



Curriculum Map

Subject: Computer Science

Year group: 7

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content <i>Declarative Knowledge – ‘Know What’</i>	<i>micro:bits</i> <i>Introduction to Block based Programming Language</i>	<i>Micro:bits</i> <i>Computational thinking techniques and problem solving : Bebras and GCHQ Challenges</i>	<i>From Scratch to code</i>	From Scratch to code continued .. <i>Computer Systems and Data Science</i>	<i>Computer Systems and Data Science continued...</i>	
Skills <i>Procedural Knowledge – ‘Know How’</i>	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 Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability	Create conditions that use comparison operators (>,<,<=) Create conditions that use logic operators (and/or/not) Identify where selection statements can be used in a program that include comparison and logical operators Define iteration as a group of instructions that are repeatedly executed Describe the need for iteration Identify where count-controlled iteration can be used in a program Implement count-controlled iteration in a program Detect and correct errors in a program (debugging)	Describe what algorithms and programs are and how they differ Locate and correct common syntax errors - Recall that a program written in a programming language needs to be translated in order to be executed by a machine -Write simple Python programs that display messages, assign values to variables, and receive keyboard input Describe the semantics of assignment statements - Receive input from the keyboard and convert it to a numerical value - Use simple arithmetic expressions in assignment statements to calculate	Recall that a general-purpose computing system is a device for executing programs Recall that a program is a sequence of instructions that specify operations that are to be performed on data Explain the difference between a general-purpose computing system and a purpose-built device Describe the function of the hardware components used in computing systems Describe how the hardware components used in computing systems work together in order to execute programs Recall that all computing systems, regardless of form, have a similar structure	Provide broad definitions of ‘artificial intelligence’ and ‘machine learning’ Identify examples of artificial intelligence and machine learning in the real world Describe the steps involved in training machines to perform tasks (gathering data, training, testing) Describe how machine learning differs from traditional programming Associate the use of artificial intelligence with moral dilemmas Explain the implications of sharing program code How instructions are stored and executed	undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability Understand a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy; recognise inappropriate content, contact, and conduct and



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	Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures; design and develop modular programs that use procedures or functions. Predict the outcome of a simple sequence Define a variable as a name that refers to data being stored by the computer Recognise that computers follow the control flow of input/process/output Predict the outcome of a simple sequence that includes variables Trace the values of variables within a sequence Make a sequence that includes a variable Define a condition as an expression that will be evaluated as either true or Identify that selection uses conditions to control the flow of a sequence	Independently design and apply programming constructs to solve a problem (subroutine, selection, count-controlled iteration, operators, and variables)	values Generate and use random integers - Use binary selection (if, else statements) to control the flow of program execution - Use relational operators to form logical expressions Describe how iteration (while statements) controls the flow of program execution - Use multi-branch selection (if, elif, else statements) to control the flow of program execution Use iteration (while loops) to control the flow of program execution - Use variables as counters in iterative programs Combine iteration and selection to control the flow of program execution - Use Boolean variables as flags	('architecture') Analyse how the hardware components used in computing systems work together in order to execute programs Define what an operating system is, and recall its role in controlling program execution Describe the NOT, AND, and OR logical operators, and how they are used to form logical expressions Use logic gates to construct logic circuits, and associate these with logical operators and expressions Describe how hardware is built out of increasingly complex logic circuits Recall that, since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits	within a computer system? How is binary used to store various data types? How can computers collect data from various input devices, including sensors and application software. What is the difference between hardware and application software, and their roles within a computer system. I know that digital computers use binary to represent all data. - Define data science - Explain how visualising data can help identify patterns and trends in order to help us gain insights - Use an appropriate software tool to visualise data sets and look for patterns or trends	know how to report concerns Choose search terms relating to a particular issue - Use tools to copy an image into another application Choose and download a suitable image apply the features of a good poster - Create a poster using a desktop publishing application - Plan a poster to clearly convey a message develop the idea of branding add text and colour to the slide - Choose how to combine text and graphics in a slide - Modify a logo using a graphic editing program - Use digital tools to provide feedback on design choices iconography links to the theme of safety, making a link between internet safety and danger points



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	Identify where selection statements can be used in a program Modify a program to include selection.					such as webcams, risk and preserving identity Modify a logo so that it fits in with the planned slide styles - Plan a consistent layout for a set of slides
Key Questions		What makes a good presentation? What are the appropriate fonts to use? Who is my audience? Why does my audience matter? How can I use sequence, selection and iteration to develop a program to solve a problem? What is the difference between I can use if and if, then and else statements. Can I use a variable and relational operators within	How can I use sequence, selection and iteration to develop a program to solve a problem? What is the difference between, and appropriately I can use if and if, then and else statements. Can I use a variable and relational operators within a loop to govern termination. Can I use loops and a sequence of selection statements in programs,	How can I use sequence, selection and iteration to develop a program to solve a problem? What is the difference between, and appropriately I can use if and if, then and else statements. Can I use a variable and relational operators within a loop to govern termination. Can I use loops and a sequence of selection statements in programs,		What are application software? How do I identify the most appropriate type of software to use that is most suitable for the problem to be solved. When is a source credible? What is a blog, what makes a good blog, and how can layout and formatting communicate information effectively? What is the most suitable layout for my blog? How



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		a loop to govern termination. Can I use loops and a sequence of selection statements in programs, including an IF, THEN and ELSE statement.	including an IF, THEN and ELSE statement	including an IF, THEN and ELSE statement		do I format correctly so that the information I am trying to get across is effective and gets the message across.
Assessment	Project based assessment - End of Unit test	Bebras and GCHQ challenges - End of unit test	Python Programming - Mid assessment	Python programming - End of Unit Test	End of Unit Test - Layers of Computer systems	Portfolio of digital work
Literacy/ Numeracy/ SMSC/ Character	Resilience : Enhancing document readability and emphasising important information. Confidence: Organizing data logically within a document and presenting it in an accessible way. Initiative: Selecting images that enhance the document's content and correctly attributing sources when necessary. Basic arithmetic to keep track of storage usage and file sizes. Using basic arithmetic for data entry, managing table dimensions, and ensuring the logical presentation of numerical information.	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative. Video Game responsibility	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative. Video Game responsibility	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative. Video Game responsibility	Definitions and Understanding: AI and ML Real-world Examples of AI and ML Training Machines Ethical Analysis and Decision Making Resilience, Confidence, Initiative, Responsibility	Resilience : Identify and Use Appropriate Software Responsibility and initiate: Use of images and design ideation Confidence:Peer support and experimentation. Consistent layout Effective design Logo and page desi Confidence. Resilience. Initiative. Digital Content Skills: Blogging Skills: