Curriculum Overview 2023/24: Term 2   Year: 10

Subject:	Learning Query / Topic: Memory and storage							
	30 Oct 2023	**6 Nov 2023**	**13 Nov 2023**	**20 Nov 2023**	**27 Nov 2023**	**4 Dec 2023**	**11 Dec 2023**	**18 Dec 2023**
Learning Question	Units of data storage Converting data into binary to be processed by a computer Programming	Data capacity and calculating data capacity requirements Converting between denary and 8-bit binary Programming	Adding two 8-bit binary integers Converting between denary and 2-digit hexadecimal Programming	Binary shifts Representing characters and character sets Programming	Representing images Representing sound Programming	Compression Programming	Memory and storage recap Assessment Programming	*Programming*
Homework	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	
Key Vocabulary	*Binary Bit, nibble, byte, kilobyte, megabyte, gigabyte, petabyte*	*Capacity Binary, denary*	*Binary, denary, hexadecimal*	*Binary shift Character set*	*Pixel Resolution Colour depth Bits Sampling Frequency Amplitude Analogue wave Digital wave*	*Compression Lossy, lossless*		
Absenteeism / Isolation / Stretch & Challenge	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	

Recommended reading	*All resources (reading materials) and tutorials are located in Teams Files and class OneNote.* *Additional reading is posted in Teams general channel.* [Craig 'n' Dave videos for SLR 1.2](#)
Knowledge Organiser Link	*Knowledge Organisers are located in the Content Library of the class OneNote Notebook*

Curriculum Overview 2023/24: Term 2   Year: 11

Subject:	Learning Query / Topic: Programming							
	30 Oct 2023	**6 Nov 2023**	**13 Nov 2023**	**20 Nov 2023**	**27 Nov 2023**	**4 Dec 2023**	**11 Dec 2023**	**18 Dec 2023**
Learning Question	Defensive design considerations: Anticipating misuse, authentication Input validation Programming	Maintainability: Use of sub-programs, naming conventions, indentation, commenting The purpose of testing Programming	Types of testing: Iterative, final, terminal Identify syntax and logic errors Selecting and using suitable test data: Normal, boundary, invalid, erroneous Refining algorithms Programming	Identifying errors and suggesting fixes Boolean logic Simple logic diagrams using the operators AND, OR and NOT Truth tables Programming	Boolean logic: Combining Boolean operators (AND, OR and NOT) to two levels Applying logical operators in truth tables to solve problems Programming	Programming languages and IDEs: Characteristics and purposes of different levels of programming language: High-level, low-level. The purpose of translators Characteristics of a compiler and an interpreter Programming	Common tools and facilities available in an IDE: Editors, error diagnostics, run-time environment, translators. Assessment Programming	*Programming*
Homework	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	*Smart Revise*	

Key Vocabulary	Defensive design Authentication Validation Verification	Maintainability Indentation Commenting Whitespace Colour Testing Stepping Line numbers	Testing (iterative, final, terminal) Syntax, logic errors Normal, boundary, invalid, erroneous	Boolean AND OR NOT Truth table	Boolean AND OR NOT Truth table	Low level & high level languages Translators (interpreter, compiler)	IDE (integrated development environment) Diagnostic Run-time	
Absenteeism / Isolation / Stretch & Challenge	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)	
Recommended reading	All resources (reading materials) and tutorials are located in Teams Files and class OneNote. Additional reading is posted in Teams general channel. Craig 'n' Dave videos for SLR 2.3 Craig 'n' Dave videos for SLR 2.4 Craig 'n' Dave videos for SLR 2.5							
Knowledge Organiser Link	Knowledge Organisers are located in the Content Library of the class OneNote Notebook							

Curriculum Overview 2023/24: Term 2   Year: 12/13

Subject:	Learning Query / Topic: Systems architecture							
	30 Oct 2023	**6 Nov 2023**	**13 Nov 2023**	**20 Nov 2023**	**27 Nov 2023**	**4 Dec 2023**	**11 Dec 2023**	**18 Dec 2023**

Learning Question	The arithmetic 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 program. The fetch-decode-execute cycle, including its effect on registers. The factors affecting the performance of CPU, clock speed, number of cores, cache. Programming Project	The use of pipelining in a processor to improve efficiency. Von Neumann, Harvard and contemporary processor architecture. Programming Project	The differences between, and uses of, CISC and RISC processors GPUs and their uses (including those not related to graphics) Multicore and parallel systems Programming Project	How different input output and storage devices can be applied as a solution of different problems The uses of magnetic, flash and optical storage devices RAM and ROM Virtual storage Programming Project	The need for, function and purposes of operating systems Memory management (paging, segmentation and virtual memory) The role of interrupts and Interrupt Service Routines (ISR) within the fetch-decode-execute cycle Programming Project	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 Programming Project	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 operating system Programming Project	Programming Project
Homework	*Smart Revise Project*	*Smart Revise Project*	*Smart Revise Project*	*Smart Revise Project*	*Smart Revise Project*	*Smart Revise Project*	*Smart Revise Project*	

Key Vocabulary	Registers Cache Random Access Memory (RAM) Read Only Memory (ROM) Central Processing Unit (CPU) Arithmetic Logic Unit (ALU) Control Unit (CU) Accumulator (ACC)	Pipelining Processor Queueing	CISC (complex instruction set computers) RISC (reduced instruction set computers) GPU (graphics processing unit)	Input, output Flash, optical, magnetic storage devices Virtual memory	Operating systems Memory management (paging, segmentation, virtual) Interrupt service routines (ISR)	Scheduling: round robin, first come first served, multi-level feedback queues, shortest job first and shortest remaining time Basic input output system (BIOS)	Device driver Virtual machine	
Absenteeism / Isolation / Stretch & Challenge	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	*All resources and programming tutorials are located in Teams Files and within OneNote (Content Library / student section)*	
Recommended reading	*All resources (reading materials) and tutorials are located in Teams Files and class OneNote.* *Additional reading is posted in Teams general channel.* Craig 'n' Dave videos for SLR 1 Craig 'n' Dave videos for SLR 2 Craig 'n' Dave videos for SLR 3 Craig 'n' Dave videos for SLR 4							
Knowledge Organiser Link	*Knowledge Organisers are located in the Content Library of the class OneNote Notebook*							