1) How many unique network interface hardware addresses are possible?
   12 hex digits means 16^{12} = 281,474,976,710,656 unique numbers. Even though some of these numbers are reserved, this seems adequate for the time being.

2) How many unique 32-bit IP addresses are possible?
   32 binary digits means 2^{32} = 4,294,967,296 unique numbers. Many of these are reserved, so clearly there are not enough possible addresses for every individual host on the internet. (We will discuss this problem soon.)

3) The dotted-decimal form of 32-bit internet addresses is composed of 4 decimal numbers, separated by periods. What is range of possible values for each of the four decimal numbers?
   0 – 255

4) What organization manages the .org TLD?
   This might require a bit of searching: The .org TLD is managed by PIR, the Public Interest Registry.

5) What is the Domain Name System (DNS) application-layer protocol used for? What transport-layer protocol does it make use of?
   The DNS protocol uses UDP, and is used to resolve human-friendly word-based web addresses into Network-layer IP addresses and alias web and mail servers.

6) In an internet name, what is the highest-priority component? The second-highest priority component? What are subsequently prioritized components used for?
   The right-most (.com, .org) TLD is the highest priority. The next-leftmost ("Comcast" in www.comcast.net) is the domain name. fields to the left of this are used internally (such as "engr" in engr.oregonstate.edu) as host names.

7) Suppose that we send a DNS request with ID # 46921.
   a. What is the little-endian representation (hexadecimal)? __0x49B7__
   b. What is the big-endian representation (hexadecimal)? __0xB749__
   c. Which representation is required for network communication?
      Network order is big-endian, so 0xB749