## Input, Output, Storage and Memory

**Input and Output Devices**

- Input devices allow data to be entered into a computer.

- Output devices allow information to be retrieved from a computer.

**Storage Devices**

- Three categories: magnetic, flash and optical.

- Magnetic storage uses materials that can be magnetised, patterns of magnetisation are used to represent binary sequences. Examples are **hard disc drives** and **magnetic tape.**

- High capacity at a low cost.

-Optical storage such as CDs, DVDs and Blu-Ray work by using a laser and looking at its reflection determining where there are pits on its surface representing 1s and 0s.

- Tend to be cheap to distribute and resilient.

- Flash media works by using a special type of ROM that can be overwritten. Used for USB memory sticks and camera memory cards. Can be read and written at high speeds.

- SSDs utilise flash storage and are a faster alternative to HDDs also HDDs are at risk of losing data if they are dropped.

- Flash memory has no moving parts so eliminates this issue.

- Flash is significantly more expensive. Also there is a limit on how much you can read and write to the same location on an SSD.

- Defragmenting an SSD can often decrease its lifespan as the SSD will automatically save its frequently accessed files such that those locations are not rewritten.

## Memory

**RAM (Random Access Memory)**

- Where programs and data being used by the computer are temporarily stored. Random aspect is that processor can access any location as easily as another one.

- RAM is much faster than a storage device but it loses its data when it loses power - it is **volatile.**

**ROM (Read Only Memory)**

- Can be read but not written to.

- Common use is storing computer’s boot-up program.

- **Non-volatile** will retain data when power is lost.