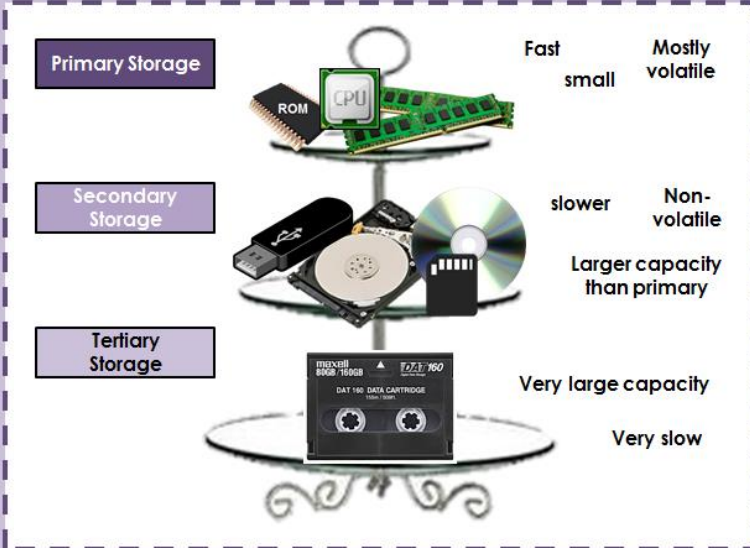


# GCSE Computer Science

## 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.*

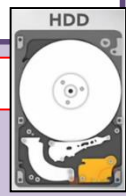
- **Optical** storage uses discs.
  - A CD (Compact disc) can hold up to 700Mb. (40p)
  - A DVD (Digital Versatile Disc) can hold 4.7 Gb.(80p)
  - A BLURAY disc can hold 25Gb. (£3)
- Optical discs use a laser to read and write data.
- The data is encoded as a series of bumps in a spiral track running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

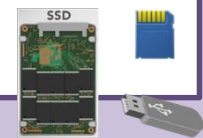


- ✓ Reliable
- ✓ Cheap
- ✓ High capacity
- ✓ Fast read-write speeds.

£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:

<b>What is primary storage?</b>			
<b>What is secondary storage?</b>			
<b>What is tertiary storage?</b>			
<b>What is the order of binary units from smallest to largest?</b>			
<i>How do you convert between the binary units?</i>			
<b>3. Common types of storage:</b>			
<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>			
<b>4. Selecting suitable storage using:</b>			
<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>			