Curriculum Map

Subject: Computer Science

Year group: 9

	Autumn1	Autumn 2	Spring1	Spring2	Summer 1/ Summer 2
Content *Declarative Knowledge – 'Know What'*	*Python Unit 1/2*	*Data representation*	*Graphics*	*HTML/CSS*	*Programming challenges & ICT*
Skills *Procedural Knowledge – 'Know How'*	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 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 values	List examples of representations Recall that representations are used to store, communicate, and process information Provide examples of how different representations are appropriate for different tasks Recall that characters can be represented as sequences of symbols and list examples of character coding schemes Measure the length of a representation as the number of symbols that it contains Provide examples of how symbols are carried on physical media Explain what binary digits (bits) are, in terms of	To understand how to implement the theoretical information learn in the Data Representation topic by using different softwares to create a variety of digital graphics To use the Adobe Suite (starting with Photoshop) to create digital graphics Use other online digital graphic tools such as Pixlr, Sketchup to create a variety of 3D and 2D graphics To understand how AI can be utilised in the later version of digital graphic software To use Python Turtle to create 2D graphics Consider how previous Python knowledge is embedded within these tasks in order to create digital graphics	Use HTML to structure static web pages Modify HTML tags using inline styling to improve the appearance of web pages Display images within a web page Apply HTML tags to construct a web page structure from a provided design Describe what CSS is Use CSS to style static web pages Assess the benefits of using CSS to style pages instead of in-line formatting Describe what a search engine is Explain how search engines 'crawl' through the World Wide Web and how they select and rank results Analyse how search engines select and rank results when searches are made	To decompose a problem into algorithmic design so the solution is fit for purpose. Identify the Inputs, Processes and Outputs for a given problem and use an algorithm to present the solution. Apply programming code to the problem given and produce a working console solution. Understand the need for iterative testing through development and refining the algorithm to meet the needs of the final solution. To create test plans that test for a range of data types that prove an effective and efficient solution. Create and document test plans that show the solution of the problem in full. Evaluate the solution produced against the original problem comparing the effectiveness of the solution produced against the original aims. How to build on using programming skills taught so that solutions are produced to be efficient.

Curriculum Map

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'Everybody can be Somebody'

	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	familiar symbols such as digits or letters Measure the size or length of a sequence of bits as the number of binary digits that it contains Describe how natural numbers are represented as sequences of binary digits Convert a decimal number to binary and vice versa Convert between different units and multiples of representation size Provide examples of the different ways that binary digits are physically represented in digital devices		Use search technologies effectively Discuss the impact of search technologies and the issues that arise by the way they function and the way they are used Create hyperlinks to allow users to navigate between multiple web pages Implement navigation to complete a functioning website	ICT/Powerpoint To learn where to find self teaching and further development
Key Questions	How can I use sequence, selection and iteration to develop a program to solve a problem?	What is binary? How does it work in circuitry? Why do computers use binary? How do I Convert between binary and decimal (vice versa)	How can I create suitable digital graphics suitable for specific mediums? (eg web, print, AV etc)	What are the benefits to websites in terms of communication in using 1 universal scripting language What are the benefits of using CSS to a website	How do I decompose the problem into an algorithmic solution? What is an algorithm? What is the purpose of an algorithm design? What is the purpose and need for iterative testing? How do I refine my solution based on testing?

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	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, including an IF, THEN and ELSE statement	What are the different ways binary digits are physically represented in digital devices? What are RGB colours? How is this represented in binary? What is colour depth?	What software should I use to create graphics? How can I check the technical criteria of digital graphics that I create? What are suitable file sizes?	How can I develop online-based platforms for a specific purpose?	What is the importance of testing? How do I use final/terminal testing? What are the different ranges of data test types? What is the purpose of testing boundary tests? Where do I need boundary tests? Why do we need to use erroneous testing for input sanitation measures?
Assessment	Combination of test and portfolio of work	End of unit test	Combination of test and portfolio of work	Portfolio of work	Assessed by amount of completed tasks
Literacy/Numeracy/ SMSC/Character	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative. Video Game responsibility	Initiative, Aspiration. Resilience, Problem Solving	Initiative, Aspiration. Resilience, Problem Solving. Creativity in design and implementation.	Writing and presenting information suitable for audience and purpose. Resilience, Initiative, Confidence,	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative