Your notes

GCSE Computer Science: revision notes

The internet, the web and digital currency

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Start here: the internet and the web

- The **internet** is the worldwide network of connected computers and cables: the hardware. The **world wide web** is the collection of web pages and websites you can reach over the **internet**: the content.
- A web page is written in HTML (hypertext markup language), which tells the browser how to show the text, pictures and links.
- To get online, you connect to an **internet** service provider (ISP).

Addresses: URLs and IP addresses

- A URL (uniform resource locator) is the text address of a web page, such as **https**://www.example.com/news.html. It has a protocol (**https**), a domain name (www.example.com) and a file or page name (news.html).
- Every device on the **internet** has an **IP address**. An IPv4 address is 32 bits, written as four numbers from 0 to 255 separated by dots (192.168.0.1). IPv6 addresses are 128 bits, written as eight groups of hexadecimal digits separated by colons, because the world was running out of IPv4 addresses.
- The domain name system (DNS) turns a domain name into its **IP address**, because computers use **IP addresses** to find each other.

How a web page reaches you

- You type a URL or click a link. The browser asks a DNS server for the **IP address** of the domain. The browser then sends a request to the web server at that **IP address**. The web server sends back the page's HTML and files. The browser renders (draws) the page.

- HTTP (hypertext transfer protocol) is the set of rules for sending web pages. **HTTPS** is the secure version: the data is encrypted using SSL or TLS, so it can't be read if intercepted.
- A web browser renders HTML, stores bookmarks and history, has an address bar, lets you use tabs and moves back and forward between pages, and stores **cookies**.
- Hardware used to connect: a modem changes signals so data can travel along a phone or cable line; a router sends data between networks; a switch connects devices on a local network; a wireless access point lets devices join by Wi-Fi.

Cookies and digital currency (Cambridge IGCSE)

- A **cookie** is a small text file a website stores on your device. Session **cookies** are deleted when you close the browser and keep things like your shopping basket. Persistent **cookies** stay for a set time and remember logins, preferences and the pages you visited (which can be used for targeted adverts).
- A digital currency exists only in electronic form, such as a cryptocurrency.
- **Blockchain** is a digital ledger: a list of every transaction, shared across many computers. Each new block of transactions holds a code (a hash) made from the block before it, so changing an old record would break the chain, and everyone would see.

Common mistakes

- Using "**internet**" and "web" as if they mean the same thing.
- Saying DNS stores web pages. It only turns domain names into **IP addresses**.

Key terms

Internet	The worldwide network of connected computers: the hardware.
World wide web	All the web pages and websites that can be reached over the internet.
URL	The text address of a web page, made of a protocol, a domain name and a file name.
IP address	A unique number that identifies a device on the internet.
DNS	The system that turns a domain name into an IP address.
HTTPS	The secure version of HTTP, which encrypts data sent between browser and server.
Cookie	A small text file a website stores on your device. (Cambridge IGCSE)
Blockchain	A shared digital ledger in which each block is linked to the one before it. (Cambridge IGCSE)

Your notes

Quick questions

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

1. What is the difference between the internet and the world wide web?
2. In https://www.example.com/news.html, what is www.example.com?
3. What does DNS do?
4. How many bits are in an IPv4 address?
5. Why was IPv6 introduced?
6. What makes HTTPS secure?
7. Which device sends data between different networks?
8. What is the language web pages are written in?

Answers

1. The internet is the network; the web is the pages reached over it
2. The domain name
3. Turns a domain name into an IP address
4. 32
5. The world was running out of IPv4 addresses
6. The data is encrypted
7. Router
8. HTML

What to do next

Practise 10 questions on this topic

Try 3 exam questions, with mark schemes

Read the lesson, one step at a time

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