

## Edexcel CS Specification:

The SLR1 Craig n Dave topic covers Edexcel specification topics 311, 321 and 313

<b>3.1 Hardware</b>	<b>3.1.1</b> understand the von Neumann stored program concept and the role of main memory (RAM), CPU (control unit, arithmetic logic unit, registers), clock, address bus, data bus, control bus in the fetch-decode-execute cycle
	<b>3.1.2</b> understand the role of secondary storage and the ways in which data is stored on devices (magnetic, optical, solid state)
	<b>3.1.3</b> understand the concept of an embedded system and what embedded systems are used for

[Edexcel Specification pdf](#)

### Content Clarification 311: The Fetch Execute Cycle

- know what is meant by the stored program concept and the fetch-decode-execute cycle.
- know the characteristics of main memory.
- know that the central processing unit (CPU) sequentially fetches, decodes and executes instructions stored in memory.
- You do not need to know how modern computers use pipelining to overlap the three stages
- understand the role of the control unit (CU) and the arithmetic logic unit (ALU) in the fetch-decode-execute cycle.
- know that registers are small memory cells within the CPU that are used for temporary storage of data and interim results.
- You do not need to be able to name, identify or describe the function of specific registers, such as the program counter or accumulator.
- know that the clock synchronises the actions of the CPU, with each tick of the clock triggering an operation, and that the speed of the clock is measured in hertz.
- understand how the speed of the clock affects the performance of the CPU.
- know that a bus is a set of parallel wires through which data/signals are transmitted from one component to another.
- be aware that the width of the bus is the number of parallel wires it has, and determines how many addressable memory locations there are.
  
- know the function of the address bus, data bus and control bus
- know which buses are bi-directional and which unidirectional, and why this is the case

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### Content Clarification 312: Secondary Storage

- understand that secondary storage provides long-term, non-volatile storage for programs and data.
- understand how data is stored on magnetic media.
- know that a magnetic hard drive is a mechanical device with moving parts and understand the implications of this for speed of access, robustness and durability.
- understand how data is stored on optical media.
- understand that solid state devices have no moving parts and use electrical circuits to persistently store data.
  
- You do not need to know the physics of how semiconductors and floating gate transistors work.
- know the advantages and disadvantages of each type of storage and recognise when one is more suitable than another for a particular purpose.
  
- You do not need to know how cloud storage works

## Content Clarification 313: Embedded Systems and IoT

- understand how an embedded system differs from a general-purpose computer.
- know about common hardware components of embedded systems.
- Know how to complete a diagram of an embedded system by adding labelled boxes and arrows to show a sensor and an actuator that controls a motor.
- understand the role of the microcontroller in an embedded system and
- recognise that power consumption is a major consideration for the design of an embedded system.
- describe uses of embedded systems and outline how an embedded system could carry out a particular task.
- be familiar with the concept of the Internet of Things (IoT)
- be aware of privacy and security concerns associated with it

[Content Clarification guide - issue 3](#)

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