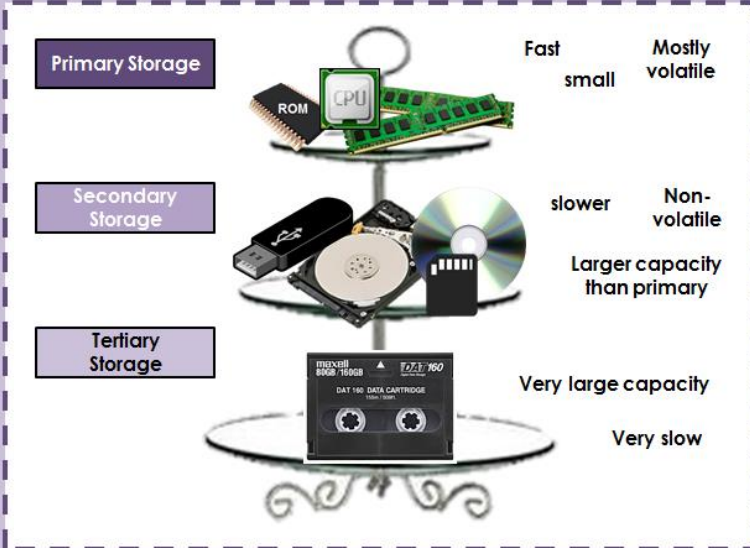


GCSE Computer Science

Topic 1.2 Storage (2)



Primary Storage is memory that can be accessed directly by the CPU: Registers, Cache, RAM, ROM.

Secondary storage is non-volatile hardware where data is stored when it is NOT in use.

The CPU can't access secondary storage directly, so program data is swapped into primary storage when opened.

Tertiary storage is HIGH capacity, non-volatile hardware used for storing data long term (i.e. back up data).

Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte.



1 Kilobyte =	1000 Bytes
1 Megabyte =	1000 Kilobytes
1 Gigabyte =	1000 Megabytes
1 Terabyte =	1000 Gigabytes



Capacity
How much data the storage device can store.

Read-Write Speeds
How fast data can be written to (saved) and read from (opened) the device.

Portability
How easy the device is to carry around.

Durability
How resistant to damage the device is.

Reliability
How long the device will last (life span).

Cost
How much money the device is to buy.

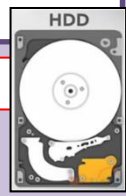
- **Optical** storage uses discs.
 - A CD (Compact disc) can hold up to 700Mb. (40p)
 - A DVD (Digital Versatile Disc) can hold 4.7 Gb.(80p)
 - A BLURAY disc can hold 25Gb. (£3)
- Optical discs use a laser to read and write data.
- The data is encoded as a series of bumps in a spiral track running from the inside to the outside of the disc.



- ✓ Portable
- ✓ Waterproof
- ✓ Shockproof
- ✓ Cheap

- ✗ Low capacity
- ✗ Scratched easy
- ✗ Very slow read-write speeds

- Hard disk drives are the traditional internal storage in PCs and laptops.
- A hard disk drive is made up of magnetic metal disks which spin very fast (5,400 – 15,000 revolutions per minute).
- Data is stored magnetically in small areas called sectors.
- The read write head on a moving arm reads data from and writes data to the sectors on the disk.
- External hard disk drives are also available.

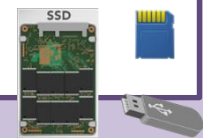


- ✓ Reliable
- ✓ Cheap
- ✓ High capacity
- ✓ Fast read-write speeds.

£50
2TB

- ✗ Not very durable.

- Solid state memory is made of flash memory.
- Flash memory is non-volatile memory that can be electronically erased and reprogrammed.
- Flash memory uses transistors (switches) that can either be ON (1) or OFF (0).
- Data is stored as binary on flash memory.
- 8 GB of flash memory requires 32billion transistors.



- ✓ Fast
- ✓ Durable
- ✓ Portable
- ✓ Moderate capacity

- ✗ Expensive for high capacity
- ✗ Limited life span.

GCSE Computer Science - Topic 1.2 Storage (2)

What I need to know:

What is primary storage?			
What is secondary storage?			
What is tertiary storage?			
What is the order of binary units from smallest to largest?			
<i>How do you convert between the binary units?</i>			
3. Common types of storage:			
<i>Describe optical storage.</i>			
<i>What are the advantages and disadvantages of optical storage?</i>			
<i>Describe magnetic storage.</i>			
<i>What are the advantages and disadvantages of magnetic storage?</i>			
<i>Describe solid state storage.</i>			
<i>What are the advantages and disadvantages of solid state storage?</i>			
4. Selecting suitable storage using:			
<i>Define capacity. Which storage devices have the highest and lowest capacity?</i>			
<i>Define speed. Which storage devices have the highest and lowest speed?</i>			
<i>Define portability. Which storage devices are the most and least portable?</i>			
<i>Define durability. Which storage devices are the most and least durable?</i>			
<i>Define reliability. Which storage devices are the most and least reliable?</i>			
<i>Define cost. Which storage devices are the most and least expensive?</i>			