Answer to Homework 01

1. A **host** (also known as "network host") is a computer or other device that communicates with other hosts on a network. Hosts on a network include clients and servers -- that send or receive data, services or applications.
   Network Device is a physical equipment or component that are required for communication and interaction between hardware on a computer network.
   A peripheral device is an external device that is used to connect to and work with a computer to either put information into it and get information out of it.
   Guide Media is a type of transmission media that are using a physical link such as twist pair cable, coaxial cable and optic fibre cable to transmit data.
   Unguided Media is another type of transmission media that are using non-physical link such as wireless to transmit data.
2. Calculate propagation delay of the link :
   Formula : propagation delay = distance / speed
   Distance = $36000\,km = 36 \times 10^6\,meter$
   Speed = $2.4 \times 10^8\,meter/sec$

   So : Propagation delay = $\frac{36 \times 10^6}{2.4 \times 10^8} = 15 \times 10^{-2}\,sec$

   Calculate Bandwidth delay product :

   Formula : Bandwidth delay product = $Propagation\,delay \times microwave\,link\,capacity$
   Microwave link capacity = 10 Mbps

   So : Bandwidth delay = $15 \times 10^{-2} \times 10^7 = 15 \times 10^5\,bits = 1.5\,Mb$

   Calculate maximum value of x that is denoted the size of photo:

   Every minute the satellite takes a digital photo and sends it to the base station

   So minimum value of x = $transmission\,rate \times 60\,sec$ ¿ $10^7 \times 60 = 6 \times 10^8\,bits$
3. **Protocols and standards** make networks work together. Protocols make it possible for the various components of a network to communicate with each other, and standards make it possible for different manufacturers' network components to work together.
4. Five layer on the internet protocols and its responsibility :
   1. Application : is responsible for providing service to the user.
   2. Transport : is responsible for delivery of an entire message from an application program on the source device to a similar application program on the destination device.
   3. Network : is responsible for delivery of packets across multiple networks.
   4. Data Link : is responsible for the delivery of individual packets from the source host to the destination host.
   5. Physical : is responsible for movements of individual bits from on hop(node) to the next.
5. **Internet Exchange Point (IX)** is the physical infrastructure through which Internet service providers (ISPs) and content delivery networks (CDNs) exchange Internet traffic between their networks.
6. **Wireshark tool** is used to monitor and analysis. And we can captures packets from a network connection, such as from your computer to your home office or the internet.