Computing Overview

At Keyworth we understand the significance that technology plays in all areas of our lives and will increasingly do so in our children's futures. Therefore, we aim for our computing curriculum to enable our pupils to become confident, safe and responsible technology users, imaginative content creators and critical thinkers. We want them to understand the processes, systems and networks that underpin the technology they are using, while developing their computational thinking skills. Our curriculum asks children to think critically about when and how we choose to use technology; in addition to teaching children the wide range of amazing, helpful and wonderful things we can do with technology, we ask them to consider the safety and legal aspects of content creation and sharing, and how we can use our time most effectively and meaningfully.

Our scheme of work for Computing is adapted from the 'Teach Computing' Curriculum, and covers all aspects of the National Curriculum. This scheme was chosen as it has been created by subject experts and based on the latest pedagogical research. The spiral nature of the curriculum allows for children to revisit areas of computing each year, building on their previous learning and understanding, allowing children to embed the subject specific knowledge and practise the key skills in fun, engaging and challenging ways.

The curriculum can be broken down into 3 strands: computer science, information technology and digital literacy, with the aims of the curriculum reflecting this distinction.

Computer Science	Information Technology	Digital Literacy
This involves understanding how computers and networks work. Additionally, through using simple floor robots in Years 1 and 2, and using block coding programmes like Scratch up to year 6, children understand how to create programs to carry out instructions, using different inputs and outputs, and how to use logical reasoning to make predictions about whether algorithms or programs will work.	This involves learning how to create digital artefacts such as: presentations, word-processed documents, stop-motion animations, video, web-pages, digital photo editing, and databases, charts and graphs. It involves considering which programs can be used to produce different digital artefacts most effectively and how and why we choose to use them in school and their applications in the wider world. As well as discrete lessons teaching skills progressively in each year group, our curriculum also plans for opportunities to practise and embed these skills during cross-curricular work in other subject areas.	Digital literacy is about understanding the different types of technological devices that exist and how they work. Children learn about how technology allows us to be connected to the wider world and the opportunities that provides for collaboration, as well as understanding about why and how we should use technology safely. Within our schools, we provide children opportunities to use different devices and technology, such as: digital cameras, iPads, laptops, data loggers, in a range of contexts.

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Reception	Objectives from Birth to Five Matters:					
	• Completes a simple program on electronic devices • Uses ICT hardware to interact with age-appropriate computer software • Can create content such as a video recording, stories, and/or draw a picture on screen • Develops digital literacy skills by being able to access, understand and interact with a range of technologies • Can use the internet with adult supervision to find and retrieve information of interest to them					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	My story our world	Story telling	Under the sea	Dinosaurs	Growing	Space
	Using the iPad to take digital photos of us and our world • Uses ICT hardware to interact with age-appropriate computer software • Develops digital literacy skills by being able to access, understand and interact with a range of technologies	**Using iPads to scan a QR code and use iPads to take videos of our storytelling** • Uses ICT hardware to interact with age-appropriate computer software • Develops digital literacy skills by being able to access, understand and interact with a range of technologies	**As a class, using the laptop to research under the sea creatures using the Internet as a source of information** • Develops digital literacy skills by being able to access, understand and interact with a range of technologies • Can use the internet with adult supervision to find and retrieve information of interest to them • E Safety- internet safety and harm.	**As a class, using the laptop to research dinosaurs on the Internet Programming – giving instructions for Daisy Dino (iPad)** • Completes a simple program on electronic devices • Uses ICT hardware to interact with age-appropriate computer software • Develops digital literacy skills by being able to access, understand and interact with a	**Using and exploring 2simple – Paint a picture to create digital images using laptop and class Smartboard. Programming the Beebots to follow a set of instructions** • Completes a simple program on electronic devices • Uses ICT hardware to interact with age-appropriate computer software • Can create content such as a video recording, stories, and/or draw a picture on screen	**Using Book creator on the iPads and the Laptop/Smartboard to create digital booklet about the Planets Group work: Use the iPads to research information about planets.** • Can create digital content - eBooks • Develops digital literacy skills by being able to access, understand and interact with a range of technologies • Can use the internet with adult

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			Online issues.	• range of technologies • Can use the internet with adult supervision to find and retrieve information of interest to them	• Develops digital literacy skills by being able to access, understand and interact with a range of technologies	supervision to find and retrieve information of interest to them
	Vocab: Ipad Screen App	Vocab: QR code Scan Record	Vocab: E-safety Internet Search information	Vocab: Instruction Beebot	Vocab: Select Text Drag	Vocab: Research Search engine (google)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Computing systems and networks – Technology around us** By the end of this unit children should be able to: - explain how these technology examples help us - explain technology as something that helps us - locate examples of technology in the classroom - name the main parts of a computer	**Creating media – Digital painting** By the end of this unit children should be able to: - draw lines on a screen and explain which tools I used - make marks on a screen and explain which tools I used - use the paint tools to draw a picture - make marks with the square and line tools - use the shape and line tools effectively - use the shape and	**Programming A – Moving a robot** By the end of this unit children should be able to: - match a command to an outcome - predict the outcome of a command on a device - run a command on a device - follow an instruction - give directions - recall words that can be acted out -compare forwards and backwards	**Data and information – Grouping data** By the end of this unit children should be able to: - describe objects using labels - identify the label for a group of objects - match objects to groups" - count a group of objects - count objects - group objects - describe an object - describe a property of an object	**Creating media – Digital writing** By the end of this unit children should be able to: - identify and find keys on a keyboard - open a word processor - recognise keys on a keyboard - enter text into a computer - use backspace to remove text - use letter, number, and space keys - explain what the	**Programming B - Programming animations** By the end of this unit children should be able to: - compare different programming tools - find which commands to move a sprite - use commands to move a sprite" - run my program - use a Start block in a program - use more than one block by joining them

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	- switch on and log into a computer - use a mouse to click and drag - click and drag to make objects on a screen - use a mouse to create a picture - use a mouse to open a program - save my work to a file - say what a keyboard is for - type my name on a computer - delete letters - open my work from a file - use the arrow keys to move the cursor - discuss how we benefit from these rules - give examples of some of these rules - identify rules to keep us safe and healthy when we are using technology in and beyond the home	line tools to recreate the work of an artist" - choose appropriate shapes - create a picture in the style of an artist - make appropriate colour choices - choose appropriate paint tools and colours to recreate the work of an artist - say which tools were helpful and why - know that different paint tools do different jobs - change the colour and brush sizes - make dots of colour on the page - use dots of colour to create a picture in the style of an artist on my own - explain that pictures can be made in lots of different ways - say whether I prefer painting using a computer or using paper - spot the differences between painting on a computer and on paper"	movements - predict the outcome of a sequence involving forwards and backwards commands - start a sequence from the same place - compare left and right turns - experiment with turn and move commands to move a robot - predict the outcome of a sequence involving up to four commands - choose the order of commands in a sequence - debug my program - explain what my program should do - identify several possible solutions - plan two programs - use two different programs to get to the same place	- find objects with similar properties - count how many objects share a property - group objects in more than one way - group similar objects - choose how to group objects - describe groups of objects - record how many objects are in a group - compare groups of objects - decide how to group objects to answer a question - record and share what I have found	keys that I have learnt about already do - identify the toolbar and use bold, italic, and underline - type capital letters - change the font - select all of the text by clicking and dragging - select a word by double-clicking - decide if my changes have improved my writing - say what tool I used to change the text - use 'undo' to remove changes - explain the differences between typing and writing - make changes to text on a computer - say why I prefer typing or writing	together - change the value - find blocks that have numbers - say what happens when I change a value - add blocks to each of my sprites - delete a sprite - show that a project can include more than one sprite" - choose appropriate artwork for my project - create an algorithm for each sprite - decide how each sprite will move - add programming blocks based on my algorithm - test the programs I have created - use sprites that match my design

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	Vocab: Enter technology computer mouse keyboard cursor left click right click mouse pad	Vocab: Program tools create save document	Vocab: Digital command outcome predict debug instructions	Vocab: Data record object label group	Vocab: Keyboard space key copy and paste word processor back space tool bar font double click undo	Vocab: Scratch coding sprite design
	During COOL Time: Exploring and labelling laptop parts, keyboards, mouse.	**During COOL time:** Using 2simple 2Paint to create digital artwork	**Cross-curricular opportunities:** Programming a Beebot to move across a map	**Cross-curricular opportunities:** Using copy and paste function to collect images of London in the past	**In COOL time:** Use 2 simple to Publish to combine text and images	**In COOL time:** Using Scratch on laptops

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 2	**Computing systems and networks – IT around us** By the end of this unit children should be able to: - describe some uses of computers - identify examples of computers - identify that a computer is a part of IT - identify examples of IT - identify that some IT can be used in more than one way	**Creating media – Digital photography** By the end of this unit children should be able to: - explain what I did to capture a digital photo - recognise what devices can be used to take photographs - talk about how to take a photograph" - explain the process of taking a good photograph - explain why a	**Programming A – Robot algorithms** By the end of this unit children should be able to: - choose a series of words that can be enacted as a sequence - follow instructions given by someone else - give clear instructions - show the difference in outcomes between two sequences that consist of the same	**Data and information – Pictograms** By the end of this unit children should be able to: - compare totals in a tally chart - record data in a tally chart - represent a tally count as a total - enter data onto a computer - use a computer to view data in a different format - use pictograms to answer simple	**Creating media - Digital music** By the end of this unit children should be able to: - describe music using adjectives - identify simple differences in pieces of music - say what I do and don't like about a piece of music - create a rhythm pattern - explain that music is created and played by humans - play an	**Programming B - Programming quizzes** By the end of this unit children should be able to: - identify that a program needs to be started - identify the start of a sequence - show how to run my program -change the outcome of a sequence of commands - match two sequences with the same outcome - predict the outcome of a sequence of commands - build the sequences of blocks I need - decide which blocks to use to meet the design - work out the actions of a sprite in

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	- sort school IT by what it's used for - find examples of information technology - sort IT by where it is found - talk about uses of information technology - demonstrate how IT devices work together - recognise common types of technology - say why we use IT" - list different uses of information technology - say how rules can help keep me safe - talk about different rules for using IT" - explain the need to use IT in different ways - identify the choices that I make when using IT - use IT for different types of activities	photo looks better in portrait or landscape format - take photos in both landscape and portrait format" - discuss how to take a good photograph - identify what is wrong with a photograph - improve a photograph by retaking it" - experiment with different light sources - explain why a picture may be unclear - explore the effect that light has on a photo - explain my choices - recognise that images can be changed - use a tool to achieve a desired effect - apply a range of photography skills to capture a photo - identify which photos are real and which have been	commands - use an algorithm to program a sequence on a floor robot - use the same instructions to create different algorithms - compare my prediction to the program outcome - follow a sequence - predict the outcome of a sequence - explain the choices I made for my mat design - identify different routes around my mat - test my mat to make sure that it is usable - create an algorithm to meet my goal - explain what my algorithm should achieve - use my algorithm to create a program" - plan algorithms for different parts of a task	questions about objects - explain what the pictogram shows - organise data in a tally chart - use a tally chart to create a pictogram - answer 'more than'/'less than' and 'most/least' questions about an attribute - create a pictogram to arrange objects by an attribute - tally objects using a common attribute - choose a suitable attribute to compare people - collect the data I need - create a pictogram and draw conclusions from it - give simple examples of why information should not be shared - share what I have found out using a computer - use a computer program to present information in different ways	instrument following a rhythm pattern - connect images with sounds - relate an idea to a piece of music - use a computer to experiment with pitch - explain how my music can be played in different ways - identify that music is a sequence of notes - refine my musical pattern on a computer - add a sequence of notes to my rhythm - create a rhythm which represents an animal I've chosen - create my animal's rhythm on a computer - explain how I changed my work - listen to music and describe how it makes me feel - review my work	an algorithm - choose backgrounds for the design - choose characters for the design - create a program based on the new design - build sequences of blocks to match my design - choose the images for my own design - create an algorithm - compare my project to my design - debug my program - improve my project by adding features

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		changed - recognise which photos have been changed	- put together the different parts of my program - test and debug each part of the program			
	Vocab: Information technology computers barcodes scanners tills bank cards traffic lights (previous years' vocabulary should be embedded)	Vocab: Device capture photograph digital photo landscape portrait format compose retake light autofocus lighting adjust tool effect (previous years' vocabulary should be embedded)	Vocab: instructions sequence algorithm floor robot outcomes logic reasoning prediction programme debugging decomposition debugging fix (previous years' vocabulary should be embedded)	Vocab: tally data chart questions objects more/less than most/least conclusions pictograms information (previous years' vocabulary should be embedded)	Vocab: digital music sounds pitch pattern sequence notes rhythm (previous years' vocabulary should be embedded)	Vocab: sequence commands programme run predict outcome sprite blocks backgrounds character design algorithm debug (previous years' vocabulary should be embedded)
	Pirates Topic: Create pirate portraits using 2simple	**Great Fire of London Topic:** Create digital drawing using stamp tool in 2simple. Publish digital books using 2simple to publish	**Kenya**: Use 2 simple 2 publish / PowerPoint to publish an information leaflet about Kenya	**Travel and Transportation:** Use a programme to show changes in the history of transportation.	**Women Who Change the World:** Use the internet to use selected websites to find out about significant women in history.	**Seaside Topic:** Use J2E pictogram https://www.j2e.com/jit5#pictogram to present data collected

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	**Computing systems and networks –**	**Creating media - Stop-frame**	**Programming A - Sequencing sound**s	**Data and information – Branching**	**Creating media – Desktop publishing**	**Programming B - Events and actions in**

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	Connecting computers	animation	By the end of this unit children should be able to:	databases	By the end of this unit children should be able to:	programs
	By the end of this unit children should be able to: - explain that digital devices accept inputs - explain that digital devices produce outputs - follow a process - classify input and output devices - describe a simple process - design a digital device - explain how I use digital devices for different activities - recognise similarities between using digital devices and non-digital tools - suggest differences between using digital devices and non-digital tools - discuss why we need a network switch - explain how messages are passed through multiple connections - recognise different connections - demonstrate how	By the end of this unit children should be able to: - create an effective flip book—style animation - draw a sequence of pictures - explain how an animation/flip book works - create an effective stop-frame animation - explain why little changes are needed for each frame - predict what an animation will look like - break down a story into settings, characters and events - create a storyboard - describe an animation that is achievable on screen - evaluate the quality of my animation - review a sequence of frames to check my work - use onion skinning to help me make small changes between frames - evaluate another	- explain that objects in Scratch have attributes (linked to) - identify the objects in a Scratch project (sprites, backdrops) - recognise that commands in Scratch are represented as blocks - choose a word which describes an on-screen action for my plan - create a program following a design - identify that each sprite is controlled by the commands I choose - create a sequence of connected commands - explain that the objects in my project will respond exactly to the code - start a program in different ways - combine sound commands - explain what a sequence is - order notes into a sequence	By the end of this unit children should be able to: - create two groups of objects separated by one attribute - investigate questions with yes/no answers - make up a yes/no question about a collection of objects" - arrange objects into a tree structure - create a group of objects within an existing group - select an attribute to separate objects into groups - group objects using my own yes/no questions - select objects to arrange in a branching database - test my branching database to see if it works - compare two branching database structures - create yes/no questions using given attributes - explain that	- explain the difference between text and images - identify the advantages and disadvantages of using text and images - recognise that text and images can communicate messages clearly - change font style, size, and colours for a given purpose - edit text - explain that text can be changed to communicate more clearly - create a template for a particular purpose - define the term 'page orientation' - recognise placeholders and say why they are important - choose the best locations for my content - make changes to content after I've added it	By the end of this unit children should be able to: - choose which keys to use for actions and explain my choices - explain the relationship between an event and an action - identify a way to improve a program - choose a character for my project - choose a suitable size for a character in a maze - program movement - choose blocks to set up my program - consider the real world when making design choices - use a programming extension - build more sequences of commands to make my design work - choose suitable keys to turn on additional features - identify additional features (from a given set of blocks) - match a piece of

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information can be passed between devices - explain the role of a switch, server, and wireless access point in a network - recognise that a computer network is made up of a number of devices - identify how devices in a network are connected together - identify networked devices around me - identify the benefits of computer networks	learner's animation - explain ways to make my animation better - improve my animation based on feedback - add other media to my animation - evaluate my final film - explain why I added other media to my animation	- build a sequence of commands - decide the actions for each sprite in a program - make design choices for my artwork - identify and name the objects I will need for a project - implement my algorithm as code - relate a task description to a design	questions need to be ordered carefully to split objects into similarly sized groups - create a physical version of a branching database - create questions that will enable objects to be uniquely identified - independently create questions to use in a branching database - create a branching database that reflects my plan - suggest real-world uses for branching databases - work with a partner to test my identification tool	- paste text and images to create a magazine cover - choose a suitable layout for a given purpose - identify different layouts - match a layout to a purpose - compare work made on desktop publishing to work created by hand - identify the uses of desktop publishing in the real world - say why desktop publishing might be helpful	code to an outcome - modify a program using a design - test a program against a given design - evaluate my project - implement my design - make design choices and justify them
Vocab: input output digital devices process Wi-Fi tablets mobile phones messages connections networks server wireless access point infrastructure (previous years' vocabulary should be embedded)	Vocab: animation flip book sequence of images story-board frame onion skinning evaluate improve media effects (previous years' vocabulary should be embedded)	Vocab: scratch sprites backdrops attributes blocks commands motion blocks actions costumes (previous years' vocabulary should be embedded)	Vocab: questions investigate groups attributes branching database compare (previous years' vocabulary should be embedded)	Vocab: font style size colour edit return backspace shift typing page orientation placeholders template paste layout (previous years' vocabulary should be embedded)	Vocab: sprite event action programme extension commands debugging pen blocks character (previous years' vocabulary should be embedded)

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	Stone Age to Iron Age	Volcanoes and Earthquakes	Egyptian society	Egypt- the Nile	India	Local Area study
	Forces - science - create graph to represent data in J2E	Animate an explanation of the process of volcanic eruption	Plants - photograph changes overtime to plants and insert into a presentation and add text to explain each image	Create presentation about the Nile using PowerPoint	Create digital artwork - layering images	Using digital maps Create Google Form survey to collect data

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	**Unit:** **Computing systems and networks – The Internet** By the end of this unit children should be able to: - demonstrate how information is shared across the internet - describe the internet as a network of networks - discuss why a network needs protecting - describe networked devices and how they connect - explain that the internet is used to provide many services - recognise that the World Wide Web contains websites and web pages	**Unit:** **Creating media - Audio production** By the end of this unit children should be able to: - explain that the person who records the sound can say who is allowed to use it - identify the input and output devices used to record and play sound - use a computer to record audio - discuss what sounds can be added to a podcast - inspect the soundwave view to know where to trim my recording - re-record my voice to improve my	**Unit:** **Programming A – Repetition in shapes** By the end of this unit children should be able to: - create a code snippet for a given purpose - explain the effect of changing a value of a command - program a computer by typing commands - test my algorithm in a text-based language - use a template to create a design for my program - write an algorithm to produce a given outcome - identify everyday tasks that include repetition as part of a sequence, e.g.	**Unit:** **Data and information – Data logging** By the end of this unit children should be able to: - choose a data set to answer a given question - identify data that can be gathered over time - suggest questions that can be answered using a given data set - explain what data can be collected using sensors - identify that data from sensors can be recorded - use data from a sensor to answer a given question - identify the intervals used to collect data	**Unit:** **Creating media – Photo editing** By the end of this unit children should be able to: -explain why I might crop an image - improve an image by rotating it - use photo editing software to crop an image - experiment with different colour effects - explain that different colour effects make you think and feel different things - explain why I chose certain colour effects - add to the composition of an image by cloning	**Unit:** **Programming B – Repetition in games** By the end of this unit children should be able to: - list an everyday task as a set of instructions including repetition - modify a snippet of code to create a given outcome - predict the outcome of a snippet of code - choose when to use a count-controlled and an infinite loop - modify loops to produce a given outcome - recognise that some programming languages enable more than one process to be run at

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- describe how to access websites on the WWW - describe where websites are stored when uploaded to the WWW - explain the types of media that can be shared on the WWW - explain that internet services can be used to create content online - explain what media can be found on websites - recognise that add content to the WWW - explain that there are rules to protect content - explain that websites and their content are created by people - suggest who owns the content on websites - explain that not everything on the World Wide Web is true - explain why I need to think carefully before I share or reshare content	recording - explain how sounds can be combined to make a podcast more engaging - plan appropriate content for a podcast - save my project so the different parts remain editable - improve my voice recordings - record content following my plan - review the quality of my recordings - arrange multiple sounds to create the effect I want - explain the difference between saving a project and exporting an audio file - open my project to continue working on it - choose appropriate edits to improve my podcast - listen to an audio recording to identify its strengths - suggest improvements to an audio recording	brushing teeth, dance moves - identify patterns in a sequence - use a count-controlled loop to produce a given outcome - choose which values to change in a loop - identify the effect of changing the number of times a task is repeated - predict the outcome of a program containing a count-controlled loop - explain that a computer can repeatedly call a procedure - identify 'chunks' of actions in the real world - use a procedure in a program - design a program that includes count-controlled loops - develop my program by debugging it - make use of my design to write a program	- recognise that a data logger collects data at given points - talk about the data that I have captured - explain that there are different ways to view data - sort data to find information - view data at different levels of detail - plan how to collect data using a data logger - propose a question that can be answered using logged data - use a data logger to collect data - draw conclusions from the data that I have collected - explain the benefits of using a data logger - interpret data that has been collected using a data logger	- identify how a photo edit can be improved - remove parts of an image using cloning - experiment with tools to select and copy part of an image - explain why photos might be edited - use a range of tools to copy between images - choose suitable images for my project - create a project that is a combination of other images - describe the image I want to create - combine text and my image to complete the project - review images against a given criteria - use feedback to guide making changes	once - choose which action will be repeated for each object - evaluate the effectiveness of the repeated sequences used in my program - explain what the outcome of the repeated action should be - explain the effect of my changes - identify which parts of a loop can be changed - re-use existing code snippets on new sprites - develop my own design explaining what my project will do - evaluate the use of repetition in a project - select key parts of a given project to use in my own design - build a program that follows my design - evaluate the steps I followed when building my project - refine the algorithm in my design

- explain why some information I find online may not be honest, accurate, or legal					
Vocab: internet world wide web protecting websites web-pages upload share access media content (previous years' vocabulary should be embedded) create ownership copyright	Vocab: microphone speaker headphone podcast Audacity ownership copyright audio soundwave editable voice recording trim align sound effects layers background music (previous years' vocabulary should be embedded)	Vocab: repetition shapes loops accuracy logo text-based code snippet counts controlled loop patterns predict debugging (previous years' vocabulary should be embedded)	Vocab: data logging gather collect identify sensors intervals capture analyse sort conclusions (previous years' vocabulary should be embedded)	Vocab: composition digital image rotate crop colour effects cloning select and copy tools combine (previous years' vocabulary should be embedded)	Vocab: repetition loops instructions snippet of code programming languages counts controlled loops repeated action (previous years' vocabulary should be embedded)
Food: Create a PowerPoint presentation about the origins of different food Create a table/chart to show airmiles of different foods to the UK	**Rivers** Present information about the features of Rivers	**WW2** Use audio files in style of WW2 radio news explaining an event in WW2 (record and insert as sound button in to eBook/PPT)	**Anglo Saxons and Vikings** Animate a video to show the route the Vikings travelled to settle in UK Create a 3D digital model of an Anglo-Saxon round house?	**Kingdom of Benin** Create a range of photos, displaying Benin's culture	**Environmental and Social Activism** Create a programme demonstrating the impact we can have on the environment.

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	**Unit: Computing systems and networks - Systems and searching** By the end of this unit children should be able to: -describe that a computer system features inputs, processes, and outputs - explain that computer systems communicate with other devices - explain that systems are built using a number of parts - explain the benefits of a given computer system - identify tasks that are managed by computer systems - identify the human elements of a computer system - compare results from different search engines - make use of a web search to find specific information	**Unit: Creating media - Video production** By the end of this unit children should be able to: - compare features in different videos - explain that video is a visual media format - identify features of videos - experiment with different camera angles - identify and find features on a digital video recording device - make use of a microphone - capture video using a range of filming techniques - review how effective my video is - suggest filming techniques for a given purpose - create and save video content - decide which filming techniques I will use - outline the scenes of my video	**Unit: Programming A – Selection in physical computing** By the end of this unit children should be able to: - create a simple circuit and connect it to a microcontroller - explain what an infinite loop does - program a microcontroller to make an LED switch on - connect more than one output component to a microcontroller - design sequences that use count-controlled loops - use a count-controlled loop to control outputs - design a conditional loop - explain that a condition is either true or false - program a microcontroller to respond to an input - explain that a	**Unit: Data and information – Flat-file databases** By the end of this unit children should be able to: - create a database using cards - explain how information can be recorded - order, sort, and group my data cards" - choose which field to sort data by to answer a given question - explain what a field and a record is in a database - navigate a flat-file database to compare different views of information - combine grouping and sorting to answer specific questions - explain that data can be grouped using chosen values - group information using a database - choose multiple criteria to answer a given question	**Unit: Creating media – Introduction to vector graphics** By the end of this unit children should be able to: - discuss how vector drawings are different from paper-based drawings - experiment with the shape and line tools - recognise that vector drawings are made using shapes" - explain that each element added to a vector drawing is an object - identify the shapes used to make a vector drawing - move, resize, and rotate objects I have duplicated - I can explain how alignment grids and resize handles can be used to improve consistency - modify objects to create a new image - use the zoom tool to help me add detail to	**Unit: Programming B – Selection in quizzes** By the end of this unit children should be able to: - identify conditions in a program - modify a condition in a program - recall how conditions are used in selection - create a program with different outcomes using selection - identify the condition and outcomes in an 'if... then... else...' statement - use selection in an infinite loop to check a condition - design the flow of a program which contains 'if... then... else…' - explain that program flow can branch according to a condition - show that a condition can direct

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	- refine my web search - explain why we need tools to find things online - recognise the role of web crawlers in creating an index - relate a search term to the search engine's index - explain that a search engine follows rules to rank results - give examples of criteria used by search engines to rank results - order a list by rank - describe some of the ways that search results can be influenced - explain how search engines make money - recognise some of the limitations of search engines	- explain how to improve a video by reshooting and editing - select the correct tools to make edits to my video - store, retrieve, and export my recording to a computer - evaluate my video and share my opinions - make edits to my video and improve the final outcome - recognise that my choices when making a video will impact on the quality of the final outcome	condition being met can start an action - identify a condition and an action in my project - use selection (an 'if…then…' statement) to direct the flow of a program - create a detailed drawing of my project - describe what my project will do - identify a real-world example of a condition starting an action - test and debug my project - use selection to produce an intended outcome - write an algorithm that describes what my model will do	- choose which field and value are required to answer a given question - outline how 'AND' and 'OR' can be used to refine data selection - explain the benefits of using a computer to create charts - refine a chart by selecting a particular filter - select an appropriate chart to visually compare data - ask questions that will need more than one field to answer - present my findings to a group - refine a search in a real-world context	my drawings - change the order of layers in a vector drawing - identify that each added object creates a new layer in the drawing - use layering to create an image - copy part of a drawing by duplicating several objects - recognise when I need to group and ungroup objects - reuse a group of objects to further develop my vector drawing - compare vector drawings to freehand paint drawings - create a vector drawing for a specific purpose - reflect on the skills I have used and why I have used them	program flow in one of two ways - identify the outcome of user input in an algorithm - outline a given task - use a design format to outline my project - implement my algorithm to create the first section of my program - share my program with others - test my program - extend my program further - identify the setup code I need in my program - identify ways the program could be improved
	Vocab: search engines select rank results system components electronic connections	Vocab: media format videos digital device camera angles microphone filming techniques capture scene script	Vocab: simple circuit microcontroller infinite loop LED switch Sparkle Crumble motor	Vocab: database information order sort fields record flat file database grouping sorting values criteria	Vocab: drawing tools vector-drawings move resize rotate duplicate zoom tool alignment grids modify layer grouping	Vocab: selection conditions identify modify conditional statement branch test set up code (previous years'

	connected systems digital system communicate with devices address bar web crawlers index keywords (previous years' vocabulary should be embedded)	storyboard reshooting shooting importing (previous years' vocabulary should be embedded)	components connect output input conditional loop Crumble controller selection (previous years' vocabulary should be embedded)	chart (previous years' vocabulary should be embedded)	ungrouping (previous years' vocabulary should be embedded)	vocabulary should be embedded)
	Ancient Romans Topic Research the Romans using Google	**Victorians Topic** Film a presentation on the Victorians	**UK Topic** Create a chart on the information of pollution levels in UK in the last 200 years.	**North America Topic** Create a Tourism Show (video recording) about the sites to visit in North America	**Space Topic** Create a chart on the information of different planets.	**The Environment** Create a programme showing how the planet is getting warmer each year.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 6	**Unit: Computing systems and networks - Communication and collaboration** By the end of this unit children should be able to: - describe how computers use addresses to access websites - explain that internet devices have addresses - recognise that data	**Unit: Creating media – Web page creation** By the end of this unit children should be able to: - discuss the different types of media used on websites - explore a website - I know that websites are written in HTML - draw a web page layout that suits my purpose - recognise the	**Unit: Programming A – Variables in games** By the end of this unit children should be able to: - explain that the way a variable change can be defined - identify examples of information that is variable - identify that variables can hold numbers or letters - explain that a	**Unit: Data and information – Spreadsheets** By the end of this unit children should be able to: - collect data - enter data into a spreadsheet - suggest how to structure my data - apply an appropriate format to a cell - choose an appropriate format	**Unit: Creating media – 3D Modelling** By the end of this unit children should be able to: - add 3D shapes to a project - move 3D shapes relative to one another - view 3D shapes from different perspectives - lift/lower 3D objects - recolour a 3D object - resize an object in	**Unit: Programming B - Sensing movement** By the end of this unit children should be able to: - apply my knowledge of programming to a new environment - test my program on an emulator - transfer my program to a controllable device - determine the flow of a program using

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	is transferred using agreed methods - explain that all data transferred over the internet is in packets - explain that data is transferred over networks in packets - identify and explain the main parts of a data packet - explain that the internet allows different media to be shared - recognise how to access shared files stored online - send information over the internet in different ways - explain how the internet enables effective collaboration - identify different ways of working together online - recognise that working together on the internet can be public or private - choose methods of communication to suit particular purposes - explain the different	common features of a web page - suggest media to include on my page - describe what is meant by the term 'fair use' - find copyright-free images - say why I should use copyright-free images - add content to my own web page - evaluate what my web page looks like on different devices and suggest/make edits - preview what my web page looks like - describe why navigation paths are useful - explain what a navigation path is - make multiple web pages and link them using hyperlinks - create hyperlinks to link to other people's work - evaluate the user experience of a website - explain the implication of linking to content owned by	variable has a name and a value - identify a program variable as a placeholder in memory for a single value - recognise that the value of a variable can be changed - decide where in a program to change a variable - make use of an event in a program to set a variable - recognise that the value of a variable can be used by a program - choose the artwork for my project - create algorithms for my project - explain my design choices - choose a name that identifies the role of a variable - create the artwork for my project - test the code that I have written - identify ways that my game could be improved - share my game with	for a cell - explain what an item of data is - construct a formula in a spreadsheet - explain which data types can be used in calculations - identify that changing inputs changes outputs - apply a formula to multiple cells by duplicating it - calculate data using different operations - create a formula which includes a range of cells - apply a formula to calculate the data I need to answer questions - explain why data should be organised - use a spreadsheet to answer questions - produce a chart - suggest when to use a table or chart - use a chart to show the answer to questions	three dimensions - duplicate 3D objects - group 3D objects - rotate objects in three dimensions - accurately size 3D objects - combine a number of 3D objects - show that placeholders can create holes in 3D objects - analyse a 3D model - choose objects to use in a 3D model - combine objects in a design - construct a 3D model based on a design - explain how my 3D model could be improved - modify my 3D model to improve it	selection - identify examples of conditions in the real world - use a variable in an if, then, else statement to select the flow of a program - experiment with different physical inputs - explain that checking a variable doesn't change its value - use a condition to change a variable - explain the importance of the order of conditions in else, if statements - modify a program to achieve a different outcome - use an operand (e.g. <>=) in an if, then statement - decide what variables to include in a project - design the algorithm for my project - design the program flow for my project - create a program based on my design - test my program

ways in which people communicate - identify that there are a variety of ways to communicate over the internet - compare different methods of communicating on the internet - decide when I should and should not share information online - explain that communication on the internet may not be private	others	others - use variables to extend my game			against my design - use a range of approaches to find and fix bugs
Vocab: IP addresses protocols Domain Name Servers (DNS) data transfer data packet public and private collaboration communication (previous years' vocabulary should be embedded)	Vocab: website HTML code webpage layout ownership copyright 'fair use' navigation paths content hyperlinks (previous years' vocabulary should be embedded)	Vocab: variables games place holder value event programme algorithm abstraction design choices (previous years' vocabulary should be embedded)	Vocab: formulas cells spreadsheet format inputs outputs calculations charts results present (previous years' vocabulary should be embedded)	Vocab: tinker cad 3D modelling 3 dimensions perspectives resize rotate duplicate place holders construct design model (previous years' vocabulary should be embedded)	Vocab: micro: bit input process output controllable device emulator variable selection condition operand (previous years' vocabulary should be embedded)
Ancient Greeks Topic: Word processing Myth poetry Science 'Explain Everything' animation	**The Maya topic:** Video as a pyramid Estate Agent Collaborate on an online document about elements of	**Japan Topic:** Create a programme to represent Japanese history and culture	**Europe Topic:** Present data that shows the impact of climate change.	**History of Medicine Topic:** Create a programme that represents the development of medicine through the	**Moving on:** Create a piece of work to present the children's time in Primary School

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for How we can see objects	Ancient Mayan culture			ages	