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| **Year 10 Term 4**  **GCSE Computer Science** | Our mission is to stimulate and challenge our students to excel and provide a desire for lifelong learning and pursue careers in the world of Business, Computing, and ICT. | | | | | |
| **Enquiry Questions: Can all protocols happen at the same time?** | | | | | | |
| |  | | --- | | **Component 1: Computer Systems**  Students will understand the components that make up digital systems, and how they communicate with one another and with other systems. They will also recognise the impacts of digital technology to the individual and to wider society. Students also learn computing fundamentals of data and apply mathematical skills relevant to data representation. | | | | | | | |
| **Knowledge**  Students will know about… | **Application/Skills**  Students will be able to… | **Vocabulary** | **Home Learning** | **Assessment** | **Extra Resources**  **Extended Reading** | **Cultural Capital** |
| * **Networks, Protocols & Layers**   IP addressing and MAC addressing  the principle of a standard to provide rules for areas of computing  different types of protocols are used for different purposes  The basic principles of each protocol i.e. its purpose and key features  How layers are used in protocols, and the benefits of using layers   * **Threats to computer systems and networks**   Forms of attack  Identifying and preventing vulnerabilities   * **Operating systems**   What each function of an operating system does   * **Utility software**   Understand that computers often come with utility software, and how this performs housekeeping tasks  Purpose of the identified utility software and why it is required | * Compare the differences between IP and MAC Addressing * Identifying standards among computing and other digital devices which require compatibility * Identify correct protocols when transmitting data over a network * Justify the correct prevention method with the correct network/cyber attack * Explain the key functionalities of an operating system * Implement system utilities to deepen understanding | * Internet Protocol * MAC Address * Ethernet * TCP/IP * FTP * HTTP/HTTPS * SMTP * IPAM * POP * Application Layer * Transport Layer * IP Layer * Data Layer * Brute Force Attack * SQL Injection * Phishing * Social Engineering * Defragmentation * Compression * Encryption | High quality Homework set on Google Classrooms  Teach-ICT.com  PG Online – GCSE Computer Science  [Isaac Computer Science](https://isaaccomputerscience.org/topics/gcse?examBoard=all&stage=all#all)  Seneca – [Computer Science](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session) | Formal End of unit assessments:   * Networks * Network Threats * Prevention Methods * Operating Systems * Utilities   Pre-Public Examination at the end of year 10 May 2023. | [Teach-ICT.com](https://teach-ict.com/2016/GCSE_Computing/OCR_J277/OCR_J277_home.html)  [Isaac Computer Science](https://isaaccomputerscience.org/topics/gcse?examBoard=all&stage=all#all)  Seneca – [Computer Science](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session)  BBC Bitesize  CGP – GCSE Computer Science  Hodder Education – Revision Book A Level Computer Science | The National Science Museum (free events)  <https://www.sciencemuseum.org.uk/>  The Royal Institute of Science (free events)  <https://www.rigb.org/families/family-fun-days>  **National Museum of Computing, Bletchley Park (Near Milton Keynes)**  <http://www.tnmoc.org/>    <https://www.bletchleypark.org.uk/>  <http://www.codesandciphers.org.uk/bletchleypark/>  (virtual tour)    Centre for Computing History, Cambridge  <http://www.computinghistory.org.uk/> |