

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	
PAPER 1			
1	Application Generation a) The nature of applications, justifying suitable applications for a specific purpose. b) Utilities. c) Open source vs closed source. d) Translators: Interpreters, compilers and assemblers. e) Stages of compilation (lexical analysis, syntax analysis, code generation and optimisation). f) Linkers and loaders and use of libraries.	<ul style="list-style-type: none">• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps• Watch through and make notes on the following videos; https://www.youtube.com/playlist?list=PLCiOXwirraUA9EgGVmuqzxonorZHPKNJN• Revisit PowerPoint slides on Teams• RAG rate revision checklist• Isaac Computing• Smart revise	
2	Structure and function of the processor 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. b) The Fetch-Decode-Execute Cycle; including its effects on registers. c) The factors affecting the performance of the CPU: clock speed, number of cores, cache. d) The use of pipelining in a processor to improve efficiency. e) Von Neumann, Harvard and contemporary processor architecture.	<ul style="list-style-type: none">• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps• Watch through and make notes on the following videos; https://www.youtube.com/watch?v=dVi2B7fGVm4&list=PLCiOXwirraUB7V2i0SJ4SSJFqRV_LtgzW• Revisit PowerPoint slides on Teams• RAG rate revision checklist• Isaac Computing• Smart revise	
3	Networks a) Characteristics of networks and the importance of protocols and standards. b) The internet structure: <ul style="list-style-type: none">• The TCP/IP Stack.• DNS• Protocol layering.• LANs and WANs.• Packet and circuit switching. c) Network security and threats, use of firewalls, proxies and encryption.	<ul style="list-style-type: none">• Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps• Watch through and make notes on the following videos; https://www.youtube.com/playlist?list=PLCiOXwirraUDhcQX2Y1yso6ImXxkQ9sat• Revisit PowerPoint slides on Teams• RAG rate revision checklist• Isaac Computing• Smart revise	

	d) Network hardware. e) Client-server and peer to peer.	
4	Systems Software <ol style="list-style-type: none"> The need for, function and purpose of operating systems. Memory Management (paging, segmentation and virtual memory). Interrupts, the role of interrupts and Interrupt Service Routines (ISR), role within the Fetch-Decode-Execute Cycle. Scheduling: round robin, first come first served, multi-level feedback queues, shortest job first and shortest remaining time. Distributed, embedded, multi-tasking, multi-user and Real Time operating systems. BIOS. Device drivers. 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. 	<ul style="list-style-type: none"> Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps Watch through and make notes on the following videos; https://www.youtube.com/watch?v=8aFByIR_CYw&list=PLCiOXwirraUCBE9i_uKL8_Kfg6XNv7Se8 Revisit PowerPoint slides on Teams RAG rate revision checklist Isaac Computing Smart revise
5	Compression, Encryption and Hashing <ol style="list-style-type: none"> Lossy vs Lossless compression. Run length encoding and dictionary coding for lossless compression. Symmetric and asymmetric encryption. Different uses of hashing. 	<ul style="list-style-type: none"> Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps Watch through and make notes on the following videos; https://www.youtube.com/playlist?list=PLCiOXwirraUC5JC0p_iwqzACQleHsnkDTP Revisit PowerPoint slides on Teams RAG rate revision checklist Isaac Computing Smart revise
6	Web Technologies <ol style="list-style-type: none"> HTML, CSS and JavaScript. Search engine indexing. PageRank algorithm. Server and client-side processing. 	<ul style="list-style-type: none"> Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps Watch through and make notes on the following videos; https://www.youtube.com/playlist?list=PLCiOXwirraUD599IP_R3rtOdmlD1FdORRp Revisit PowerPoint slides on Teams RAG rate revision checklist Isaac Computing Smart revise
PAPER 2		
	Programming Techniques <ol style="list-style-type: none"> Sequence, iteration, branching. Recursion Global and local variables. Modularity, functions and procedures, parameter passing by value and by reference. Use of an IDE to develop/debug a program. Use of object oriented techniques. 	<ul style="list-style-type: none"> Use your notes from lessons to recall information through revision clocks, Cornell notes or mind maps Revisit the lessons on Teams – work through the tasks again Watch through and make notes on the following videos; https://student.craigndave.org/videos/slr-23-programming-techniques Isaac Computing Smart revise

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