their music while performing.• Predict how software will work based on previous experience.• Write more complex algorithms for a purpose.• Iterate and developing their programming as they work.• Confidently using loops in their programming.• Use a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.• Write code to create a desired effect• Use a range of programming commands.• Use repetition within a program.• Amending code within a live scenario.• Use a software programme to create music.• Identify ways to improve and edit programs, videos, images etc.	basic commands, bug/debug, error, live loop, pitch, soundtrack, rhythm, tempo, timbre, tinker
Spring 1	Data Handling: Mars Rover 1	<ul style="list-style-type: none">• Know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.• Know what numbers using binary code look like and be able to identify how messages can be sent in this format.• Understand that RAM is Random Access Memory and acts as the computer's working memory.• Know what simple operations can be used to calculate bit patterns.• 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.• Learning that messages can be sent by binary code, reading binary up to eight	binary code, data transmission, discovery, numerical data, radio signal, input, output, sequence, simulation



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		<p>characters and carrying out binary calculations.</p> <ul style="list-style-type: none"> • 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. 	
Spring 2	Programming: using loops to achieve results	<ul style="list-style-type: none"> • To know how sequence and selection are used in programs • To know how loop statements work • To know how conditional statements affect programs • To understand selection using the if...do... statement • To predict algorithms • To debug and correct errors in programs • To use conditional statements • To identify patterns • To use simple repetition • To use loops to achieve goals • To use a range of programming commands 	debug, algorithm, general algorithm, if statement, if else, else, repeat until, loop, sequence
Summer 1	Creating Media: (Stop Motion animation)	<ul style="list-style-type: none"> • know that decomposition of an idea is important when creating stop-motion animations. • understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. • know that editing is an important feature of making and improving a stop motion animation • Decompose animations into a series of images. • Decompose a story to be able to plan a program to tell a story. • Use video editing software to animate 	animation, animator, background, decompose, design, digital device, duplicate, editing, frame, illusion, onion skinning, stop motion, storyboard, upload
Summer 2	Skills Showcase: Mars Rover 2	<ul style="list-style-type: none"> • Understand that bit patterns represent images as pixels. • Understand that the data for digital images can be compressed. • Know the difference between ROM and RAM. • Understand various techniques that will improve the design of a 3D object (using CAD software). • Learn the difference between ROM and RAM. • Recognise how the size of RAM affects the processing of data. 	algorithm, binary image, Bit, Bit pattern, CAD, Compression file, CPU, Data, Digital image, Encode, Image, JPEG, Memory computer, Operating system, Pixels,



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		<ul style="list-style-type: none">• Understand the fetch, decode, execute cycle.• Learn how the data for digital images can be compressed• Recognise that computers transfer data in binary and understanding simple binary addition.• Understand how bit patterns represent images as pixels.• Use logical thinking to explore software more independently, making predictions based on their previous experience.• Independently learning how to use 3D design software package TinkerCAD.	RGB
Continuous	Online Safety	<ul style="list-style-type: none">• Know different ways we can communicate online.• Understand how online information can be used to form judgements.• Understand some ways to deal with online bullying.• Know that apps require permission to access private information and that you can alter the permissions.• Know where I can go for support if I am being bullied online or feel that my health is being affected by time online.• Identify possible dangers online and learning how to stay safe.• Evaluate the pros and cons of online communication.• Recognise that information on the Internet might not be true or correct and learning ways of checking validity.• Learn what to do if they experience bullying online.• Learn to use an online community safely	password, strong password, applications, apps, private information, personal information, app permissions, emojis, memes, positive contributions, trusted adult, opinion, judgement, real world