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

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

| Summer Term – Topic 3 | |
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| **Topic Area** | **Resources** |
| Common CPU Components | 32. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-common-cpu-components-and-their-function |
| Von Neuman Architecture | 33. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-von-neumann-architecture |
| FDE Cycle | 34. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-the-fetch-execute-cycle |
| Secondary Storage | 35. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-common-types-of-storage<br><br>36. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-the-need-for-secondary-storage |
| Embedded Systems | 37. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-embedded-systems |
| Internet of Things | 38. https://student.craigndave.org/videos/gcse-edexcel-topic-3a-the-internet-of-things |

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| Purpose and Functionality of Operating Systems | 39. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-the-purpose-and-functionality-of-operating-systems |
| Operating Systems | 40. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-operating-systems-part-1 <br><br> 41. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-operating-systems-part-2 |
| Utility Software | 42. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-utility-software |
| Robust Software | 43. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-importance-of-robust-software |
| Different Languages – High and Low Level | 44. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-characteristics-and-purpose-of-different-levels-of-programming-language |
| Compliers and Interpreters | 45. https://student.craigndave.org/videos/gcse-edexcel-topic-3b-characteristics-of-compilers-and-interpreters |

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 2 Resources – Programming**

| Autumn – Summer Term | |
|---|---|
| **Topic Area** | **Resources** |
| Abstraction and Decomposition | https://student.craigndave.org/videos/gcse-edexcel-topic-6a-using-abstraction-decomposition-to-solve-problems |
| Algorithmic Thinking | https://student.craigndave.org/videos/gcse-edexcel-topic-6a-algorithmic-thinking |
| Producing Algorithms using pseudocode and flowcharts | https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-product-algorithms-using-pseudocode-and-flow-diagrams |
| Syntax and Logic Errors | https://student.craigndave.org/videos/gcse-edexcel-topic-6a-how-to-identify-syntax-and-logic-errors |
| Is your program efficient? | https://student.craigndave.org/videos/gcse-edexcel-topic-6a-evaluating-a-programs-fitness-for-purpose-and-efficiency |
| Data Types | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-data-types-and-casting |
| Variables and Constant | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-variables-constants-and-assignments |
| Three basic constructs | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-the-three-basic-programming-constructs |
| 1 and 2-Dimensional Array | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-one-and-two-dimensional-structured-data-types |
| Basic String Manipulation | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-use-of-basic-string-manipulation <br> https://student.craigndave.org/videos/gcse-edexcel-topic-6b-formatting-and-customising-string-output |
| Output | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-user-input-and-display-output |

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| Basic File Handling | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-user-of-basic-file-handling-operations |
| Data Validation | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-data-validation |
| Authentication Routines | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-simple-authentication-routines |
| Arithmetic/Logic Operators | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-using-arithmetic-comparison-and-logic-operators-in-programs |
| Subprograms | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-how-to-use-pre-existing-and-user-devised-subprograms |
| Math and Time Module | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-math-and-time-module |
| Python Turtle | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-the-turtle-module |
| Local and Global Variables | https://student.craigndave.org/videos/gcse-edexcel-topic-6b-local-and-global-variables |
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**You will also find programming revision resources on Teams in the following location:**

Documents > General > Revision Programming