

Now that the revised curriculum has been taught, please consider the Implementation and Impact of the curriculum you taught.
What changes might need to be made to the Curriculum Intent (See Curriculum Map and Overviews) in light of this year's experiences?

Year 10 Overview 2023-24 – Computer Science											
Date	Wk	Week	Units Studied & Learning Outcomes		Key Concepts & Assessment						
8 weeks (38 Days)											
Tues 5-Sep	A	1	Intro to programming and Data Representation		Foundational Concepts Topic 1: Computational thinking – understanding of what algorithms are, what they are used for and how they work; ability to follow, amend and write algorithms; ability to construct truth tables. Topic 6: Problem solving with programming. The main focus of this paper is: • understanding what algorithms are, what they are used for and how they work in relation to creating programs • understanding how to decompose and analyse problems • ability to read, write, refine and evaluate programs. Define the term ‘program’ Identify types of programs used every day Identify Python as a programming language Access an integrated development environment Load and run a Python program Change a Python program Save a Python program Use arithmetic operators and BIDMAS Layout code to be readable and maintainable Correct errors in programs Use variables in algorithms and programs Define the term ‘decomposition’ Define the term ‘algorithm’ Decompose a problem Order the pieces of an algorithm (unplugged) Order the pieces of an algorithm (IDE) Define the term ‘sequence’ and use sequence in algorithms and program code Interpret error messages Correct errors in ordering Links to history, culture, vocabulary: Computer programming history - Ada Lovelace is credited as being the first person to describe or write a computer program. In 1843, she described an algorithm to compute Bernoulli numbers using the Analytical Engine. For more see: https://www.computerhope.com/history/programming.htm Program – noun a series of coded software instructions to control the operation of a computer or other machine. Programming - noun the process or activity of writing computer programs. Careers: Software application developer, Web developer, Computer systems engineer, Database administrator, Computer systems analyst, Software quality assurance (QA) engineer, Business intelligence analyst, Computer programmer, Network system administrator. Equality Diversity and Inclusion <i>15/09-17/09 Rosh Hashanah</i> <i>23/9 International day of sign languages</i> <i>2/10-8/10 Dyslexia awareness week</i> <i>5/10 world teachers day</i> <i>6/10 World cerebral palsy day</i>						
11-Sep	B	2	Unit 1 Outcomes								
18-Sep*	A	3									
25-Sep	B	4									
2-Oct	A	5									
9-Oct	B	6									
16-Oct	A	7									
23-Oct	B										
			<table><thead><tr><th>Prior</th><th>Current</th><th>Next</th></tr></thead><tbody><tr><td>Year 9 KS3 NC – understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem</td><td>Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills</td><td>KS5 – Chapters 1 - 4 Learning to program effectively. Chapters 13 - 14 Planning and completing a programming project.</td></tr></tbody></table>			Prior	Current	Next	Year 9 KS3 NC – understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills	KS5 – Chapters 1 - 4 Learning to program effectively. Chapters 13 - 14 Planning and completing a programming project.
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			Decomposition, algorithms								
			Unit 6 Outcomes								
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				Recognise primitive data types (int, real, char, string) Define the term 'variable' Create variables of all types Create meaningful identifier names Assign values to variables, with the correct data types View contents of memory (variable) in IDE Take input and create output Define the term 'runtime error' Find and fix runtime errors Use primitive data types (integer, real, char, string) Translate code into flowchart symbols Represent an algorithm in a flowchart Translate a flowchart into code
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Half-Term			7 weeks (34 Days)											
6-Nov	A	9	Unit 2 Outcomes <table><thead><tr><th>Prior</th><th>Current</th><th>Next</th></tr></thead><tbody><tr><td>Year 9 KS3 NC – understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]</td><td>Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills</td><td>KS5 – Chapters 5 - 12 Foundations of Computer Science.</td></tr></tbody></table>			Prior	Current	Next	Year 9 KS3 NC – understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills	KS5 – Chapters 5 - 12 Foundations of Computer Science.	Topic 2: Data – understanding of binary, data representation, data storage and compression. Define what is meant by the terms ‘binary’ and ‘bit’ Explain why binary is used to represent data and program instructions in a computer Describe the relationship between the number of available bits and the range of unique values that can be represented Determine the number of unique values that can be represented by a binary pattern of a given length (2^n) Define what is meant by the terms ‘nibble’ and ‘byte’ Convert between denary and 8-bit binary numbers Convert between signed denary numbers and two’s complement binary numbers Determine the range of values that can be represented in two’s complement by a binary number of a given length Apply logical left and right shifts to binary integers Use logical binary shifts to multiply and divide unsigned binary integers by powers of 2 Explain why a number may be less precise after a binary shift right has been applied Apply arithmetic left and right shifts to signed binary numbers Describe how an arithmetic right shift differs from a logical right shift Define what is meant by the term ‘hexadecimal’ Define what is meant by the term ‘character set’ Describe how characters are represented in 7-bit ASCII Given the ASCII code for one character derive the code for another Outline the shortcomings of ASCII and how encoding systems that use more bits overcome them		
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13-Nov	B	10												
20-Nov	A	11												
27-Nov	B	12												
4-Dec	A	ST1												
11-Dec	B	ST1												
18-Dec	A	15												

Christmas Holiday			6 weeks (30 Days)											
8-Jan	B	16	<table><tr><th>Prior</th><th>Current</th><th>Next</th></tr><tr><td>Year 9 KS3 NC – 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 [for example, lists, tables or arrays]; design and</td><td>Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills or functions</td><td>KS5 – Chapters 1 - 4 Learning to program effectively. Chapters 13 - 14 Planning and completing a programming project.</td></tr></table>			Prior	Current	Next	Year 9 KS3 NC – 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 [for example, lists, tables or arrays]; design and	Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills or functions	KS5 – Chapters 1 - 4 Learning to program effectively. Chapters 13 - 14 Planning and completing a programming project.	Format output to meet requirements Format output suitable for the end user Define the term ‘array’ Define the term ‘list’ Give characteristics of one-dimensional and two-dimensional data structures Use indexing to access any item in a two-dimensional structure Use ‘for’ to iterate over every item in a two-dimensional structure Use ‘while’ to find a row in a two-dimensional structure Validate input using presence check, length check, range check, pattern check Apply a linear search to a one-dimensional list (paper) Complete a linear search algorithm in a flowchart Write a linear search for a single item in a one-dimensional list (code) Apply a linear search to a two-dimensional list (paper) Complete a linear search algorithm in a flowchart Write a linear search for a single record in a two-dimensional list (code)		
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15-Jan	A	17												
22-Jan	B	18												
29-Jan	A	19												
5-Feb	B	20												
12-Feb	A	21												

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What changes might need to be made to the Curriculum Intent (See Curriculum Map and Overviews) in light of this year's experiences?

			develop modular programs that use procedures or functions			Equality Diversity and Inclusion (EDI) 25/1 Burns night 27/1 Holocaust memorial day LGBT+ history month 1/2 World Hijab day 6/2-12/2 Children's mental health week. 7/2 Safer internet day 10/2 Chinese New Year								
Half-Term			5 weeks (24 Days)											
26-Feb	B	22	Unit 3 Outcomes <table><tr><th>Prior</th><th>Current</th><th>Next</th></tr><tr><td>Year 9 KS3 NC – understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits</td><td>Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills</td><td>KS5 NC – Chapters 5 - 12 Foundations of Computer Science.</td></tr></table>			Prior	Current	Next	Year 9 KS3 NC – understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits	Year 10 KS4 NC – develop and apply their analytic, problem-solving, design, and computational thinking skills	KS5 NC – Chapters 5 - 12 Foundations of Computer Science.	Topic 3: Computers – understanding of hardware and software components of computer systems and characteristics of programming languages. Describe the role of the operating system in a computer system Identify tasks carried out by an OS Describe how the OS organises files and allocates space on a hard drive Construct an expression to calculate the number of blocks of space on a hard drive needed to store a file of a given size Describe how file permissions are used to control access to files Select an appropriate level of file access (read, write, delete, none) for a user Describe how an OS uses scheduling to give each active process a share of CPU time Describe the features of the round-robin scheduling algorithm Describe how the OS uses a paging algorithm to swap programs in and out of main memory. Define what is meant by the term 'peripheral' Describe how the OS uses drivers to communicate with and manage peripherals Explain the purpose of a user interface and describe features of a user interface Define what is meant by the term 'access control' Describe commonly used methods of authentication Select suitable access right for specified individuals Equality Diversity and Inclusion (EDI) Women's history month Ramadhan 10/03-08/04 Passover 22/4-30/4 Good Friday 29/3 Easter Sunday 31/3		
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4-Mar	A	23												
11-Mar	B	24												
18-Mar	A	25												
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	B	26												
Easter Holiday			6 weeks (29 Days)											
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22-Apr	B	28												
29-Apr	A	29												
6-May*	B	30												
13-May	A	31												
20-May	B	ST2												

			use procedures or functions			Equality Diversity and Inclusion (EDI) Autism and stress awareness month. 25/4 World Malaria Day 26/4 Lesbian visibility day UK national walking month. 1/5-7/5 Deaf awareness week 23/05 Vesak Topic 4: Networks – understanding of computer networks and network security. Define what is meant by the term ‘cyberattack’ Describe the financial, reputational and legal damage that a cyberattack can cause Describe the characteristics of and threat posed by different types of malware Describe how anti-malware works Explain why it is important to keep anti-malware up-to-date Links to history, culture, vocabulary: October 29, 1969, the first ARPAnet (later to be known as the Internet) link was established between UCLA and SRI. March 1989, Tim Berners-Lee circulated a proposal for “Mesh” (later to be known as the World Wide Web) to his management at CERN. This timeline highlights the major (and some minor) developments in the evolution of these twin flowers of the digital age, one (the Internet) a network infrastructure, the other (the Web) a software infrastructure layered on top of it. Together, they have so far connected more than a third of the world’s population and have made millions of people both new consumers and new creators of information. Gil Press Senior Contributor Forbes Network – noun a group or system of interconnected people or things. Internet - noun a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols. Origin 1970s (denoting a computer network connecting two or more smaller networks): from inter- ‘reciprocal, mutual’ + network. Careers: Network and Computer Systems Administrator, Information Systems Manager, Computer Network Architect, Computer Systems Analyst, Computer Network Support Specialist, IT security Analyst, Network Operations Engineer.
Half-Term7 weeks (35 Days)						
3-Jun	A	ST2	Unit 5 Outcomes			Topic 5: Issues and impact – awareness of emerging trends in computing technologies, and the impact of computing on individuals, society and the environment, including ethical, legal and ownership issues. Define what is meant by the term ‘hacker’ Explain why unpatched software is a target for hackers Explain the function of a firewall Explain how ethical hacking and penetration testing help identify vulnerabilities Links to history, culture, vocabulary: Although digital technology has been hugely beneficial to mankind, it can be argued it has also had a negative impact on some sections of society and the environment. Society has reacted to many of these issues by creating legislation that governs the use of digital technology and puts in place penalties if rules or laws are broken. Laws like:
10-Jun	B	ST2				
17-Jun	A	35				
24-Jun	B	36				
1-Jul	A	37				
8-Jul	B	38				
15-Jul						
A		39				

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				The Copyright Designs and Patents Act (1988) The Federation Against Software Theft (FAST) Data Protection Act (1998) Computer Misuse Act (1990) Waste Electrical and Electronic Equipment recycling (WEEE) Careers: Infrastructure Technician, Technical Services Manager, IT Development Manager Equality Diversity and Inclusion (EDI) <i>LGBTQ+ pride month.</i> <i>Gypsy, Roma and Traveller history month.</i> <i>12/6 world day against child labour</i> <i>18/6 autistic pride day</i> <i>20/6 World refugee day</i>
(Total: 190 Days)				

* Bank Holidays

Overview of Year 10	
Based on your Flight Path (E.g. Targets 1L – 4L)	By the end of Year 10, students will have learned
GW: (E.g. Grade 1-3)	Demonstrate knowledge and understanding of the key concepts and principles of computer science
BI: (E.g. Grades 4-6)	Apply knowledge and understanding of key concepts and principles of computer science.
EW: (E.g. Grades 5-9)	Analyse problems in computational terms: to make reasoned judgements to design, program, evaluate and refine solutions.