

Computer Science - Long Term Plans showing what each year group is currently doing. [More detailed plans per year group showing the KS3 or KS4 journey are available if requested.] These are 'live' documents.

Year 10		HT1	HT2	HT3	HT4	HT5	HT6
Computer Science	Big Idea (Teaching will involve teaching unit 1 CT and unit 2 P simultaneous through each half term)	Introduction to the course & intro into programming & Flowcharts. Topics: CT 1-6, P 1-6	Programming basics using string manipulation, selection, iteration. Binary & Hex. Topics: CT 7-12, P 7-12	Programming efficiently e.g. loops, functions, etc. FDE cycle & Secondary storage. Topics: CT13-18, P13-18	Programming - Searching and sorting & Understanding Software Topics: CT 19-24 P 19-24	Algorithms, developing code, constructs Cyber security Topics: CT 25-30 P 25-30	Drawing in python Networks Topics: CT31-36 P 31-36
	Assessment	End of unit assessment (1) Represent algorithms in flowcharts, create code from algorithms represented in flowcharts, binary.	End of unit assessment (2) CT – Flowcharts, repetition. P – Character set, ASCII.	End of unit assessment (3) CT – Use of list, Range, for, create procedures and functions. P – FDE cycle, Hardware, storage.	End of unit assessment (4) CT - Programming – using one-dimensional and two-dimensional lists. P – Software, OS, GUI, etc.	End of unit assessment (5) CT – Programming – Validate inputs, Read and write files. P – Cyber Security.	End of unit assessment (6) CT – Turtle module, constructs & sub programs to create images. P – Networks.
	Assessment Intent	Student will look at a mixture of programming topics and understanding key terminology, looking at decomposition and algorithms, data types & variables, inputs and outputs, integer functions, debugging tools, binary and flowcharts . Spec ref – 1.2, 1.2 6.1, 6.2, 6.3, 6.4, 6.6	Students will understand String manipulation , programming using selection and iteration , Boolean operators, binary shifts as well as Hexadecimal and ASCII. Spec ref – 1.2, 1.3, 2.1, 2.2, 6.1, 6.2 6.5	Be able to program efficiently by using loops , functions, procedures, sub programs. Understand the FDE cycle and secondary storage Spec ref – 1.2, 6.1, 6.2, 6.3	Understand and use String.format(), one- & Two-dimensional lists, validation. Understand the different software, OS, GUI, etc. Spec ref – 1.1, 1.2, 3.1, 3.2 6.1, 6.2, 6.3, 6.4, 6.6	Students will continual to develop their programming skills using merge sort, reading files, string processing, writing files and authentication. Students will also learn what cyber security is, looking at Malware, hackers, social engineering, Data level protection and Robust software .	<i>Students will learn how to use the python turtle to draw lines and shapes. They will also use colours as well as combining sub programs. Students will also learn a range of networks from LAN, WAN, network speed, connectivity and network topologies</i>

	Wider Curriculum Links SMSC – Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering. Diversity looking at achievements, different cultures systems and software. Maths: Addition, multiplication	SMSC – Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering. Maths: Addition, multiplication	SMSC: Logical thinking and problem solving. Resilience, software development, Mutual respect and tolerance, moral codes and models of moral virtue Maths: Bidmas	SMSC – advancement of software linking to other subjects. Rule of law Maths: Addition, multiplication Careers, looking at a range of careers in computing. Guest speaker.	SMSC – Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering. Maths: Addition, multiplication	SMSC – Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering.
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Year 11		HT1	HT2	HT3	HT4	HT5	HT6
3	Big Idea	1.3 – Computer networks, connections and protocols	1.4 – Network Security	Revision: 1.1 1.2 1.3	Revision: 2.2 2.3 2.4 1.6	Revision: 2.5 1.5 1.4	
	Assessment	Assess: The characteristics of LANs and WANs including common examples of each Understanding of different factors that can	Assess: Threats posed to devices/systems ü Knowledge/principles of each form of attack including: How the attack is used		Mini assessments covering the above topics going through past exam questions	How to convert positive denary whole numbers to binary numbers (up to and including 8 bits) and vice versa	

	affect the performance of a network, The tasks performed by each piece of hardware The concept of the Internet as a network of computer networks A DNS's role in the conversion of a URL to an IP address ü Concept of servers providing services (e.g. Web server " Web pages, File server " file storage/retrieval) ü Concept of clients requesting/using services from a server ü The Cloud: remote service provision (e.g. storage, software, processing) Advantages and disadvantages of the Cloud Advantages and disadvantages of the Star and Mesh topologies Apply understanding of networks to a given scenario	The purpose of the attack Understanding of how to limit the threats posed Understanding of methods to remove vulnerabilities Knowledge/principles of each prevention method: What each prevention method may limit/prevent § How it limits the attack			How to add two binary integers together (up to and including 8 bits) and explain overflow errors which may occur How to convert positive denary whole numbers into 2-digit hexadecimal numbers and vice versa How to convert from binary to hexadecimal equivalents and vice versa • Binary shifts Characters • The use of binary codes to represent characters • The term 'character-set' • The relationship between the number of bits per character in a character set, and the number of characters which can be represented, e.g.: - o ASCII - o Unicode Images • How an image is represented as a series of pixels, represented in binary • Metadata • The effect of colour depth and resolution on: - o The quality of the image - o The size of an image file Sound	
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Wider Curriculum Links	English: writing, speaking. Maths: Addition, multiplication SMSC – Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering.	English: writing, speaking. Maths: Addition, multiplication SMSC – laws, ethical and moral issues, tolerance, international laws Engineering and technology: advancements of computers, new machines built and tested	English: writing, speaking. Maths: BIDMAS SMSC: Logical thinking and problem solving. Computers used to explore furthest reaches of the universe. Robotics and Automation in our lives. Ethics associated with this. Links to science, technology and engineering.				