NAWP -Lab 2

Implement a Client-Server communication between two machines for the following scenario:

> **The client takes a file name from the user, communicates to the Server. Server communicates the content of the file back to the client. Later the client displays/ executes the file.**

The scenario has to be tested for 1) a text file transfer (using Streams) 2) a video/audio file (using datagram).

Also study the question given below. Give the RFC or appropriate other references wherever required.

1. Did you assign any port number to the Client? How is port number assigned to the client? How does the server learn about the IP and Port addresses of the client machine? What are their values received at the server process during the executions?
2. What is meant by INADDR_ANY? How it is useful?
3. When do you specify a non-zero protocol value in socket? What are the possible values for domain argument?
4. What are the different categories of port addresses? Give any 10 well known port addresses.
5. What could be the possible values for number of connection argument (2nd) in listen during your testing?
6. By default, what is the nature of these functions, blocking or non-blocking? How to make them in the opposite? listen, accept, connect, send, recv
7. Explain the usage of the functions, gethostbyname, gethostbyaddr, inet_addr, inet_ntoa.
8. Given big-endian machines don't need conversion routines and little-endian machines do, how do we avoid writing two versions of code?
9. Why does accept function return another socket id? Why not to use the first socket id in send and receive? Justify.
10. What are Raw sockets? How they are useful in promiscuous mode?
11. Execute ifconfig command and answer the following:
    a. What are *Ethn* and *lo*?
    b. Briefly explain the purpose and value of the different items mentioned under *Ethn*?
    c. Why txqueuelen is non zero with *Ethn* and zero with *lo*?
    d. What is the observed utilization % of the channel?
    e. Why MTU is different with *Ethn* and *lo*?
    f. Some of the items which are there with *Ethn* are missing with *lo*. Why?
12. Try testing the following scenarios for a video file transfer and observe:
    a. When only the client and server processes are alone executed running on your machine, what is the quality of received file? Are they same as at the sender? If not, give your reason.
    b. Using some sort of benchmarking function, overload the processor and at this time execute both the applications. How much time will be taken for the data transfer? What is the quality of the received file? Why?