



Year 10 CS Medium Term Plan Autumn Term

Learning Overview (Contents)	- Algorithms and their types - Interpretations – flowcharts, pseudocodes and descriptions - Fitness of purpose – logical and data test - Decomposition - Abstraction
Assessment Opportunities	Half term project
Textbooks Published Lesson Resources	Pearson Edexcel – International GCSE – Computer Science (9-1) ISBN 978–1–292–31022-0
Home Learning Resources	https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/algorithms/lessons?sid-c566f0=Tr6Z4WCl G&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/searching-and-sorting-algorithms/lessons?sid-aa2cd5=m b7NPxd3b&sm=0&src=3
Knowledge organisers	CS Knowledge organisers .pdf

Week Number	Learning Overview / objective	What should pupils know, understand and be able to do by the end of the week?
1	Welcome Back And Introduction	Introduction Expectations and Prospects Rules and Regulations

	Unit 1: Problem Solving Section 1: Understanding Algorithms	Define Algorithms and their use Interpret algorithms as flowcharts, pseudocode and written descriptions
2	Unit 1: Problem Solving Section 1: Understanding Algorithms	Use and describe the purpose of arithmetic operators Describe and code an algorithm to a high-level language
3	Unit 1: Problem Solving Section 2: Creating Algorithms	Create an algorithm to solve a particular problem Make use of programming constructs and use appropriate conventions
4	Unit 1: Problem Solving Section 3: Sorting and searching algorithms	Identify standard algorithms and how they work Describe how the choice of algorithm is influenced by the data structures and data values that need to be manipulated Evaluate the fitness of purpose of algorithms using: • logical reasoning • data test
5	Unit 1: Problem Solving Section 4: Decomposition and Abstraction	Analyse a problem, investigate requirements and design solutions Decompose a problem into smaller sub-problems
6	Unit 1: Problem Solving Section 4: Decomposition and Abstraction	Describe how abstraction can be used effectively to model aspects of the real world Program abstractions of real-world examples
7	Half term project	Unit 1: Problem Solving



Year 10 CS Medium Term Plan Autumn Term

Learning Overview (Contents)	- Algorithms and programs - Datatypes – sequencing, selection and iteration - Code readability improvement - Strings – split and concatenate - One- and two- dimensional arrays - Record structures
Assessment Opportunities	End of term assessment
Textbooks Published Lesson Resources	Pearson Edexcel – International GSCE – Computer Science (9-1) ISBN 978–1–292–31022-0
Home Learning Resources	https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-selection/lessons?sid-28c0b4=57SXwpop0b&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-sequence/lessons?sid-798b4b=1umr6EsZgK&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-iteration/lessons?sid-0ec1ff=4pNoY99MKs&sm=0&src=3
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Week Number	Learning Overview / objective	What should pupils know, understand and be able to do by the end of the week?
1		Explain the difference between algorithms and programs Code an algorithm in pseudocode and a high level programming language

	Unit 2: Programming Section 5: Develop code	
2	Unit 2: Programming Section 5: Develop code	Describe the characteristics of datatypes Select appropriate data types for variables Use sequencing, selection and iteration constructs in programs
3	Unit 2: Programming Section 6: Making programs easy to read	Explain the benefit of producing programs that are easy to read Use techniques to improve the readability of code Describe how codes work
4	Unit 2: Programming Section 7: Strings	Describe strings and their use Use iteration to traverse a string Concatenate strings Split strings
5	Unit 2: Programming Section 8: Data Structures	Describe the structure of one- and two- dimensional arrays and their use Create and use one- and two- dimensional arrays in programs
6	Unit 2: Programming Section 8: Data Structures	Describe the record data structure and its use Design record structures
7	End of term assessment	Unit 1 and Unit 2



Year 10 CS Medium Term Plan Spring Term

Learning Overview (Contents)	• Data validation • Subprograms – user defined and pre-existing • Local and global variables • Errors – test plans and data • Evaluate a program Write code according to given instructions
Assessment Opportunities	Half term project
Textbooks Published Lesson Resources	Pearson Edexcel – International GCSE – Computer Science (9-1) ISBN 978–1–292–31022-0
Home Learning Resources	https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-selection/lessons?sid-28c0b4=57SXwpop0b&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-sequence/lessons?sid-798b4b=1umr6EsZqK&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/programming-iteration/lessons?sid-0ec1ff=4pNoY99MKs&sm=0&src=3
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Week Number	Learning Overview / objective	What should pupils know, understand and be able to do by the end of the week?
1		

	Unit 2: Programming Section 9: Input / Output	Explain the need for validation Write code that validate user input
2	Unit 2: Programming Section 9: Input / Output	Write code that accepts and responds appropriately to user input Write code that reads from and writes to a text file
3	Unit 2: Programming Section 10: Subprograms	Describe a subprogram Explain the use of subprograms Compare between global and local variables
4	Unit 2: Programming Section 10: Subprograms	Explain passing data into and out of subprograms Create subprograms that use parameters Write code that uses user-defined and pre-existing subprograms
5	Unit 2: Programming Section 11: Testing and Evaluation	Describe different types of errors in programs Design and use test plans and test data
6	Unit 2: Programming Section 11: Testing and Evaluation	Determine what value a variable will hold at a given point in a program Evaluate the strength and weaknesses of a program Suggest improvements to a program
7	Half term project	Unit 2: Programming



Year 10 CS Medium Term Plan

Spring Term

Learning Overview (Contents)	• Data representation in binary system • Convert between binary, denary and hexadecimal numbers • Data storage • Compression • Encryption
Assessment Opportunities	End of term assessment
Textbooks Published Lesson Resources	Pearson Edexcel – International GSCE – Computer Science (9-1) ISBN 978–1–292–31022-0
Home Learning Resources	https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/representation-of-numbers/lessons?sid-a52c07=4pmR9fx8y1&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/representation-of-text-images-and-sound/lessons?sid-d87ec6=4GHuEh4Hmq&sm=0&src=3
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Week Number	Learning Overview / objective	What should pupils know, understand and be able to do by the end of the week?
1	Unit 3: Data Section 12: Binary	Recognise that computers use binary to represent data and program instructions Describe how computers represent and manipulate numbers (unsigned and signed integers) Convert between binary and denary numbers (0 -255)
2		

	Unit 3: Data Section 12: Binary	Perform binary arithmetic and recognize the concept of overflow Recognise hexadecimal notation Convert between hexadecimal and binary systems
3	Unit 3: Data Section 13: Data Representation	Identify how computers encode characters using ASCII and Unicode Describe how bitmap images are represented in binary
4	Unit 3: Data Section 13: Data Representation	Describe how sound (analogue signal) is represented in binary Describe the limitations of binary representation of data: Sample frequency Resolution Number of bits
5	Unit 3: Data Section 14: Data Storage and Compression	Convert between binary and denary multiples Recognise the need for compression Identify methods of compression: • Lossless • Lossy Describe how a lossless run-length encoding (RLE) algorithm works Describe file storage in bytes Calculate file sizes
6	Unit 3: Data Section 15: Encryption	Recognise the need for data encryption Describe how encryption algorithms work: • Pigpen Cypher • Caesar Cypher • Vigenère Cypher • Rail fence Cypher
7	End of term assessment	Unit 3: Data



Year 10 CS Medium Term Plan Summer Term

Learning Overview (Contents)	• Input-process- output model • Hardware components • Fetch-execute-decode cycle • Data storage • Logical operations and truth table (AND, OR, NOT) • Software – System, Application and Utility • Programming – High level and low level
Assessment Opportunities	Term Project End of term assessment
Textbooks Published Lesson Resources	Pearson Edexcel – International GSCE – Computer Science (9-1) ISBN 978–1–292–31022-0
Home Learning Resources	https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-aqa/units/boolean-logic/lessons?sid-bc6b2f=DNNmQVVH8c&sm=0&src=3 https://www.thenational.academy/teachers/programmes/computing-secondary-ks4-gcse-l/units/computer-systems-e17a/lessons?sid-c17fc4=zqYLiqrUq&sm=0&src=3
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Week Number	Learning Overview / objective	What should pupils know, understand and be able to do by the end of the week?
1	Unit 4: Computers Section 16: Machines and computational models	Describe the input-process-output model Identify range of computational models: • Sequential • Parallel • Multi-agent

2	Unit 4: Computers Section 17: Hardware	Identify the function of the hardware components of a computer and how they work together: • CPU • Main memory • Secondary storage • Input and Output devices Recognise the function of different types of main memory: • RAM • ROM • Cache memory • Virtual memory Recognise the concept of a stored program Describe the role of the components of the CPU in fetch-execute-decode cycle (von Neumann Model)
3	Unit 4: Computers Section 17: Hardware	Describe the factors that affect the performance of the CPU Describe how data is stored on physical devices: • Magnetic devices • Optical devices • Solid State devices Explain the concept of “cloud” and other contemporary secondary storage Identify embedded systems and their use
4	Unit 4: Computers Section 18: Logic	Construct and interpret truth table for a given logic statement (AND, OR, NOT) Produce logic statements for a given problem
5	Unit 4: Computers Section 19: Software	Identify operating system and how it manages files, processes hardware and the user interface Describe the purpose and functionality of utility software Describe how software can be used to simulate and model aspects of the real world

		Define system software and application software
6	Unit 4: Computers Section 20: Programming Languages	Identify high-level and low-level programming and their suitability for a particular task Distinguish between compiler, assembler and interpreter. Compare between advantages and disadvantages of compiler, assembler and interpreter.
7	Term Project	Unit 4: Computers
8	Revision for Final Assessment	Revision resources (Unit 1 – Unit 4) Past Papers
9	Revision for Final Assessment	Revision resources (Unit 1 – Unit 4) Past Papers
10	Final Assessment	Unit 1 – Unit 4