

GCSE Computer Science Knowledge Organiser

1.1: System Architecture

	Term	Definition
1	CPU	Central Processing Unit
2	Purpose of the CPU	The purpose of the CPU is to fetch, decode and execute instructions.
3	PC	The program counter holds the address of the next instruction to be fetched from memory.
4	MAR	The memory address register holds the address of the instruction to be fetched from ram. It can also hold the address of the piece of data to be read or written from RAM.
5	MDR	The memory data register holds the instruction or piece of data from the RAM. It can also hold a piece of data before it's written to the RAM
6	ACC	The accumulator holds the result of any calculations or logic decisions from the ALU.
7	ALU	The arithmetic logic unit performs arithmetic calculations and logic decisions.
8	CU	The control unit controls the flow of data around the CPU. It does this by sending read and write signals.
9	Von Neumann Cycle(Shorter version)	Instructions are fetched from memory(RAM) The control unit decodes these instructions The instructions are executed The cycle is continuous The program counter is incremented by one.
10	Embedded System	An embedded system is a smaller system inside of a larger system with a single purpose.
11	Example of embedded systems	Washing Machine, Dishwasher, Engine management system, Manufacturing control
12	Clock Speed	The clock speed is the number of instructions that can be executed per second(Measured in Hz) If you increase the clock speed it means you can execute more instructions per second.
13	Number of cores	The number of cores shows how many instructions can be executed simultaneously. The more cores the more instructions

		<p>can be executed at the same time.</p> <p>NOTE: Doubling the number of cores doesn't double the speed of the CPU. This is because some problems aren't parallelizable and also other factors affect the speed of the CPU.</p>
14	Size of cache	<p>The cache contains commonly/frequently used instructions. The larger the cache the more commonly used instructions can be held. This speeds up the CPU as it can then fetch instructions from the cache which is faster than fetching from RAM.</p>

How to Self Quiz

- 1) Look at the terms you have been asked by your teacher one at a time. Repeat them in your head. Can you remember them?
 - 2) Copy down the terms you have been asked to learn for that week
 - 3) Get a piece of paper or an exercise book. Write the title of the knowledge organiser and write the date. Underline both.
 - 4) Cover the terms BUT NOT the keyword. Test yourself on the knowledge.
 - 5) Check your answers by using a green pen.
 - a) If you need to add simple corrections then add in green pen
 - b) If you got it completely wrong write it out again fully any terms you got wrong.
- Repeat above until you can get them all right.