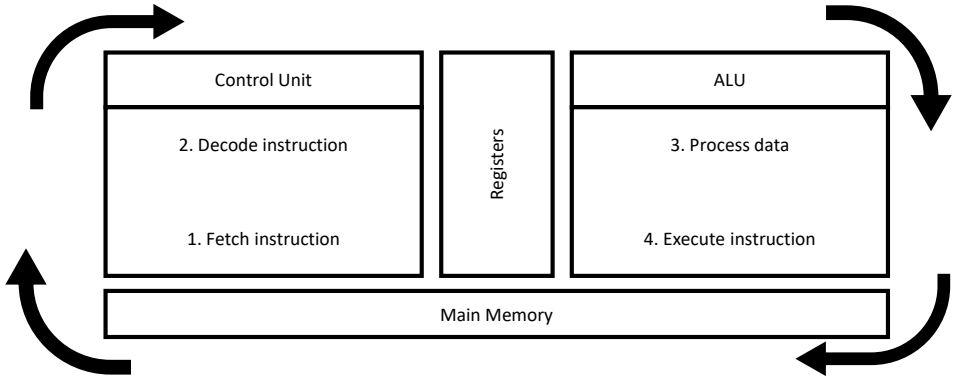
1.1 Systems Architecture	
CPU	**Central Processing Unit**
Cores	An **individual processor** within a CPU
Cache	Incredibly fast, but very expensive volatile (temporary) memory **close to the CPU**
Clock speed	The **number of FDE cycles** that a CPU can carry out **in one second**
Levels of cache	**L1, L2, L3** – L1 is the fastest and most expensive cache level
Overclocking	Processor running **at a higher speed** than the manufacturer has recommended
CU	**Control** Unit- Fetches, decodes and executes instructions, issues signals to control the hardware and moves data around the system.
MAR	Memory **address** register- holds the address of the current instruction that is to be fetched from memory
MDR	Memory **data** register - holds the contents found at the address held in the MAR, or data which is to be transferred to primary memory
PC	**Program counter-** holds the memory address of the next instruction to be fetched from primary memory
Accumulator	Small, fast register, used to keep track of the data **currently** being processed
ALU	**Arithmetic Logic Unit -** It performs arithmetic and logical operations (decisions).
FDE cycle	Basis of the **Von Neumann** architecture
Address Bus	Carries memory addresses from the processor to other components such as primary memory and input/output devices.
Data bus	Carries the actual data between the processor and other components.
Control bus	Carries control signals from the processor to other components.
CIR	Current instruction register - holds the instruction that is currently being decoded and executed

1.1 F-D-E Cycle



1.2 Memory and storage	
RAM	Primary, **volatile** internal storage.
ROM	**Non-volatile** memory, stores the boot up sequence for the computer
Virtual memory	**Short-term**, allocated when the RAM is at capacity
Primary storage	**Volatile** storage, used to temporary hold data
Compression	**Reducing** the file size
Lossy	Data is **removed from** a file to reduce the file size.
Lossless	redundant data is **removed** for sending, then **replaced** upon receipt.
Data capacity	How **much data** the storage type can hold, measured in bits
Secondary Storage	Permanent, **non-volatile** methods of keeping data
Features of storage	Capacity, speed, portability, reliability and cost
Flash memory	Non-volatile memory that can be read from and written to. It is suitable for secondary storage.
BIOS	Basic input output system - the basic firmware that is embedded in the computer ROM chip used to start a computer.
GB	Gigabyte (GB) - a measurement of file size or storage capacity, 1,024 megabytes, or 1 billion bytes.

1.3 Computer networks, connections and protocols	
Types of network	**Variations** of network
Client- Server	A network involving the client (user machine) **sending requests** to the server. The server **processes the request** and sends the data
Peer-to-peer	A network where devices are **physically connected to each other** with an Ethernet cable
Network hardware	Devices required to **maintain a network**
The Internet	A **world-wide** collection of hardware
DNS	Domain Naming System **translates** an IP address into a domain name
Hosting	Housing, maintaining and serving **files on a server**
Modes of connection	How **devices are connected**, for example: Wired, wirelessly or Bluetooth
Encryption	The process of **converting** data into code
IP addressing	a **unique string** of numbers separated by full stops
Standards	Standards that allow hardware/software to **interact**
Protocols	A set of **rules** for transmitting data
Wi-Fi	A method of connecting to the internet wirelessly using radio waves.
Wireless access point (WAP)	A device that connects computers to a network using Wi-Fi.
Router	A device for connecting computers and other network capable devices together to form a network.
Switch	A device for connecting computers and other network capable devices together to form a network

1.3 Computer networks, connections and protocols	
TCP/IP	Transmission Control Protocol/Internet Protocol - enables communication over the internet.
HTTP and HTTPS	Hypertext Transfer Protocol - governs communication between a webserver and a client. HTTPS (secure) includes secure encryption to allow transactions to be made over the internet.
FTP	File Transfer Protocol - governs the transmission of files across a network and the internet.
SMTP	Simple Mail Transfer Protocol - governs the sending of email over a network to a mail server.
POP and IMAP	Post Office Protocol and Internet Message Access Protocol - govern retrieving emails from email servers. POP is an older implementation, largely replaced by IMAP**.**

1.4 Network Security	
Malware	Software that is specifically designed to disrupt, damage, or gain unauthorised access to a computer system.
Social Engineering	The use of deception to manipulate individuals into divulging confidential or personal information that may be used for fraudulent purposes. E.g. Phishing
Brute-force attacks	A brute force attack is a hacking method that uses trial and error to crack passwords, login credentials, and encryption keys.
Denial of service attacks	(DoS) attack is an attack meant to shut down a machine or network, making it inaccessible to its intended users.
Penetration test	(pen test) is an authorized simulated attack performed on a computer system to evaluate its security
Firewall	Protect (a network or system) from unauthorised access

1.5 Systems Software	
Operating System	**controls** all the hardware and software for the PC.
User management	Allocation of an **account**, access rights and security
File management	Naming, allocating to folders, moving **files** and saving
Utility software	Programs on the computer that help the user keep the **computer running**

1.5 Functions of the Operating System	
Functions	The role and responsibilities of the **Operating System**
MUMPS	**An acronym for the functions of the Operating System**
Multi-tasking	Allows more than one **program** to run at the same time
User interface	**Windows, menus, icons and a pointing device (WIMP**) to assist the user
Memory Management	Gives over RAM and CPU **memory** to programs requiring it
Peripheral Management	Allowing **mice/keyboards/printers** to work
Security	Keeping **data protected** from **modification/deletion**

1.6 Ethical, Legal, Cultural and environmental impacts of digital technology	
Ethical	**morally** right or wrong when discussing computing
Legal	Within or outside the confines of **law**
Cultural	How technology **impacts** on different societies across the globe
Environmental	Discussing how the **environment** is impacted by technology
Privacy	**Regulation, storing and use** of personally identifiable information
Data Protection Act	Updated in **2018 to GDPR**, the law **governs** how people and businesses can use information relating to their clients
Computer Misuse Act	Released in **1990**, the law **governs** use of other peoples computer and outlines the **consequences** of doing so
Copyright, designs and Patents Act	Released in **1988,** the law **governs** who can use the property of others and the information that cannot be used as it belongs to the creator

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