DNS and the internet

S.P.I.R.I.T
- ✓ **Self-management**
- ✓ **Perseverance**

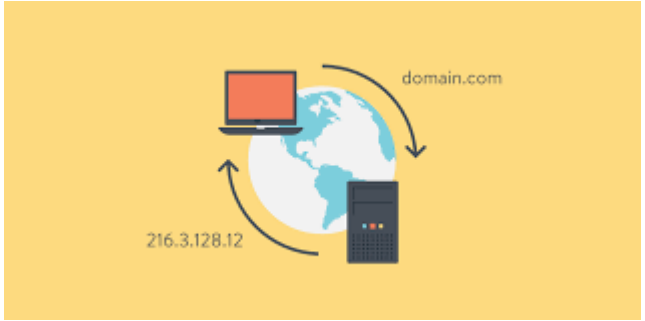
Monday, 04 April 2022

Task 1

Describe Purpose and give an example of an IP address and MAC address *(Slide 2-4)*

Task 2

What is the purpose of a DNS *(Slide 5)*



Task 3

Write down a list of the detailed steps of how a DNS work *(Slide 7-8 plus video information)*

Ensure keywords are highlighted or underlined

Learning Intention

To develop knowledge by listing internet address features

To secure understanding how computers communicate on the internet

To achieve excellence *by explaining all the stages of DNS system*

IP Addresses

- An IP address is an address which is **allocated to a computer system on a network**.
- An example of an IP address is 195.10.213.120.
- It is used by the TCP/IP protocol to **uniquely identify** computer systems on a network, thus allowing communication between them.
- **In routing tables** the corresponding IP address of a **unique MAC address** is stored and updated as necessary.

https://www.youtube.com/watch?v=7_-qWlvQQtY

MAC Address

A MAC address (Media Access Control) is a unique hexadecimal number given to any communication device, such as a network interface card.

Also known as **a physical address** or **a hardware address** – does not change

An example of a MAC address is 74:E1:B6:8E:18:77.

The address is usually stored in a communication devices' ROM.

Web browsers

A Web browser is:

- An application used to access websites and render their html code to allow viewing.

The role of a web browser is

- to render HTML (language used to create web pages)

- Rendering is ***a process used in web development that turns website code into the pages users see when they visit a website.***

IP Addresses and web browsers

DNS TASK

- EVERYONE GO ONTO THE INTERNET. GO TO ANY WEBPAGE **OTHER THAN GOOGLE**

- ..then, type this IP address into the address browser:

216.58.201.164

What happened?

DNS

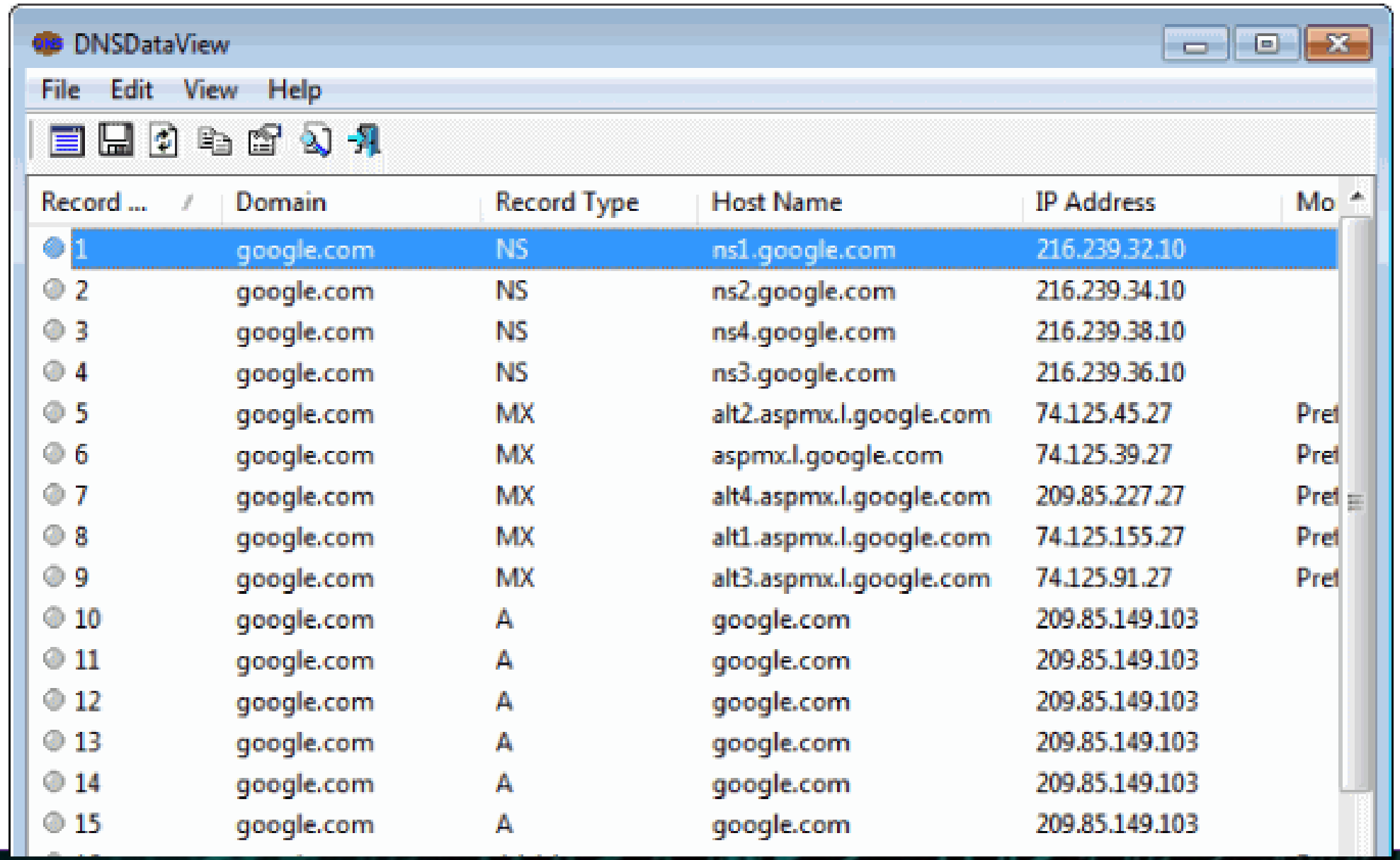
- A Domain Name System (DNS) is a **distributed database** that **matches IP addresses to computer system resources**.

- 216.58.201.164 = ??????

- 216.58.201.164 is much harder to remember than www.google.com

Award one mark for the following
- The role of a web browser is

DNS table example

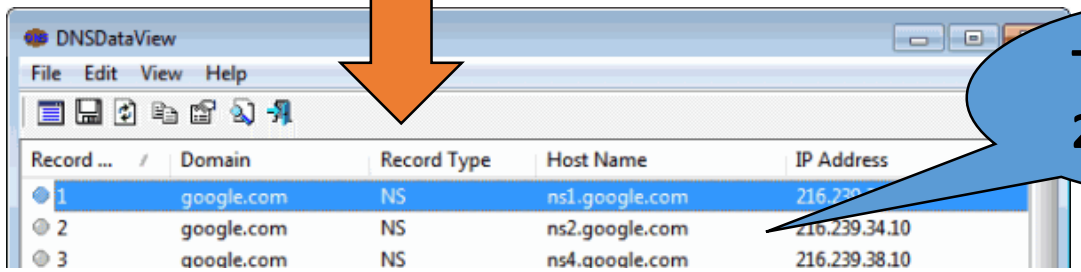


Record ...	Domain	Record Type	Host Name	IP Address	Mo
1	google.com	NS	ns1.google.com	216.239.32.10	
2	google.com	NS	ns2.google.com	216.239.34.10	
3	google.com	NS	ns4.google.com	216.239.38.10	
4	google.com	NS	ns3.google.com	216.239.36.10	
5	google.com	MX	alt2.aspmx.l.google.com	74.125.45.27	Pref
6	google.com	MX	aspmx.l.google.com	74.125.39.27	Pref
7	google.com	MX	alt4.aspmx.l.google.com	209.85.227.27	Pref
8	google.com	MX	alt1.aspmx.l.google.com	74.125.155.27	Pref
9	google.com	MX	alt3.aspmx.l.google.com	74.125.91.27	Pref
10	google.com	A	google.com	209.85.149.103	
11	google.com	A	google.com	209.85.149.103	
12	google.com	A	google.com	209.85.149.103	
13	google.com	A	google.com	209.85.149.103	
14	google.com	A	google.com	209.85.149.103	
15	google.com	A	google.com	209.85.149.103	

DNS in your Cache

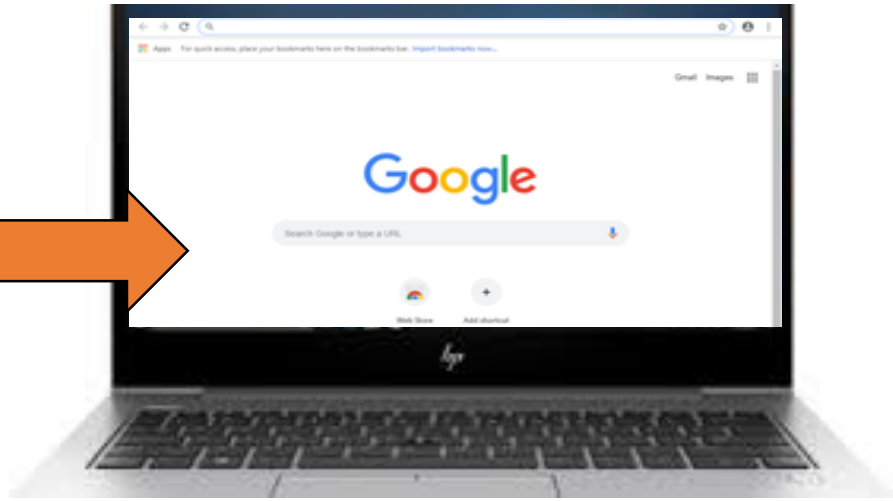
I request the address for google.com

Your computer **system sends a request to its DNS server** for **the IP address** that is **mapped to** the ***domain name*** **www.google.co.uk.**



The address is 216.58.201.164

The DNS server **returns the IP address 216.58.201.164**, which ***allows your computer system to communicate with the computer system where the Google search engine is stored.***



HOW DOES IT WORK?

1. A **web site address** is typed into **the address bar of a browser**
2. The browser checks the local (cached) host file to check if it already holds the IP address
3. **The local DNS server** (your domain) is **queried(**asked**) for the IP address**
4. **If the local DNS server does not hold the IP address,** then the query is passed to another DNS server at a higher level until the IP address is resolved (found).
5. **When the full address has been resolved (found), the IP address is then passed to your browser**
6. The browser then **connects to the IP address of the server and downloads the web site.**

In reality, there are many different DNS servers located across the world.

A DNS server will contain

- a list of domain names
- a list of corresponding IP addresses

https://www.youtube.com/watch?v=2ZUxoi7YNgs

https://www.youtube.com/watch?v=72snZctFFtA