DNS: The Internet's Phonebook

I – Communication practice

With your partners, prepare a short presentation (one or two slides) of one of the following topics.
The given links are only a starting point of the research that you will have to make to complete your knowledge on the topic.

1. **The format of an IPv4 address**
   a) What is the main format, distinguishing the (sub)net id and the host id? [W↗]
   b) What are the classful networking [W↗] and the classless inter-domain routing? [W↗]
   c) What are the special-use addresses (private, loopback, multicast, etc.)? [W↗]

2. **The format of an IPv6 address**
   a) What is the main motivation for a new format? [W↗]
   b) What is the address representation? [W↗]
   c) What are the unicast and anycast addresses format? [W↗]

3. **The history of ARPANET**
   a) What was ARPANET and what were the goals of its design? [W↗]
   b) What are the key dates of its creation and developments? [W↗]
   c) How did the transition toward the Internet went? [W↗]

4. **The root name servers in the world**
   a) What is the root of the domain name space and what is a root name server? [W↗]
   b) Where are the root name servers and who owns them? [W↗]
   c) What does a root name servers do [W↗] and what happens if the address doesn't exist? [W↗]

5. **The format of a domain name and its place in a URL**
   a) What is the format of a domain name? [W↗]
   b) What is the format of a protocol that is coded to the left of the domain name? [W↗]
   c) What is the format of a path and a query that is coded to the right of the domain name? [W↗]

6. **The top-level domains**
   a) What are generic top-level domains? [W↗]
   b) What are sponsored top-level domains? [W↗]
   c) What are country-code top-level domains? [W↗]

7. **The recursive resolver**
   a) What is recursion in general and in computer science? [W↗]
   b) What is a recursive resolver and how does it works? [W↗]
   c) What is an iterative name resolving algorithm and when does it take place? [↗]

8. **The cache memory**
   a) What is a cache memory in general? [W↗]
   b) What is the use of cache memory in DNS resolvers? [↗]
   c) What is the cache memory DNS in the operating system of a host machine? [↗]

9. **The time-to-live parameter**
   a) What is the time-to-live parameter in general? [W↗]
   b) What is the time-to-live parameter of a DNS resource record? [W↗]
   c) How is the time-to-live value chosen for a given resource record? [↗]

10. **The Pi-Hole system**
    a) What is a Pi-Hole system and how does it works? [W↗]
    b) What are the equipment and software needed to implement a Pi-Hole system? [↗]
    c) What are the main steps to implement a Pi-Hole system? [↗]