

Curriculum Map 2023/24

Subject: GCSE Computer Science

Year Group: 10

Time Period	Autumn Term	Spring Term	Summer Term
Content			
	Extending Python Programming Knowledge Learning and applying the key fundamentals of programming using Python programming language.	 1.2 Memory & Storage (Continued) Units Data storage – Numbers, characters, images and sound Compression 	 2.1 Algorithms (Continued) Computational thinking Designing, creating and refining algorithms Searching and sorting algorithms
	 1.1 Systems Architecture Architecture of the CPU CPU performance Embedded systems 1.2 Memory & Storage Primary storage (Memory) Secondary storage 	 2.4 Boolean Logic Creating simple logic diagrams and truth tables. Combining Boolean and logical operators to solve problems 2.1 Algorithms Computational thinking Designing, creating and refining algorithms Searching and sorting algorithms 2.2 Programming fundamentals (using Python) Programming fundamentals Data types 	 2.2 Programming fundamentals (using Python) (Continued) Programming fundamentals Data types Additional programming techniques 1.5 System software Operating systems Utility software

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Skills	 Students are able to create robust, simple and complex programs using: Input/output, sequence, selection and iteration. Data types; string, integers, float, Boolean. Random values, lists, arrays, sub programs. Students learn how the internal structure of a computer system works. How the CPU is an integral part of how instructions are processed and why it is known as the 'brain' of the computer. Students gain the understanding of the need for both primary and 	Boolean logic helps students think through different problems in a logical and methodical way, based on the inputs they are given. Students develop pattern recognition skills. Students will learn the key cornerstones of computational thinking and how to apply them to planning and solving problems. Students will learn the skills in how to plan, using algorithms, how a program or system will work before they begin to create. Students will build on the programming skills from year 9 with more complex challenges. Students	Students will gain the understanding of how different operating systems work and the important part the OS plays in a computer system. Students explore different utility software and how they work to maintain the optimal running of a computer system.
	Students learn the skills of converting between binary, denary and hexadecimal number, binary arithmetic – addition Students are able to demonstrate how binary is used to represent numbers, characters, images and sound.	can also apply the skills learnt in unit 2.1 to support them with each challenge.	

Key Questions			
	What is the CPU? How does it	Why do computers use binary?	What are operating systems &
	function? What are the components	What are transistors?	interfaces? What is memory,
	it is made of?	How do AND, OR and NOT gates	peripheral, user and file
	What happens at each stage of the	work together? What is a truth table	management? What is utility
	Fetch-Execute cycle? What do the	used for?	software? What is the purpose of
	different registers do?		encryption, defragmentation and file
	What are the common		management & data compression?
	characteristics which affect	Using abstraction, decomposition	
	performance? What are embedded	and algorithmic thinking to define a	
	systems? Who is Von Neumann?	problem. Create structure diagrams	
		& flowcharts. How to efficiently	
		search and sort data. Writing	
	what is primary & secondary	algorithms using Python. what are	
	storage? What is the purpose of	binary, bubble, merge, insertion	
	RAW and ROW? Differences	fixee? What are trees tobles?	
	disadvantages for each? Why de		
	usauvantages for each? Why uo		
	flash momory?	Lising variables, constants	
	What are the common types of	operators inputs/outputs	
	storade?	Sequences selection & iteration	
	What is data canacity? What is a	Arithmetic integers Boolean	
	nibble? How do you convert binary	Characters & string manipulation	
	denary and hexadecimal?	data types and casting. String	
	What is a character set? What are	manipulation & file handling, open.	
	bitmaps, image resolution, colour	read, write, close, Storing data in	
	depth and metadata? How can	records. Using SQL to search for	
	sound be sampled and stored? How	data. Using arrays, sub programs.	
	does sampling rates, duration and		
	bit depth affect the size of sound		
	files and quality of its playback?		
	What is compression?		
	What is the difference between		
	lossy and lossless compression?		

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Assessment week			
and content	Extending Python Programming	1.2 Memory & Storage	2.1 Algorithms
	Knowledge – wb 23/10	Mid-term test wb 5/02 End of Unit test wb 04/03	End of Unit test wb 03/06
	1.1 Systems Architecture Mid-term test wb 29/11		2.2 Programming fundamentals End of Unit test wb 17/06
	End of Unit test wb 13/12	2.4 Boolean Logic	
		End of Unit test wb 25/03	1.5 System software End of Unit test wb 15/07

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