



Key content

Unit 1 – Computer Systems 50% Exam –

- Systems Architecture
- Networks
- Memory
- Software

Unit 2 – Computational Thinking, Algorithms and Programming 50% Exam

- Algorithms - Flowcharts
- Psuedocode
- Programming
- Design, Testing and IDES
- Data Representation

Key assessment points

There will be an end of Topic assessment. There are 10 Assessments plotted over the 2 years.

There will also be mini assessments throughout Year 1 + Year 2. The types of assessment that will take place are exam style questions and MCQ for end of unit assessments.

Year / Week	Topic	Assessment
1 – Week 6	1.0 Computer Systems	Complete Exam style questions – 6 mark and 8 mark style questions on Ethical, legal + Cultural + enviromental conserns of MCQ questions on other topic areas covered from CGP booklets and Exam builder
1 – Week 16	1.1 Systems Architecture	Complete MCQ questions based on topics learned – Summative Use Exam builder OCR and also CGP booklets. Formative Assessment for 6/8 exam style questions.
1 – Week 29	1.2 Networks	Formative Assessment – MCQ and CGP booklet questions.

		Formative – exam style questions from OCR exam builder
1 – Week 37	1.3 Memory	Summative Assessment – MCQ + CGP booklet questions Formative Assessment – Exam style questions from OCR exam builder
1 – Week 42	2.1 Algorithms	Summative Assessment – MCQ , CGP booklet questions Formative Assessment – Exam style questions OCR exam builder 6/ 8 mark questions
2 – Week 6	2.2 Programming Techniques	Summative Assessment – MCQ, CGP booklet questions Formative Assessment – Exam style questions OCR exam builder
2 – Week 10	2.3 Producing Robust programs	Summative Assessment - MCQ, CGP booklet questions. Formative Assessment Exam style questions OCR exam builder
2 – Week 14	2.4 Computation Thinking	Summative Assessment – MCQ, CGP booklet questions. Formative Assessment - Exam style questions OCR exam builder
2 – Week 21	2.5 Translator + Facilitators of languages	Summative Assessment – MCQ, CGP booklet questions. Formative Assessment - Exam style questions

2 – Week 28	2.6 Data representation	Summative Assessment – MCQ, CGP booklet questions. Formative Assessment – Exam style questions
Christian ethos		
Both the curriculum and group work should develop in students a responsible moral attitude as members of a responsible, safe and considerate online world, recognising that Christian ethics are as important online as offline. Students will understand and be able to recognise and also discuss how Christian values were applied in the history of technology and how Social Media should be used in a positive way which represents the Christian ethos.		
British values		
<p>Democracy – Will see how technology is used in countries that have democracy and compare it to how technology is used where it is autocracy</p> <p>Rule of Law – Look at all the Computer + Data laws based in the UK regarding technology</p> <p>Individual liberty – See how certain countries block access to technology or websites so they are not able to access them. Think about Ethical legal and social considerations of Computing.</p> <p>Mutual respect – Looking at how Alan Turing had a forever last affect on Computer Science and how his team were able to help in WW2.</p>		

Subject: Computer Science
Annual plan Y10



Week	Month	Learning Intentions and/or Key Questions
1 - 1.0 Computer Systems Overview	September	<ul style="list-style-type: none"> To be able to have a basic understanding of systems architecture To be able to have a basic understanding of systems software To be able to have a basic understanding of memory and storage
2 -		<ul style="list-style-type: none"> To be able to have a basic understanding of wired and wireless networks
3 -		<ul style="list-style-type: none"> To be able to have a basic understanding of network topologies, protocols and layers
4		<ul style="list-style-type: none"> To be able to have a basic understanding of system security
5		<ul style="list-style-type: none"> To be able to have a basic understanding of Ethical, legal, cultural and environmental concerns linked to computer systems
6	October	<ul style="list-style-type: none"> To be able to define the term CPU To be able to state the purpose of the CPU
7 1.1 Systems Architectur e		<ul style="list-style-type: none"> To be able to explain the principle behind the Von Neumann architecture
8		<ul style="list-style-type: none"> To be able to annotate a Von Neumann architecture diagram
9		Half term holiday
10	November	<ul style="list-style-type: none"> To be able to describe the common components of the CPU and their function
11		<ul style="list-style-type: none"> Explain how common characteristics of CPUs such as clock speed, cache size and number of cores affect their performance
12		<ul style="list-style-type: none"> To be able to define the term software To be able to classify the different types of systems software To be able to explain the purpose of the different types of systems software
13		<ul style="list-style-type: none"> To be able to describe the purpose of utility software To be able to explain the different functions of utility software
14	December	<ul style="list-style-type: none"> To explain the purpose of back-up To explain the difference between a full back-up and an incremental back-up.

15		<ul style="list-style-type: none"> To be able to describe a LAN and a WAN To be able to explain the differences between a LAN and a WAN To be able to identify the hardware required to link to a LAN and a WAN
16 – 1.1 Assessment		<ul style="list-style-type: none"> Exam style questions on topics covered in exam
17		Christmas holiday
18	January	
19 1.2 Networks		<ul style="list-style-type: none"> To be able to describe the factors that affect the performance of networks To be able to explain, with examples, the factors that affect performance of networks To be able to analyse ways to improve performance of networks
20		<ul style="list-style-type: none"> To be able to describe a client-server and a peer-to-peer network To be able to illustrate a client-server and a peer-to-peer network To be able to analyse the benefits of a client-server compared with a peer-to-peer network
21		<ul style="list-style-type: none"> To be able to identify the hardware needed to connect to a LAN To be able to explain the purpose of the different hardware needed to connect to a LAN
22		<ul style="list-style-type: none"> To be able to describe how the internet works To be able to define the terms 'DNS', 'Hosting' and 'the Cloud' To be able to analyse how communication via the internet works
23	February	<ul style="list-style-type: none"> To be able to describe the term 'virtual network' To be able to explain how a virtual network operates To be able to analyse the benefits and drawbacks of a virtual network
24		<ul style="list-style-type: none"> To be able to describe a star and a mesh topology To be able to illustrate a star and a mesh topology To be able to analyse the benefits of a mesh topology compared with a star topology
25		Half term holiday
26		<ul style="list-style-type: none"> To be able to describe the concept of network layers To be able to explain the functions of different layers in the network
27	March	<ul style="list-style-type: none"> To be able to describe how Wi-Fi works To be able to explain the frequencies and channels for Wi-Fi communications To be able to analyse the different levels of Wi-Fi encryption
28		<ul style="list-style-type: none"> To be able to describe how the Ethernet works To be able to illustrate how the Ethernet connects devices on a network To be able to analyse the benefits of Ethernet connection

29		<ul style="list-style-type: none"> To be able to describe IP addressing, MAC addressing and protocols To be able to explain, with examples of a school, IP addressing, MAC addressing and protocols To be able to analyse the benefits of IP addressing, MAC addressing and protocols
30		<ul style="list-style-type: none"> To be able to demonstrate knowledge and understanding of wired and wireless networks To be able to demonstrate knowledge and understanding of network topologies, protocols and layers
Assessment		
31		Easter holiday
32	April	
33		<ul style="list-style-type: none"> To be able to define 'ROM' To be able to describe ROM To be able to draw a diagram to explain ROM in a computer system
1.3 Memory		
34		<ul style="list-style-type: none"> To be able to define 'RAM' To be able to describe RAM To be able to draw a diagram to explain RAM in a computer system To be able to explain the difference between RAM and ROM
35		<ul style="list-style-type: none"> To be able to define 'virtual' and 'flash' memory To be able to explain the purpose of virtual memory To be able to the purpose of flash memory
36	May	<ul style="list-style-type: none"> Understand the need for secondary storage Understand the different types of storage device Understand the different characteristics of different types of storage
37		<ul style="list-style-type: none"> Be able to recommend a storage device for a situation Estimate data capacity requirements for different file types
38		<ul style="list-style-type: none"> To be able to explain the purpose and difference between ROM and RAM To be able to explain the purpose and difference between virtual memory and flash memory To be able to calculate data capacity requirements To be able identify and justify storage devices for specific purposes
End of Unit assessment		
39		<ul style="list-style-type: none"> To be able to think 'abstractly' (abstraction) To be able to think 'procedurally' (decomposition) To be able to think 'ahead' (algorithmic thinking) To be able to think 'logically' (algorithmic thinking) To be able to think 'concurrently' (algorithmic thinking)
2.1 Algorithm		

40	June	Half term holiday
41		<ul style="list-style-type: none"> To be able to simulate and describe a binary search To be able to write a program to carry out a binary search To be able to simulate and describe a linear search To be able to write a program to carry out a linear search
42		<ul style="list-style-type: none"> To be able to understand algorithms written using flow diagrams or pseudocode Produce algorithms using flow diagrams or pseudocode to solve problems
43 Unit Assessment		<ul style="list-style-type: none"> To be able to correct or complete algorithms Produce algorithms using flow diagrams or pseudocode to solve problems
44 2.2 Programming techniques	July	<ul style="list-style-type: none"> To be able to describe the use of basic programming techniques To be able to explain the use of basic programming techniques To be able to add comments to an existing program to explain use in code
45		<ul style="list-style-type: none"> To be able to describe the use of data types To be able to explain the use of data types To be able to add comments to an existing program to explain use in code
46		<ul style="list-style-type: none"> To be able to describe the use of arithmetic and Boolean operators To be able to explain the use of arithmetic and Boolean operators To be able to add comments to an existing program to explain use in code

**Subject: Computing
Annual plan Y11**



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PENINSULA CAMPUS
*Excellence through innovation,
founded in faith since 1840.*

Week	Month	Learning Intentions and/or Key Questions
1 2.2 Programming techniques	September	<ul style="list-style-type: none"> To be able to describe the use of sequence, selection and iteration To be able to explain the use of sequence, selection and iteration To be able to add comments to an existing program to explain use in code
2		<ul style="list-style-type: none"> To be able to describe the use of strings To be able to explain the use of strings To be able to add comments to an existing program to explain use in code
3		<ul style="list-style-type: none"> To be able to describe the use of one dimensional and two dimensional arrays

		<ul style="list-style-type: none"> To be able to explain the use of one dimensional and two dimensional arrays To be able to add comments to an existing program to explain use in code
4		<ul style="list-style-type: none"> To be able to describe the use of file handling To be able to explain the use of file handling To be able to add comments to an existing program to explain use in code
5		<ul style="list-style-type: none"> To be able to describe the use of procedures and functions To be able to explain the use of procedures and functions To be able to add comments to an existing program to explain use in code
6	October	<p>Assessment Key concept – End of unit test Task: Using responses from assessment:</p>
7 2.3 Producing robust programs		<ul style="list-style-type: none"> To understand the elements of defensive program design Know how comments and indentation can support maintainability Describe the role of testing, including how to identify errors and select appropriate test data
8		<ul style="list-style-type: none"> Understand the purpose of testing Identify different types of program errors
9		Half term holiday
10	November	<p>End of unit test</p> <ul style="list-style-type: none"> To be able to answer specimen exam questions on producing robust programs. Know different between iterative and terminal testing Be able to select suitable test data
11 2.4 Computational thinking		<ul style="list-style-type: none"> To be able to explain why data needs to be in binary form
12		<ul style="list-style-type: none"> To be able to draw diagrams for the AND, OR and NOT gates To be able to create a Truth Table for AND, OR and NOT gates
13		<ul style="list-style-type: none"> To be able to draw Logic Circuits and Truth Tables for 2nd Level Logic Circuits To be able to draw Logic Circuits and Truth Tables for 3rd Level Logic Circuits To be able to draw half adder and full adder Logic Circuits
14	December	<ul style="list-style-type: none"> To be able to answer MCQs on binary, logic gates and truth tables

		<ul style="list-style-type: none"> To be able to attempt the stretch and challenge tasks on logic gates and truth tables. To be able to describe the different generations of programming language
15 2.5 Translator + Facilitators of languages		
16		<ul style="list-style-type: none"> To be able to describe the differences between Low Level and High Level Languages To evaluate the benefits of programming in both Low and High Level languages To state which translator is needed for each and why
17		Christmas holiday
18	January	
19		<ul style="list-style-type: none"> To be able to describe the differences in operation between a Compiler and Interpreter.
20		<ul style="list-style-type: none"> To be able to describe the common tools and facilities in an Integrated Development Environment (IDE)
21		<ul style="list-style-type: none"> To be able to use Macromedia Flash to create an animation To be able to summarise the theory of translators and facilities of languages in an animation
22 2.6 Data representation		<ul style="list-style-type: none"> To be able to define the terms bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte To be able to understand that data needs to be converted into a binary format to be processed by a computer To be able to convert positive denary whole numbers (0-255) into 8-bit binary numbers and vice versa To be able to add two 8-bit binary integers and explain overflow errors which may occur.
23	February	<ul style="list-style-type: none"> To be able to convert positive denary whole numbers (0-255) into 2-digit hexadecimal numbers and vice versa To be able to convert between binary and hexadecimal equivalents of the same number To be able to explain the use of hexadecimal numbers to represent binary numbers
24		<ul style="list-style-type: none"> To be able to explain the representation of an image as a series of pixels represented in binary To be able to explain the need for metadata to be in the file such as height, width and colour depth

		<ul style="list-style-type: none"> To be able to discuss the effect of colour depth and resolution on the size of an image file
25		Half term holiday
26		<ul style="list-style-type: none"> To be able to explain how sound can be sampled and stored in digital form To be able to explain how sampling intervals and other considerations affect the size of a sound file and quality of its playback
27	March	<ul style="list-style-type: none"> To be able to explain how instructions are coded as bit patterns To be able to explain how the computer distinguishes between instructions and data
28		<p><u>End of Unit assessment</u></p> <p>Objectives:</p> <ul style="list-style-type: none"> To be able to convert numbers To be able to calculate file sizes To be able to convert instructions into machine code
29		<ul style="list-style-type: none"> Exam Practice
Revision		
30		<ul style="list-style-type: none"> Exam practice
31		Easter holiday
32	April	
33		Exam practice
34		Exam practice
35		Exam Practice
36	May	
37		GCSE EXAM week
38		
39		
40	June	Half term holiday
41		
42		
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44	July	
45		
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