

## Year 11 Computer Science Homework January – February 2024

| <u>Week;</u>                   | <u>Topic Area</u>  | <u>Video Link</u>  | <u>Activity</u>  |
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| <b>8<sup>th</sup> January</b>  | <p><b>The purpose of the CPU:</b></p> <ul style="list-style-type: none"> <li>o The fetch-execute cycle</li> </ul> <p><b>Common CPU components and their function:</b></p> <ul style="list-style-type: none"> <li>o ALU (Arithmetic Logic Unit)</li> <li>o CU (Control Unit)</li> <li>o Cache</li> <li>o Registers</li> </ul> <p><b>Von Neumann architecture:</b></p> <ul style="list-style-type: none"> <li>o MAR (Memory Address Register)</li> <li>o MDR (Memory Data Register)</li> <li>o Program Counter</li> <li>o Accumulator</li> </ul> | <p><a href="#">OCR GCSE (J277) 1.1 The purpose of the CPU - The fetch-execute cycle (youtube.com)</a></p> <p><a href="#">OCR GCSE (J277) 1.1 CPU components and their function (youtube.com)</a></p> <p><a href="#">OCR GCSE (J277) 1.1 Von Neumann architecture (youtube.com)</a></p> | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |
| <b>15<sup>th</sup> January</b> | <p><b>The need for primary storage</b></p> <p><b>The difference between RAM and ROM</b></p> <p><b>The purpose of ROM in a computer system</b></p> <p><b>The purpose of RAM in a computer system</b></p> <p><b>Virtual memory</b></p>   | <p><a href="#">6. OCR GCSE (J277) 1.2 The need for primary storage (youtube.com)</a></p> <p><a href="#">7. OCR GCSE (J277) 1.2 RAM and ROM (youtube.com)</a></p> <p><a href="#">8. OCR GCSE (J277) 1.2 Virtual memory (youtube.com)</a></p>  | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |

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| <p><b>22<sup>nd</sup> January</b></p> | <p><b>Types of network:</b></p> <ul style="list-style-type: none"> <li>o LAN (Local Area Network)</li> <li>o WAN (Wide Area Network)</li> </ul> <p><b>Factors that affect the performance of networks</b></p> <p><b>The different roles of computers in a client-server and a peer-to-peer network</b></p>   | <p><a href="#">23. OCR GCSE (J277) 1.3 Types of networks (youtube.com)</a></p> <p><a href="#">24. OCR GCSE (J277) 1.3 Performance of networks (youtube.com)</a></p> <p><a href="#">25. OCR GCSE (J277) 1.3 Client server, peer to peer (youtube.com)</a></p> | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |
| <p><b>29<sup>th</sup> January</b></p> | <p><b>The hardware needed to connect stand-alone computers into a Local Area Network:</b></p> <ul style="list-style-type: none"> <li>o Wireless access points</li> <li>o Routers</li> <li>o Switches</li> <li>o NIC (Network Interface Controller/Card)</li> <li>o Transmission media</li> <li>..</li> </ul> <p><b>The Internet as a worldwide collection of computer networks:</b></p> <ul style="list-style-type: none"> <li>o DNS (Domain Name Server)</li> <li>o Hosting</li> <li>o The Cloud</li> <li>o Web servers and clients</li> </ul> <p><b>Star and Mesh network topologies</b></p> | <p><a href="#">26. OCR GCSE (J277) 1.3 LAN hardware (youtube.com)</a></p> <p><a href="#">27. OCR GCSE (J277) 1.3 The internet (youtube.com)</a></p> <p><a href="#">28. OCR GCSE (J277) 1.3 Star and mesh networks (youtube.com)</a></p>                      | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |
| <p><b>5<sup>th</sup> February</b></p> | <p><b>Modes of connection:</b></p> <ul style="list-style-type: none"> <li>o Wired <ul style="list-style-type: none"> <li>• Ethernet</li> </ul> </li> <li>o Wireless <ul style="list-style-type: none"> <li>• Wi-Fi</li> <li>• Bluetooth</li> </ul> </li> </ul> <p><b>Encryption</b></p>  | <p><a href="#">29. OCR GCSE (J277) 1.3 Modes of connection (youtube.com)</a></p> <p><a href="#">30. OCR GCSE (J277) 1.3 Wireless encryption (youtube.com)</a></p> <p><a href="#">31. OCR GCSE (J277) 1.3 IP and MAC addressing (youtube.com)</a></p>         | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |

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|                                 | <p>IP addressing and MAC addressing</p> <p>Standards</p>   |   |  |
| <p>12<sup>th</sup> February</p> | <p>Standards</p> <p>Common protocols including:</p> <ul style="list-style-type: none"> <li>o TCP/IP (Transmission Control Protocol/Internet Protocol)</li> <li>o HTTP (Hyper Text Transfer Protocol)</li> <li>o HTTPS (Hyper Text Transfer Protocol Secure)</li> <li>o FTP (File Transfer Protocol)</li> <li>o POP (Post Office Protocol)</li> <li>o IMAP (Internet Message Access Protocol)</li> <li>o SMTP (Simple Mail Transfer Protocol)</li> </ul> <p>The concept of layers</p>   | <p><a href="#">32. OCR GCSE (J277) 1.3 Standards (youtube.com)</a></p> <p><a href="#">33. OCR GCSE (J277) 1.3 Common protocols (youtube.com)</a></p> <p><a href="#">34. OCR GCSE (J277) 1.3 The concept of layers (youtube.com)</a></p> | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |
| <p>19<sup>th</sup> February</p> | <p>Forms of attack:</p> <ul style="list-style-type: none"> <li>o Malware</li> <li>o Social engineering, e.g. phishing, people as the 'weak point'</li> <li>o Brute-force attacks</li> <li>o Denial of service attacks</li> <li>o Data interception and theft</li> <li>o The concept of SQL injection</li> </ul> <p>Common prevention methods:</p> <ul style="list-style-type: none"> <li>o Penetration testing</li> <li>o Anti-malware software</li> <li>o Firewalls</li> <li>o User access levels</li> <li>o Passwords</li> <li>o Encryption</li> </ul> | <p><a href="#">35. OCR GCSE (J277) 1.4 Forms of attack (youtube.com)</a></p> <p><a href="#">37. OCR GCSE (J277) 1.4 Preventing vulnerabilities (youtube.com)</a></p>  | <p>Watch the videos and make either a mind-map or flash cards.</p> <p>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></p> <p>Due on the following Monday of each week.</p> |

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|                                 | <ul style="list-style-type: none"> <li>o Physical security</li> </ul>  |  |   |
| <b>26<sup>th</sup> February</b> | <p><b>Impacts of digital technology on wider society including:</b></p> <ul style="list-style-type: none"> <li>o Ethical issues</li> <li>o Legal issues</li> <li>o Cultural issues</li> <li>o Environmental issues</li> <li>o Privacy issues</li> </ul> <p><b>Legislation relevant to Computer Science:</b></p> <ul style="list-style-type: none"> <li>o The Data Protection Act 2018</li> <li>o Computer Misuse Act 1990</li> <li>o Copyright Designs and Patents Act 1988</li> <li>o Software licences (i.e. open source and proprietary)</li> </ul> | <p><a href="#">43. OCR GCSE (J277) 1.6 Privacy issues (youtube.com)</a></p> <p><a href="#">42. OCR GCSE (J277) 1.6 Investigating technologies (youtube.com)</a></p> <p><a href="#">47. OCR GCSE (J277) 1.6 Legislation (youtube.com)</a></p> <p><a href="#">48. OCR GCSE (J277) 1.6 Open source vs proprietary (youtube.com)</a></p> | <p><b>Watch the videos and make either a mind-map or flash cards.</b></p> <p><b>Answer questions at <a href="http://smartrevise.online/">http://smartrevise.online/</a></b></p> <p><b>Due on the following Monday of each week.</b></p> |