

## Year 12 Computer Science Assessment Checklist

Subject	Paper	Duration
Computer Science	Paper 1 – Computer systems Paper 2 – Algorithms and programming	1 hour 30 minutes 1 hour 30 minutes
What to revise		How to revise it
<b>PAPER 1</b>		
1	<p>Application Generation</p> <ol style="list-style-type: none"> <li>a) The nature of applications, justifying suitable applications for a specific purpose.</li> <li>b) Utilities.</li> <li>c) Open source vs closed source.</li> <li>d) Translators: Interpreters, compilers and assemblers.</li> <li>e) Stages of compilation (lexical analysis, syntax analysis, code generation and optimisation).</li> <li>f) Linkers and loaders and use of libraries.</li> </ol>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/playlist?list=PLCiOXwirraUA9EgGVmuqzxonorZHPKNJN">https://www.youtube.com/playlist?list=PLCiOXwirraUA9EgGVmuqzxonorZHPKNJN</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>
2	<p>Structure and function of the processor</p> <ol style="list-style-type: none"> <li>a) The Arithmetic and Logic Unit; ALU, Control Unit and Registers (Program Counter; PC, Accumulator; ACC, Memory Address Register; MAR, Memory Data Register; MDR, Current Instruction Register; CIR). Buses: data, address and control: how this relates to assembly language programs.</li> <li>b) The Fetch-Decode-Execute Cycle; including its effects on registers.</li> <li>c) The factors affecting the performance of the CPU: clock speed, number of cores, cache.</li> <li>d) The use of pipelining in a processor to improve efficiency.</li> <li>e) Von Neumann, Harvard and contemporary processor architecture.</li> </ol>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/watch?v=dVi2B7fGVm4&amp;list=PLCiOXwirraUB7V2i0SJ4SSJFqRV_LtgzW">https://www.youtube.com/watch?v=dVi2B7fGVm4&amp;list=PLCiOXwirraUB7V2i0SJ4SSJFqRV_LtgzW</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>
3	<p>Networks</p> <ol style="list-style-type: none"> <li>a) Characteristics of networks and the importance of protocols and standards.</li> <li>b) The internet structure:               <ul style="list-style-type: none"> <li>• The TCP/IP Stack.</li> <li>• DNS</li> <li>• Protocol layering.</li> <li>• LANs and WANs.</li> <li>• Packet and circuit switching.</li> </ul> </li> <li>c) Network security and threats, use of firewalls, proxies and encryption.</li> </ol>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/playlist?list=PLCiOXwirraUDhcQX2Y1yso6ImXxkQ9sat">https://www.youtube.com/playlist?list=PLCiOXwirraUDhcQX2Y1yso6ImXxkQ9sat</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>

	<p>d) Network hardware. e) Client-server and peer to peer.</p>	
4	<p>Systems Software</p> <p>a) The need for, function and purpose of operating systems. b) Memory Management (paging, segmentation and virtual memory). c) Interrupts, the role of interrupts and Interrupt Service Routines (ISR), role within the Fetch-Decode-Execute Cycle. d) Scheduling: round robin, first come first served, multi-level feedback queues, shortest job first and shortest remaining time. e) Distributed, embedded, multi-tasking, multi-user and Real Time operating systems. f) BIOS. g) Device drivers. h) Virtual machines, any instance where software is used to take on the function of a machine, including executing intermediate code or running an operating system within another.</p>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/watch?v=8aFBYIR_CYw&amp;list=PLCiOXwirraUCBE9i_ukL8_Kfg6XNv7Se8">https://www.youtube.com/watch?v=8aFBYIR_CYw&amp;list=PLCiOXwirraUCBE9i_ukL8_Kfg6XNv7Se8</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>
5	<p>Compression, Encryption and Hashing</p> <p>a) Lossy vs Lossless compression. b) Run length encoding and dictionary coding for lossless compression. c) Symmetric and asymmetric encryption. d) Different uses of hashing.</p>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/playlist?list=PLCiOXwirraUC5JC0p_iwqzACQleHsnkDTP">https://www.youtube.com/playlist?list=PLCiOXwirraUC5JC0p_iwqzACQleHsnkDTP</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>
6	<p>Web Technologies</p> <p>a) HTML, CSS and JavaScript. b) Search engine indexing. c) PageRank algorithm. d) Server and client-side processing.</p>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Watch through and make notes on the following videos; <a href="https://www.youtube.com/playlist?list=PLCiOXwirraUD599IP_R3rtOdmlD1FdORRp">https://www.youtube.com/playlist?list=PLCiOXwirraUD599IP_R3rtOdmlD1FdORRp</a></li> <li>• Revisit PowerPoint slides on Teams</li> <li>• RAG rate revision checklist</li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>
<b>PAPER 2</b>		
	<p>Programming Techniques</p> <p>a) Sequence, iteration, branching. b) Recursion c) Global and local variables. d) Modularity, functions and procedures, parameter passing by value and by reference. e) Use of an IDE to develop/debug a program. f) Use of object oriented techniques.</p>	<ul style="list-style-type: none"> <li>• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>• Revisit the lessons on Teams – <b>work through the tasks again</b></li> <li>• Watch through and make notes on the following videos; <a href="https://student.craigndave.org/videos/slr-23-programming-techniques">https://student.craigndave.org/videos/slr-23-programming-techniques</a></li> <li>• Isaac Computing</li> <li>• Smart revise</li> </ul>

	<p>Computational Methods</p> <ol style="list-style-type: none"> <li>Problem recognition.</li> <li>Problem decomposition.</li> <li>Use of divide and conquer.</li> <li>Use of abstraction.</li> <li>Backtracking, data mining, heuristics, performance modelling, pipelining</li> </ol>	<ul style="list-style-type: none"> <li>Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>Revisit the lessons on Teams – <b>work through the tasks again</b></li> <li>Watch through and make notes on the following videos; <a href="https://student.craigndave.org/videos/slr-24-computational-methods">https://student.craigndave.org/videos/slr-24-computational-methods</a></li> <li>Isaac Computing</li> <li>Smart revise</li> </ul>
	<p>Algorithms</p> <ol style="list-style-type: none"> <li>Standard sorting &amp; searching algorithms (except Dijkstra's and A* algorithms)</li> <li>For Data Structures</li> <li>Complexities</li> </ol>	<ul style="list-style-type: none"> <li>Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps</li> <li>Revisit the lessons on Teams – <b>work through the tasks again</b></li> <li>Watch through and make notes on the following videos; <a href="https://student.craigndave.org/videos/slr-25-algorithms">https://student.craigndave.org/videos/slr-25-algorithms</a> and <a href="https://student.craigndave.org/videos/slr-26-algorithms">https://student.craigndave.org/videos/slr-26-algorithms</a></li> <li>Isaac Computing</li> <li>Smart revise</li> </ul>