Computing Curriculum Overview (Sergio UI Historic 18)

Our Ultimate End Goal: (intent statement)

What will our children be able to do when they leave us?

By the end of their time at Britannia Community Primary School, our Year 6 children will use computational thinking and creativity to understand and change the world.

The children will:
- be able to operate in the 21st century workplace.
- know the career opportunities that will be open to them if they study Computing.
- become independent users of computing technologies, gaining confidence and enjoyment from their activities.
- be digitally literate and competent users of technology.
- develop creativity, resilience, problem solving and critical thinking skills (particularly through Computer Science).
- have a range of experience to develop their understanding of themselves as individuals within their community but also as members of a wider global community and as responsible digital citizens.

We want the use of technology to support learning across the entire curriculum and to ensure our curriculum is accessible to every child.

The National Curriculum for Computing aims to ensure that all pupils:
- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- are responsible, competent, confident and creative users of information and communication technology.

Early Years Foundation Stage Framework and National Curriculum Coverage (Sergio UI Historic/line spacing 6)

EYFS	Key Stage 1	Key Stage 2	
Reception	Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
ELG – Children at the expected level of development will: Communication, Language and Literacy Listening, Attention and Understanding: Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. Speaking: Children at the expected level of development will: • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. • Express their ideas and feelings about their experiences using full sentences,	Pupils should be taught to: • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • create and debug simple programs. • use logical reasoning to predict the behaviour of simple programs. • use technology purposefully to create, organise, store, manipulate and retrieve digital content. • recognise common uses of information technology beyond school. • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Pupils should be taught to: • 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.	

including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher. PSED Self Regulation Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate. • Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions. Managing Self: Children at the expected level of development will: • Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly. Understanding the World: Past and Present: Children at the expected level of development will: • Talk about the lives of the people around them and their roles in society. • Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class.		

• Understand the past through settings, characters and events encountered in books read in class and storytelling. People, Culture and Communities Children at the expected level of development will: • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.		

Long Term Plan Overview

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1		Creating Media: Digital Painting	Creating Media: Digital Photography	Creating Media: Animation	Creating Media: Audio Editing	Creating Media: Video Editing	Creating Media: Web Page Creation
Autumn 2		Programming A: Moving a Robot	Programming A: Robot Algorithms	Programming A: Sequencing in Music	Programming A: Repetition in Shapes	Programming A: Selection in Physical Computing	Programming A: Variables in Games
Spring 1		Data and Information: Grouping Data Safer Internet Day	Data and Information: Pictograms Safer Internet Day	Data and Information: Branching Databases Safer Internet Day	Data and Information: Data Logging Safer Internet Day	Data and Information: Flat File Databases Safer Internet Day	Data and Information: Spreadsheets Safer Internet Day
Spring 2		Computing Systems and Networks:	Computing Systems and Networks: IT Around Us	Computing Systems and Networks:	Computing Systems and Networks: The Internet	Computing Systems and Networks:	Computing Systems and Networks: Communication

		Technology Around Us		Connecting Computers		Sharing Information	and Collaboration
Summer 1		Creating Media: Digital Writing	Creating Media: Making Music	Creating Media: Desktop Publishing	Creating Media: Photo Editing	Creating Media: Vector Drawing	Creating Media: 3D Modelling
Summer 2		Programming B: Introduction to Animation	Programming B: An Introduction to Quizzes	Programming B: Events and Actions	Programming B: Repetition in Games	Programming B: Selection in Quizzes	Programming B: Sensing

Disciplinary Knowledge (skills)

The skills detailed below ensure progression in each area of Computing and provide rich opportunities for children to engage in a range of Computing experiences. Aspects will be combined within a Computing learning experience and may also be woven into learning experiences from other subjects to further enrich them.

EYFS - Reception	Key Stage 1			Key Stage 2		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Creating Media	Digital Painting	Digital Photography	Animation	Photo Editing	Video Production	Web Page Creation
	To create a picture using freehand tools.	To take photographs in both landscape and portrait format.	To set up the work area with an awareness of what will be captured.	To recognise that digital images can be manipulated.	To use different camera angles.	To review an existing website (navigation bar, header).
	To use shape and line tools when precision is needed.	To view photographs on a digital device.	To plan an animation using a storyboard.	To recognise that digital images can be changed for different purposes.	To use pan, tilt and zoom.	To create a new blank web page.
	To use a range of paint colours.	To decide which photographs to keep.	To capture an image.	To choose the most appropriate tool for a particular purpose.	To identify features of a video recording device or application.	To add text to a web page.
	To use the fill tool to colour an enclosed area.	To hold the camera still to take a clear photograph.	To use the onion skinning tool to review subject position.	To consider the impact of changes made on the quality of the image.	To combine filming techniques for a given purpose.	To set the style of text on a web page.
	To use the undo button to correct a mistake.	To use zoom to change the composition of a photograph.	To move a subject between captures.	**Audio Production**	To determine what scenes will convey your idea.	To embed media in a web page.
	To combine a range of tools to create a piece of artwork.	To consider lighting before taking a photograph.	To review a captured sequence of frames as an animation.	To record sound using a computer.	To decide what changes I will make when editing.	To add web pages to a website.
	Digital Writing	To improve a photograph by retaking it.	To remove frames to improve an animation.	To play recorded audio.	To choose to reshoot a scene or improve later through editing.	To insert hyperlinks between pages.
	To use letter, number and Space keys to enter text into a computer.	To use simple editing tools to change the appearance of a photograph.	To add media to enhance an animation.	To import audio into a project.	To use split, trim and crop to edit a video.	To insert hyperlinks to another site.
	To use punctuation and special characters.	To improve a photograph by retaking it.	To review a completed project.	To delete a section of audio.	**Vector Drawing**	To change the appearance of text.
	To select text.	**Digital Music**	**Desktop Publishing**	To change the volume of tracks in a project.	To add an object to a vector drawing.	To preview a web page (different screen sizes e.g. laptop, ipad, phone).
	To choose options to achieve a desired effect.	To experiment with musical patterns on a computer.	To show that page orientation can be changed.		To select one object or multiple objects.	**3D Modelling**
	To change the appearance of text on a computer.	To experiment with different sounds on a computer.	To add text to a placeholder.		To delete objects.	To position 3D shapes relative to one another.
	To use the Backspace key to remove text.	To use a computer to create a musical pattern.	To organise text and image placeholders in a page layout.		To move objects between the layers of a drawing.	To use digital tools to modify 3D objects.
	To position the text cursor in a chosen location.	To use a computer to compose a rhythm and a melody and a given theme.	To add and remove images to and from placeholders.		To group and ungroup selected objects.	To combine objects to create a 3D digital artefact.
	To use Undo.	To use a computer to play the same music in different ways (e.g. tempo).	To edit text in a placeholder.		To duplicate objects using copy and paste.	To use digital tools to accurately size 3D objects.
		To evaluate a musical composition created on a computer.	To choose fonts and apply effects to text.		To modify objects.	To construct a 3D model which reflects a real world object.
		To improve a musical composition created on a computer.	To move, resize and rotate images.		To reposition objects.	
			To review a document.		To combine options to achieve a desired effect.	
					To create a vector drawing for a given purpose.	

		Moving a Robot	Robot Algorithms	Sequencing in Music	Repetition in Shapes	Selection in Physical Computing	Variables in Games
	Programming A	To enact a given word. To predict the outcome of a command on a device. To list which commands can be used on a given device. To run a command on a floor robot. To choose a command for a given purpose. To choose a series of words that can be enacted as a program. To choose a series of commands that can be run as a program. To build a sequence of commands in steps. To combine commands in a program. To run a program on a device.	To choose a series of words that can be enacted as a sequence. To choose a series of instructions that can be run as a program. To create a program. To trace a sequence to make a prediction. To run a program on a device. To debug a program that I have written.	To build a sequence of commands. To combine commands in a program. To order commands in a program. To create a sequence of commands to produce a given outcome.	To list an everyday task as a set of instructions including repetition. To use an indefinite loop to produce a given outcome. To use a count-controlled loop to produce a given outcome. To plan a program that includes appropriate loops to produce a given outcome. To recognise tools that enable more than one process to be run at the same time (concurrency). To create two or more sequences that run at the same time.	To create a condition-controlled loop. To use a condition in an 'if...then' statement to start an action. To use selection to switch the program flow in one of two ways. To use a condition in an 'if...then...else' statement to produce given outcomes.	To identify a variable in an existing program. To experiment with the value of an existing variable. To choose a name that identifies the rest of a variable to make it easier for humans to understand it. To decide where in a program to set a variable. To update a variable with a user input. To use an event in a program to update a variable. To use a variable in a conditional statement to control the flow of a program. To use the same variable n more than one location in a program.
	Data and Information	**Grouping Data** To identify some attributes of an object. To collect simple data. To show that collected data can be counted. To describe the properties of an object. To choose an attribute to group objects by. To group objects to answer questions. To explain that objects can be grouped by similarities (attribute). To describe a group of objects (based on commonality).	**Pictograms** To show that I can enter data onto a computer. To recognise that people, animals and objects can be described by attributes. To use a computer to view data in different formats. To use pictograms to answer single attribute questions. To use a computer to answer comparison questions (graphs, tables).	**Branching Databases** To create questions with yes/no answers. To choose questions that will divide objects into evenly sized subgroups. To repeatedly create subgroups of objects. To identify an object using a branching database. To retrieve information from different levels of the branching database.	**Data Logging** To use a digital device to collect data automatically. To choose an appropriate timeframe when collecting data automatically. To use a set of logged data to find information. To use a computer program to sort data by one attribute. To export information in different formats.	**Flat-File Databases** To choose different ways to view data. To ask questions that need more than one attribute to answer. To choose which attribute and value to search by to answer a given question (operands). To choose which attribute to sort data by to answer a given question. To choose multiple criteria to search data to answer a given question (AND and OR). To select an appropriate graph to visually compare data. To choose suitable ways to present information to other people.	**Introduction to Spreadsheets** To calculate data using a formula for each operation. To use functions to create new data. To use existing cells within a formula. To choose suitable ways to present spreadsheet data.

	Computing Systems and Networks	Technology Around Us	IT Around Us	Connecting Computers		Systems and Searching	Communication and Collaboration
		Technology Around Us To choose a piece of technology to do a job. To recognise that some technology can be used in different ways. To identify the main parts of a computer. To use a mouse in different ways. To use a keyboard to type. To use the keyboard to edit text. To show how to use technology safely.	IT Around Us To describe some uses of computers. To identify information technology in school. To identify information technology beyond school. To show how to use information technology safely.	Connecting Computers To identify input and output devices. To explain that a computer system accepts an input and processes it to produce an output. To explain how a computer network can be used to share information. To explain the role of a switch, server and wireless access point in a network. To identify network devices around me. To explain how networks can be connected to other networks.		Systems and Searching To describe the input and output of a search engine. To demonstrate that different search terms produce different results. To evaluate the results of search terms.	Communication and Collaboration To outline methods of communicating and collaborating using the internet. To choose methods of internet communication and collaboration for given purposes. To evaluate different methods of online communication and collaboration. To decide what you should and should not share online.
	Programming B	Introduction to Animation To choose a series of words that can be enacted as a program. To choose a series of commands that can be run as a program. To run a program on a device.	An Introduction to Quizzes To choose a series of words that can be enacted as a sequence. To explain what happens when we change the order of instructions. To choose a series of commands that can be run as a program. To trace a sequence to make a prediction. To test a prediction by running the sequence. To create and debug a program that I have written. To run a program on a device.	Events and Actions To build a sequence of commands. To combine commands in a program. To order commands in a program. To create a sequence of commands to produce a given outcome.	Repetition in Games To list an every day task as a set of instructions including repetition. To use an indefinite loop to produce a given outcome. To use a count-controlled loop to produce a given outcome. To plan a program that includes appropriate loops to produce a given outcome. To recognise tools that enable more than one process to be run at the same time (concurrency). To create two or more sequences that run at the same time.	Selection in Quizzes To choose a condition to use in a program. To create a condition-controlled loop. To use a condition in an 'if...then' statement to start an action. To use selection to switch program flow. To use 'if...then...else...' to switch program flow in one of two ways.	Sensing To identify a variable in an existing program. To experiment with the value of an existing variable. To choose a name that identifies the role of a variable to make it more usable (to humans). To decide where in a program to set a variable. To update a variable with a user input. To use an event in a program to update a variable. To use a variable in a conditional statement to control the flow of a program. To use the same variable in more than one location in a program.

Substantive Knowledge (the stuff)

As there are such a wealth of skills in Computing to choose to study, it is essential that teachers choose work which will interest and inspire their particular group of children. The most important thing is that children have opportunities to

understand how Computing works in the world and how skills in Computing are becoming increasingly important in today's job market.

Substantive Concept
Computer Science
Information Technology
Digital Literacy

EYFS - Reception	Key Stage 1		Key Stage 2			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Creating Media	Digital Painting	Digital Photography	Animation	Audio Production	Video Production	Web Page Creation
	To explain what different freehand tools do.	To recognise that some digital devices can capture images using a camera.	To explain that an animation is made up of a sequence of images.	To identify that sound can be recorded.	To explain the features of video as a visual media format.	To recognise the relationship between HTML and visual display.
	To recognise that computers can be used to create art.	To talk about how to take a photograph.	To identify that a capturing device needs to be in a fixed position.	To identify that an input device is needed to record sound.	To recognise which devices can and can't record video.	To recognise that web pages can contain different media types.
	To recognise a tool can be adjusted to suit my need.	To recognise that photographs can be saved and viewed later.	To recognise that smaller movements create smoother animation.	To identify that output devices are needed to play audio.	To explain the purposes of a storyboard.	To recognise that web pages are written by people.
	To decide when it's appropriate to use each tool.	To make choices when composing my photograph.	To explain the need for consistency in working.	To recognise that recorded audio can be stored on a computer.	To recognise that filming techniques can be used to create different effects.	To recognise that a website is a set of hyperlinked webpages.
	To consider impact of choices made.	To recognise features of good photographs.	To explain the impact of adding other media to an animation.	To recognise that audio can be edited.	To recognise the need to regularly review and reflect on a video project.	To recognise components of a web page layout.
	To compare painting using a computer with painting using brushes.	To identify how a photograph could be improved.	To explain that a project must be exported so it can be shared.	To recognise that sound can be represented visually as a waveform.	To explain the limitations of editing video on a recording device.	To consider the ownership and use of images (copyright).
	Digital Writing	To explain the effect of light on a photograph.	Desktop Publishing	To recognise that audio can be layered so that multiple sounds can be played at the same time.	To identify that videos can be edited on a recording device or on a computer.	To recognise the need to preview pages (different screens/devices).
	To recognise that a keyboard is used to enter text into a computer.	To recognise that photographs can be changed after they have been taken.	To recognise how text and images can be used together to convey information.	To consider the results of editing choices made.	To identify videos can be improved through and reshooting/editing.	To recognise the need for a navigation path.
	To recognise that the Shift key changes the output of a key.	To recognise that some images are not accurate.	To define landscape and portrait as two different page orientations.	Photo Editing	To recognise projects need to be exported to be shared.	To recognise the implications of linking to content owned by others.
	To recognise that text can be changed.	Digital Music	To consider how different layouts can suit different purposes.	To use an application to change the whole of a digital image.	Vector Drawing	3D Modelling
	To recognise that text can be edited.	To identify that computers can used to play sounds of different instruments.	To recognise that desktop publishing pages can be structured with placeholders.	To change the composition of a digital image by rotation and flipping.	To identify that a vector drawing comprises separate objects.	To explain that 3D models can be created on a computer.
	To recognise that the appearance of text can be changed.	To identify that the same pattern can be represented in different ways.	To recognise how different font styles and effects are used for particular purposes.	To change the composition of a digital image by cropping.	To recognise that each object in a drawing is in its own layer.	To recognise that a 3D environment can be viewed from different perspectives.
	To consider the impact of choices made.	To compare playing music on instruments with making music on a computer.	To consider the benefits of using a desktop publishing application.	To adjust colours of a digital image.	To recognise that vector images can be scaled without impact on a quality.	To recognise that digital tools can be used to manipulate 3D objects.
				To apply filters to a digital image.	To recognise that objects can be modified in groups.	To show how placeholders can create holes in 3D objects.
				To apply effects to a digital image.	To explain how alignment and size guides can help create a more consistent drawing.	To recognise that artefacts can be broken down into a collection of 3D objects.
				To use an application to change part of a digital image.	To consider the impact of choices made.	
				To select part of a digital image.		
				To use clone, copy and paste to change the composition of a digital image.		
				To use cloning to retouch a digital image.		

				To use an application to add to the composition of a digital image. To add text to a digital image.		

	Programming A	Moving a Robot	Robot Algorithms	Sequence in Music	Repetition in Shapes	Selection in Physical Computing	Variables in Games
		To recall words that can be enacted. To explain what a given command does. To match a command to an outcome. To understand that a program is a set of commands that a computer can run. To recall that a series of instructions can be issued before they are enacted.	To describe that a series of instructions is a sequence. To explain what happens when we change the order of instructions. To recall that a series of instructions can be issued before they are enacted. To recognise that you can predict the outcome of a program.	To explain that programs start because of an input. To explain what a sequence is. To identify that a program includes sequences of commands. To identify that the sequence of a program is a process. To explain that the order of commands can affect a program's output. To identify that different sequences can achieve the same output. To identify that different sequences can achieve different outputs.	To relate what 'repeat' means. To identify everyday tasks that include repetition as part of a sequence e.g. brushing teeth, dance moves. To explain that we can use a loop command in a program to repeat instructions. To identify patterns in a sequence. To identify a loop within a program. To explain that in programming there are indefinite loops and count-controlled loops. To explain that an indefinite loop will run until the program is stopped. To explain that you can program a loop to stop after a specific number of times. To identify patterns in a sequence, e.g. step 3 times, means the same as step, step, step. To justify when to use a loop and when not to. To explain the importance of instruction order in a loop. To recognise that not all tools enable more than one process to be run at once.	To explain that a condition can only be true or false. To relate that a count-controlled loop contains a condition. To compare a count-controlled loop with a condition-controlled loop. To explain that a condition-controlled loop will stop when a condition is met. To explain that when a condition is met, a loop will complete a cycle before it stops. To explain that selection can be used to branch the flow of a program. To explain that a loop can be used to repeatedly check whether a condition has been met. To explain the importance of instruction order in 'if, then, else' statements.	To define a 'variable' as something that is changeable. To identify examples of information that is variable, for example, a football score during a match. To explain that a variable can be used in a program e.g. score. To define a program variable as a placeholder in memory for a single value. To explain that a variable has a name and a value. To recognise that the value of a variable can be used by a program. To recognise that the value of a variable can be updated. To identify that variables can hold numbers (integers) or letters (strings). To define the way that a variable is changed. To recognise that a variable can be set of a constant (fixed value). To explain the importance of setting up a variable at the start of a program (initialisation). To explain that there is only one variable at any one time. To explain that if you change the value of a variable, you cannot access the previous value (cannot undo). To explain that if you read a variable, the value remains. To explain that the name of a variable is meaningless to the computer.

		Grouping Data	Pictograms	Branching Databases	Data Logging	Flat-File Databases	Introduction to Spreadsheets
							To explain that the name of a variable needs to be unique.
	Data and Information	Grouping Data To identify that objects can be counted. To recognise that information can be presented. To recognise that information can be presented in different ways.	Pictograms To use a tally chart to collect data. To compare objects that have been grouped by attribute. To suggest appropriate headings for tally charts and pictograms. To explain that we can present information using a computer. To construct (complete) a given comparison question e.g. "Are there more ____ balls than ____?" To use a computer program to present information in different ways. To give simple examples of why some information should not be shared.	Branching Databases To investigate questions with yes/no answers. To identify attributes that you can ask yes/no questions about. To select an attribute to separate objects into two similarly sized groups. To explain that a branching database is an identification tool. To recognise that a data set can be structured using yes/no questions. To explain that a well-structured branching database will enable you to identify objects using fewer questions. To relate two levels of a branching database using AND. To suggest real world applications for branching databases.	Data Logging To suggest questions that can be answered using a table of data. To identify data that can be logged over time. To identify that sensors are input devices. To recognise that a sensor can be used as an input device for data collection. To explain that a data logger captures 'data points' from sensors over time.	Flat-File Databases To explain that a computer program can be used to organise data. To outline how ordering data allows us to answer some questions. To explain that tools can be used to select data to answer questions. To outline how operands can be used to filter data. To outline how AND and OR can be used to refine data selection. To explain that computer programs can be used to compare data visually. To explain that we present information to communicate a message.	Introduction to Spreadsheets To identify questions that can be answered using spreadsheet data. To explain what an item of data is in a spreadsheet. To explain how the data type determines how a spreadsheet can process the data. To outline that there are different software tools to work with data. To explain that formulas can be used to produce calculated data. To recognise cells can be linked. To explain why data should be organised in a spreadsheet. To recognise that a cell's value automatically updates when the value in a linked cell is changed. To evaluate results in comparison to the question asked.

	Computing Systems and Networks	Technology Around Us	IT Around Us	Connecting Computers		Systems and Searching	Communication and Collaboration
		To explain that technology is something that can help us. To identify examples of technology. To explain how examples of technology help us. To recognise that a computer is an example of technology. To recognise that choices are made when using technology. To explain why rules are needed when using technology.	To recognise different types of computers used in school. To identify that a computer is a part of information technology. To recognise the features of information technology. To talk about uses of information technology. To explain how information technology benefits us. To say how rules for using information technology can help us. To recognise that choices are made when using information technology.	To describe what an input is. To explain that a process acts on the inputs. To explain that an output is produced by the process. To identify how changing the process can affect the output. To recognise that a digital device is made up of several parts. To explain how computer systems can change the way that we work. To recognise that computers can be connected to each other. To identify how devices in a network are connected with one another. To recognise that a network is made up of a number of components. To explain how information is passed through multiple connections. To identify the benefits of computer networks.		To recognise that a system is a set of interconnected parts which work together. To explain that computers can be connected together to form IT systems. To identify that data can be transferred between IT systems. To recognise inputs, processes and outputs in large IT systems, To describe the role of a particular IT system in their lives. To relate that search engines are examples of large IT systems. To explain why search engines create indices and that they are different for each search engine. To explain the role of web crawlers in creating an index. To explain how search results are selected. To explain that ranking orders search results to make them more useful. To explain how ranking is determined by rules and that different search engines use different rules. To explain why the order of results is important and to whom. To explain how search engines make money by selling targeted advertising space. To identify some of the limitations of search engines.	To recognise that data is transferred across networks using agreed protocols (methods). To recognise that connections between computers allow access to shared stored files. To explain that data is transferred in packets. To recognise computers connected to the internet allow people in different places to work together. To discuss the opportunities that technology offers for communication and collaboration. To explain which types of media can be shared through the internet. To explain that communicating and collaboration using the internet can be public or private. s

Programming B	Introduction to Animation	An Introduction to Quizzes	Events and Actions	Repetition in Games	Selection In Quizzes	Sensing
	To enact a given word.	To describe a series of instructions as a sequence.	To explain that programs start because of an input.	To relate what 'repeat' means.	To explain that a condition can only be true or false.	To define 'variable' as something that is changeable.
	To recall words that can be enacted.	To recall that a series of instructions can be issued before the enacted.	To explain what a sequence is.	To identify everyday tasks that include repetition as part of a sequence e.g. brushing teeth, dance moves.	To relate that a count-controlled loop contains a condition.	To identify examples of information that is variable e.g. a football score during a match.
	To predicted the outcome of a command on a device.	To use logical reasoning to predict the outcome of a program.	To identify that a program includes sequences of commands.	To explain that we can use a loop command in a program to repeat instructions.	To compare a count-controlled loop with a condition-controlled loop.	To explain that a variable can be used in a program e.g. score.
	To list that commands can be used on a given device.		To identify that the sequence of a program is a process.	To identify patterns in a sequence.	To explain that a condition-controlled loop will stop when a condition is met.	To define a program variable as a placeholder in memory for a single value.
	To explain what a given command does.		To explain that the order of commands can affect a program's output.	To identify a loop within a program.	To explain that when a condition is met a loop will complete a cycle before it stops.	To recognise that the value of a variable can be used by a program.
	To match a command to an outcome.		To identify that different sequences can achieve the same output.	To explain in programming there are indefinite loops and count-controlled loops.	To explain that selection can be used to branch the flow of a program.	To explain that a variable has a name and a value.
	To recognise how to run a command (press a button).		To identify that different sequences can achieve different outputs.	To explain that an indefinite loop will run until the program is stopped.	To explain that a loop can be used to repeatedly check whether a condition has been met.	To recognise that the value of a variable can be updated.
	To choose a command for a given purpose.			To explain that you can program a loop to stop after a specific number of times.	To explain the importance of instruction order in 'if... then...else...' statements.	To identify that variables can hold numbers (integers) or letters (strings).
	To understand that a program is a set of commands a computer can run.			To identify patterns in a sequence e.g. step 3 times means the same as step, step, step.		To define the way that a variable is changed.
	To recall that a series of instructions can be issued before they are enacted.			To justify when to use a loop and when not to.		To recognise that a variable can be set as a constant (fixed value).
	To build a sequence of commands in steps.			To explain the importance of instruction order in a loop.		To explain the importance of setting up a variable at the start of a program (initialisation).
	To combine commands in a program.					To explain that there is only one value for a variable at any one time.
						To explain that if you change the value of a variable, you cannot access the previous value (cannot undo).
						To explain that if you read a variable, the value remains.
						To explain that the name of a variable is meaningless to the computer.

						To explain that the name of a variable needs to be unique.

Key Vocabulary

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
	<u>Year 1</u> Computing Systems and Networks: Technology Around Us technology, computer, mouse, trackpad, keyboard, screen, double-click, typing Creating Media: Digital Painting paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers Creating Media: Digital Writing word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing Data and Information: Grouping Object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same Programming A: Moving A Robot BeeBot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program Programming B: Programming Animations Scratch JR, command, sprite, compare, programming, area, block, joining, start, run, program, background,	<u>Year 3</u> Computing Systems and Networks: Connecting Computers digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets Creating Media: Desktop Publishing Texts, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits Creating Media: Stop Frame Animation Animation, flip book, stop-frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition Data and Information: Branching Databases Attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree Programming A: Sequencing Sounds Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design,	<u>Year 5</u> Computing Systems and Networks: Systems and Searching System, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking Creating Media: Introduction to Vector Graphics Vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection Creating Media: Video Production Video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share Data and Information: Flat-file Databases Database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation Programming A: Selection in Physical Computing Microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED,

delete, reset, algorithm, predict, effect, change, value, instructions, design.

Year 2

Computing Systems and Networks: Information Technology Around Us

Information Technology (IT), computer, barcode, scanner/scan

Creating Media: Digital Music

Music, quiet, loud, feelings, emotion(s), pattern, rhythm, pulse, pitch, tempo, notes, create, beat, instrument, open, edit

Creating Media: Digital Photography

Device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting

Data and Information: Pictograms

More than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing

Programming A: Robot Algorithms

Instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition

Programming B: Programming Quizzes

Sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.

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run the code, order, note, chord, algorithm, bug, debug, code.

Programming B: Events and Actions in Programs

Motion, event, sprite, algorithm, logic, move, resize, extension lock, pen up, set up, pen, design, action, debugging, errors, set up, code, test, debug, actions

Year 4

Computing Systems and Networks – Connecting Computers: The Internet

Internet, network, router, security, switch, server, wireless action point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts

Creating Media: Audio Production

Audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback

Creating Media: Photo Editing

Image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.

Data and Information: Data Logging

data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion

Programming A: Repetition in Shapes

Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.

Programming B: Repetition in Games

Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block,

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Sparkle, crocodile clips, connect, battery box, program, condition, input, output, selection, action, debug, circuit, power, cell, buzzer

Programming B: Making Quizzes

Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator

Year 6

Computing Systems and Networks: Communication and Collaboration

Communication, protocol, data, address, internet protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many

Creating Media: Webpage Creation

Website, web page, browser, media, HTML (hypertext markup language), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.

Creating Media: 3D Modelling

TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify

Data and Information: Introduction to Spreadsheets

Data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, rang, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.

Programming A: Variables in Games

Variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare

Programming B: Sensing Movement

		duplicate, modify, design, algorithm, debug, refine, evaluate.	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug

Experiences and Opportunities

Children should have regular opportunities to look at real life uses of Computing and in their local environment and to consider the role that Computing plays in jobs and careers.

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Trips/Visits: STEM workshop	Trips/Visits: STEM workshop (see Teach Computing plan for ideas at beginning of each topic).	Trips/Visits: STEM workshop (see Teach Computing plan for ideas at beginning of each topic).	Trips/Visits: STEM workshop (see Teach Computing plan for ideas at beginning of each topic).	Trips/Visits: (see Teach Computing plan for ideas at beginning of each topic).	Trips/Visits: (see Teach Computing plan for ideas at beginning of each topic).	Trips/Visits: (see Teach Computing plan for ideas at beginning of each topic).
Visitor:	Visitor:	Visitor:	Visitor:	Visitor:	Visitor:	Visitor: