- DNS (Domain Name System) is like a phonebook, you only need to remember the name (Domain Name ex. Google.com) instead of the number (IP address ex. 142.250.204.142).
- It converts the Domain Name to IP address so the computer can understand it.

❖ Client Request Domain
  ➢ check browser & operating system cache
❖ DNS Resolver
  ➢ your ISP or google, cloudflare dns - check resolver cache
❖ Root Nameservers
  ➢ top of DNS hierarchy.
  ➢ Each set has unique IP address
  ➢ 13 different servers around the world.
❖ TLD(top level domain) Nameservers
  ➢ .com .edu .org etc..
❖ Authoritative nameserver

How DNS works

When the client/computer query/request google.com in the browser it will check if the cache exists, if the request cant find the IP address in the browser & operating system cache it will send it to DNS recursive resolver. Typically your ISP, the resolver will check its own cache, if the IP address doesn't exist in the resolver, the query will send to the root server. The root server is the hierarchy that has 13 different servers like NASA. If the cache is not in the Root server it will respond to the location of TLD. Once the domain name match in TLD, it will send to the authoritative nameservers. The authoritative nameserver will respond with an IP address to the resolver which is requested by the resolver. The resolver will cache this IP address and send it back to the client. Now the client can now retrieve the google.com web page