KEY VOCABULARY

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Volatile	Memory which requires constant electrical charge. If the power is turned off, then the data is lost
Non-volatile	Memory which can retain its data when the power is turned off
RAM	*Random Access Memory*
ROM	*Read-Only Memory*
Cache	Very fast memory, on, or very close to the CPU
Virtual Memory	A section of the HDD which can be used as RAM for very memory intensive processes
Flash Memory	A type of dynamic (changeable) ROM
Boot Process	The instructions needed to start the computer and to initialize the operating system.
POST	*Power On Startup Test* A series of checks done on the hardware of the computer to ensure the machine can run.

PRIMARY MEMORY

TYPE	VOLATILE?	DYNAMIC?	RELATIVE SPEED
Cache	YES	YES	Very Fast
RAM	YES	YES	Fast
ROM	NO	NO	Slow
Flash	NO	YES	Slow
Virtual	YES	YES	Very Slow

PRIMARY STORAGE - MEMORY

RAM is *volatile* memory, which stores data in a single transistor and capacitor. This means it needs a constantly recycled charge to hold its data. If the power is turned off, it cannot refresh the data and it is lost. This is known as *DYNAMIC* memory. The computer uses RAM to store the current program or data being used.

ROM is non-volatile. The data is hardcoded onto the chip by the manufacturer, and cannot be overwritten by the user. Because it holds its information even when the power is turned off, this makes ROM ideal for storing the instructions needed to get the computer started up – the *BOOT PROCESS, and POST.*

Flash Memory is a new(ish) type of ROM chip which holds its data when there is no power making it *non-volatile* but that can be rewritten easily by the user. By using a relatively large electric current, electrons can be *forced* through a barrier and into the *storage layer*. The pattern of electrons can be read as data without affecting the data.
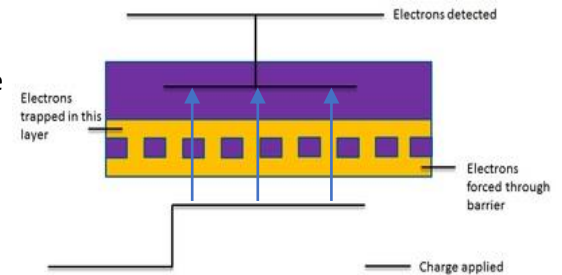
VIRTUAL MEMORY

To increase the speed and efficiency of RAM, most machines allocate a small portion of the Hard Disk to *VIRTUAL MEMORY.* The contents of the RAM are moved between the slower Virtual Memory and RAM as and when they are needed.

Using / Increasing Virtual Memory does not improve the speed of the computer, but rather using Virtual Memory increases the threshold at which a computer locks, by increasing the usable memory, and preventing deadlock due to filling the available primary memory.

Transfer Speed Increases / Capacity decreases