Meden School Curriculum Planning							
Subject	GCSE Computer Science	**Year Group**	10	**Sequence No.**	1.1 – Systems architecture	**Topic**	Systems Architecture

Week Number	Retrieval	Core Knowledge	Student Thinking
-	What do teachers need to **retrieve** from students before they start teaching **new content**?	What **specific ambitious knowledge** do teachers need to teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to **develop our students' thinking, encouraging them to see the inequalities around them** and 'do something about them!'
U1: Systems Architecture, CPU	**New content for unit.** Students have studied computer science at KS3 – looking at hardware and software. Students will be able to recall the meaning of hardware and components.	Understand the purpose of the CPU and the fetch-execute cycle Understand the following registers in the Von Neumann architecture: • MAR (Memory Address Register) • MDR (Memory Data Register) • Program Counter • Accumulator Understand common CPU components including: • ALU (Arithmetic Logic Unit) • CU (Control Unit) • Cache • Registers **program counter** - holds the memory address of the next instruction to be fetched from main memory **memory address register (MAR)** - holds the address of the current instruction that is to be fetched from memory, or the address in memory to which data is to be transferred	To understand how computers work and how the process of logic works in relation to computer science. **Improving society** Students will be able to compare and contrast computer specifications within the industry and evaluate their performance. Students will be able to recommend a computer specification based on purpose and audience.

		memory data register (MDR) - holds the contents found at the address held in the MAR, or data which is to be transferred to main memory **current instruction register (CIR)** - holds the instruction that is currently being **decoded** and executed **accumulator (ACC)** - holds the results of processing **Cache** - Cache is a small amount of high-speed random access memory (RAM) built directly within the processor. It is used to temporarily hold data and instructions that the processor is likely to reuse. This allows for faster processing as the processor does not have to wait for the data and instructions to be fetched from the RAM. **Registers** are small amounts of high-speed memory contained within the CPU. They are used by the processor to store small amounts of data that are needed during processing, such as: • the address of the next instruction to be executed • the current instruction being decoded • the results of calculations	
U1: Systems Architecture, CPU Performance	Recall the purpose of the CPU and the fetch-execute cycle. Students have studied computer science at KS3 – looking at hardware and software.	Understand the function of cache in the CPU Describe how common characteristics of CPUs affect their performance including: • Clock speed • Cache size • Number of cores	Students will be able to compare and contrast computer specifications within the industry and evaluate their performance. Students will be able to recommend a computer

	Students will be able to recall the meaning of hardware and components.	Explain the purpose and give examples of embedded systems **Cache** - Cache is a small amount of high-speed random access memory (RAM) built directly within the processor. It is used to temporarily hold data and instructions that the processor is likely to reuse. This allows for faster processing as the processor does not have to wait for the data and instructions to be fetched from the RAM.	specification based on purpose and audience.
U1: Systems Architecture, Memory	Recall the purpose of the CPU and the fetch-execute cycle. Students have studied computer science at KS3 – looking at hardware and software. Students will be able to recall the meaning of hardware and components.	Explain the need for primary storage Describe the difference between RAM and ROM Describe the purpose of RAM and ROM in a computer system Explain the need for virtual memory **ROM** is memory that cannot be changed by a program or user. ROM retains its memory even after the computer is turned off. For example, ROM stores the instructions for the computer to start up when it is turned on again. **RAM** is a fast temporary type of memory in which programs, applications and data are stored. Here are some examples of what's stored in RAM: • the operating system • applications • the graphical user interface (GUI)	Students will be able to compare and contrast computer specifications within the industry and evaluate their performance. Students will be able to recommend a computer specification based on purpose and audience.

		Virtual memory enables data that is in RAM and not currently being used to be transferred to the hard disk. This frees up room in RAM for other programs and data. When the data on the hard disk is needed again, any other unused data is transferred to the hard disk before the original data is transferred back to RAM.	
U1: Systems Architecture, Secondary Storage	Recall the purpose of the CPU and the fetch-execute cycle. Students have studied computer science at KS3 – looking at hardware and software. Students will be able to recall the meaning of hardware and components.	Discuss the need for secondary storage including optical, magnetic and solid-state storage Evaluate suitable storage devices and media for a given application using the following characteristics: • Capacity • Speed • Portability • Durability • Reliability • Cost	Students will be able to compare and contrast computer specifications within the industry and evaluate their performance. Students will be able to recommend a computer specification based on purpose and audience.
Key Vocabulary: Fetch-execute, CPU, ALU CU, cache, registers, Von Neumann architecture, MAR, MDR, Program Counter, Accumulator, Clock speed, cache size, cores, embedded systems, memory address, Primary storage, RAM, ROM, virtual memory, volatile, non-volatile, Secondary storage, optical, magnetic, solid state, drive, disk, hard disk, floppy disk, tape drive, Blu-ray, DVD, CD, capacity, speed, portability, durability, reliability, cost, storage device, storage media			
Final assessment on the unit of work. Students will - Apply knowledge in answers to a range of questions - Be able to identify areas of strength and weakness and any gaps in their understanding of impacts of digital technology in the wider society.			