Your notes

GCSE Computer Science: revision notes

Memory and storage

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Primary storage

- RAM (random access memory) holds the programs and data that are in use. It is **volatile**: everything in it is lost when the power is turned off. It can be read from and written to.
- ROM (read-only memory) holds the start-up (boot) instructions. It is non-**volatile** and normally can't be changed.
- Cache and registers inside the CPU are also **primary storage**.

Virtual memory

- When RAM is full, part of the **secondary storage** is used as **virtual memory**. Data that isn't needed right now is moved there to free up RAM.
- Moving data between RAM and **virtual memory** is slow, so the computer slows down. Adding more RAM reduces the need for **virtual memory**.

Secondary storage

- **Secondary storage** keeps data when the power is off (it is non-**volatile**), such as files and installed programs.
- Magnetic storage (a hard disk drive) has a large capacity and is cheap per gigabyte, but it has moving parts, so it is slower and can be damaged if dropped.
- **Solid state storage** (an SSD, USB stick or memory card) is fast, and has no moving parts, so it is durable and silent. It costs more per gigabyte.
- **Optical storage** (CDs, DVDs and Blu-ray discs) is cheap and portable, but it has a small capacity, is slow and scratches easily.

Choosing storage

- Compare capacity, speed, portability, durability, reliability and cost.

- **Cloud storage** keeps files on remote servers that are reached over the internet. Files can be reached from anywhere and are backed up, but it needs an internet connection and relies on the provider's security.

Your notes

Key terms

Primary storage	Memory the CPU can reach directly, such as RAM, ROM and cache.
RAM	Random access memory: volatile memory that holds the programs and data in use.
ROM	Read-only memory: non-volatile memory that holds the start-up instructions.
Volatile	Loses its contents when the power is turned off.
Virtual memory	Part of secondary storage used as extra RAM when RAM is full.
Secondary storage	Non-volatile storage that keeps data permanently, such as an SSD.
Solid state storage	Storage with no moving parts that uses flash memory.
Optical storage	Storage read by a laser, such as a DVD.
Cloud storage	Storing files on remote servers reached over the internet.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Which memory loses its contents when the power is turned off?
2. What is stored in ROM?
3. What does volatile mean?
4. When is virtual memory used?
5. Why does using virtual memory slow a computer down?
6. What is one advantage of an SSD over a hard disk drive?
7. What is one advantage of a hard disk drive over an SSD?
8. Which type of storage is a Blu-ray disc?

Answers

1. RAM
2. The start-up (boot) instructions
3. The data is lost when the power is off
4. When RAM is full
5. Secondary storage is much slower than RAM
6. It is faster and has no moving parts
7. It is cheaper per gigabyte
8. Optical

What to do next

Practise 12 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

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