# YouTube Year 9: Computer Science

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| Michaelmas 1 | **1.1 -Systems architecture & 2.1 – Algorithms**<br>• Architecture of the CPU<br>• ¨ The purpose of the CPU:<br>• The fetch-execute cycle<br>• ¨ Common CPU components and their function:<br>• ALU (Arithmetic Logic Unit)<br>• CU (Control Unit), Cache, Registers, ¨ Von Neumann architecture:<br>• MAR (Memory Address Register), MDR (Memory Data Register)<br>• Program Counter, o Accumulator<br>• Designing, creating and refining algorithms |
| Michaelmas 2 | **1.1 Systems architecture & 2.1 – Algorithms**<br>• **1.2.1 Primary storage (memory)**<br>• Searching and sorting algorithms<br>• Standard sorting algorithms:  Bubble sort, Merge sort, Insertion sort<br>• Sequence, Selection, Iteration (count- and condition-controlled loops)<br>• Create, interpret, correct, complete, and refine algorithms using:<br>• Pseudocode, Flowcharts, o Reference language/high-level programming language |
| Lent 1 | • **– Memory and storage & 2.2 – Programming fundamentals**<br>• The need for primary storage<br>• The difference between RAM and ROM<br>• The purpose of ROM in a computer system<br>• The purpose of RAM in a computer system<br>• Virtual memory, Cache<br>•  Optical, Magnetic, Solid state<br>• The common arithmetic operators<br>• The common Boolean operators AND, OR and NOT |
| Lent 2 | **1.2– Memory and storage & 2.2 – Programming fundamentals**<br>• The use of data types:<br>• The advantages and disadvantages of different storage devices and storage media relating to these characteristics: Capacity, Speed, Portability, Durability, Reliability, Cost<br>• The units of data storage: Bit, Nibble (4 bits), Byte (8 bits), Kilobyte (1,000 bytes or 1 KB) |
| Trinity 1 | **1.3 – Computer networks, connections and protocols & 2.2.2 Data types - 2.2.3 Additional programming techniques**<br>• Networks and topologies<br>• The Internet as a worldwide collection of computer networks<br>• Wired and wireless networks, protocols and layers<br>• Open, Read, Write, Close |

| Trinity 2 | **1.3 – Computer networks, connections and protocols & 2.2.2 Data types** |
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| | • Modes of connection: Wired, Ethernet, Wireless, Wi-Fi, Bluetooth |
| | • Common protocols including: |
| | • TCP/IP (Transmission Control Protocol/Internet Protocol) |
| | • HTTP (Hyper Text Transfer Protocol) |
| | • o HTTPS (Hyper Text Transfer Protocol Secure) |