

# Year 10 Computer Science

Below are the topic areas covered over this academic year. Please use the resources to help improve and embed the learning you have completed in school.

## Paper 1 Resources

Autumn Term – Topic 1	
Topic Area	Resources
Abstraction and Decomposition	1. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-abstraction">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-abstraction</a> 2. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-decomposition">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-decomposition</a>
Subprograms	3. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-introduction-to-subprograms">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-introduction-to-subprograms</a>
Flowcharts and Pseudocode	4. <a href="https://www.youtube.com/watch?v=5EDEXCEL_GCSE_1CP2_How_to_produce_algorithms">5. EDEXCEL GCSE (1CP2) How to produce algorithms (youtube.com)</a>
Algorithms – Sequence, Selection, Repetition and Iteration	5. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-inputs-processes-and-outputs">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-inputs-processes-and-outputs</a> 6. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-how-to-produce-algorithms">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-how-to-produce-algorithms</a>
Variables, Constants	7. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-introduction-to-programming-concepts">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-introduction-to-programming-concepts</a>
Data Structures and Arrays	8. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-data-structures-and-arrays">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-data-structures-and-arrays</a>
Arithmetic, Relational and Logical operators	9. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-the-common-arithmetic-and-comparison-operators">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-the-common-arithmetic-and-comparison-operators</a> 10. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-the-common-boolean-operators">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-the-common-boolean-operators</a>
Trace Tables	11. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-using-trace-tables-to-determine-the-purpose-of-algorithms">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-using-trace-tables-to-determine-the-purpose-of-algorithms</a>
Syntax, Logic and Runtime Errors	12. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-identifying-errors-and-suggesting-fixes">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-identifying-errors-and-suggesting-fixes</a>
Bubble and Merge Sort	13. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-bubble-sort">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-bubble-sort</a> 14. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-merge-sort">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-merge-sort</a>
Linear and Binary Search	15. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-linear-search">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-linear-search</a> 16. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-1a-binary-search">https://student.craigndave.org/videos/gcse-edexcel-topic-1a-binary-search</a>
Algorithm Efficiency	17. <a href="https://www.youtube.com/watch?v=16PearsonEdexcelGCSE1CP2Topic1AAlgorithmEfficiency-CraigNDave">16. Pearson Edexcel GCSE (1CP2) Topic 1A Algorithm efficiency – Craig 'n' Dave knowledge video index (craigndave.org)</a>
Apply Logical Operators in Truth Tables	18. <a href="https://www.youtube.com/watch?v=19EDEXCELGCSE1CP2ApplyingLogicalOperatorsInTruthTables">19. EDEXCEL GCSE (1CP2) Applying logical operators in truth tables to solve problems (youtube.com)</a>

Spring Term – Data Representation	
Topic Area	Resources
Bit patterns	19. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-bit-patterns">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-bit-patterns</a>
Number Bases	20. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-number-bases">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-number-bases</a>
Signed integers - Two's Complement	21. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-signed-integers-using-twos-complement">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-signed-integers-using-twos-complement</a>
Binary – Denary Conversions	22. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-converting-between-denary-and-8-bit-binary">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-converting-between-denary-and-8-bit-binary</a>
Binary Addition	23. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-adding-two-8-bit-binary-integers">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-adding-two-8-bit-binary-integers</a>
Binary Shifts	24. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-binary-shifts">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-binary-shifts</a>
Hexadecimal	25. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-converting-between-denary-and-2-digit-hexadecimal">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-converting-between-denary-and-2-digit-hexadecimal</a>  26. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2a-why-hexadecimal-is-used-in-computer-science">https://student.craigndave.org/videos/gcse-edexcel-topic-2a-why-hexadecimal-is-used-in-computer-science</a>
ASCII	27. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-characters-and-character-sets">https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-characters-and-character-sets</a>
Bitmap Images	28. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-images">https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-images</a>
Sound Representation	29. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-sound">https://student.craigndave.org/videos/gcse-edexcel-topic-2b-representing-sound</a>
Data Storage	30. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2b-the-units-of-data-storage">https://student.craigndave.org/videos/gcse-edexcel-topic-2b-the-units-of-data-storage</a>
Compression	31. <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-2b-compression">https://student.craigndave.org/videos/gcse-edexcel-topic-2b-compression</a>

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### Paper 2 Resources – Programming

Autumn – Summer Term	
Topic Area	Resources
Abstraction and Decomposition	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6a-using-abstraction-decomposition-to-solve-problems">https://student.craigndave.org/videos/gcse-edexcel-topic-6a-using-abstraction-decomposition-to-solve-problems</a>
Algorithmic Thinking	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6a-algorithmic-thinking">https://student.craigndave.org/videos/gcse-edexcel-topic-6a-algorithmic-thinking</a>
Producing Algorithms using pseudocode and flowcharts	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-product-algorithms-using-pseudocode-and-flow-diagrams">https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-product-algorithms-using-pseudocode-and-flow-diagrams</a>
Syntax and Logic Errors	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-identify-syntax-and-logic-errors">https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-identify-syntax-and-logic-errors</a>
Is your program efficient?	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6a-evaluating-a-programs-fitness-for-purpose-and-efficiency">https://student.craigndave.org/videos/gcse-edexcel-topic-6a-evaluating-a-programs-fitness-for-purpose-and-efficiency</a>

Data Types	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-data-types-and-casting">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-data-types-and-casting</a>
Variables and Constant	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-variables-constants-and-assignments">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-variables-constants-and-assignments</a>
Three basic constructs	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-the-three-basic-programming-constructs">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-the-three-basic-programming-constructs</a>
1 and 2-Dimensional Array	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-one-and-two-dimensional-structured-data-types">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-one-and-two-dimensional-structured-data-types</a>
Basic String Manipulation	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-basic-string-manipulation">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-basic-string-manipulation</a> <a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-formatting-and-customising-string-output">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-formatting-and-customising-string-output</a>
Output	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-user-input-and-display-output">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-user-input-and-display-output</a>
Basic File Handling	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-user-of-basic-file-handling-operations">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-user-of-basic-file-handling-operations</a>
Data Validation	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-data-validation">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-data-validation</a>
Authentication Routines	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-simple-authentication-routines">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-simple-authentication-routines</a>
Arithmetic/Logic Operators	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-arithmetic-comparison-and-logic-operators-in-programs">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-arithmetic-comparison-and-logic-operators-in-programs</a>
Subprograms	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-how-to-use-pre-existing-and-user-devised-subprograms">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-how-to-use-pre-existing-and-user-devised-subprograms</a>
Math and Time Module	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-math-and-time-module">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-math-and-time-module</a>
Python Turtle	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-turtle-module">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-turtle-module</a>
Local and Global Variables	<a href="https://student.craigndave.org/videos/gcse-edexcel-topic-6b-local-and-global-variables">https://student.craigndave.org/videos/gcse-edexcel-topic-6b-local-and-global-variables</a>