


University : Menoufia		Date : 29/05/2019
Faculty : Electronic Engineering		Time : 3 Hours
Department : Comp. Science & Eng.		No. of pages : 1
Academic level : 4 th Year, 2 nd term		Full Mark : 60 Marks
Course Name : Network Programming		Exam : Final Exam
Course Code : CSE 423		Examiner : Prof. Dr. Ayman EL-SAYED

Answer the Following Questions

The First Question **(12 marks)**

- (a) Draw the various protocols in TCP/IP model?
- (b) Write the socket address data structure for IPv4.
- (c) By what you can identify the connection between two hosts.
- (d) What is this function do : `struct timeval tm; tm.tv_sec=2; tm.tv_usec=0; select (10, NULL, NULL, NULL, &tm);`

The Second Question **(16 marks)**

- (a) Explain with drawing the socket functions for both TCP client-server.
- (b) Describe both Little-endian byte order and big-endian byte order.
- (c) Describe by using drawing the I/O models.
- (d) What is the function of The following functions with write its declarations:
 - i. `inet_aton(...)` function.
 - ii. `ntohs(...)` function.

The Third Question **(12 marks)**

- (a) Explain by drawing the socket address structure passed from process to kernel and vice versa.
- (b) How to implement the client program and server program that shown in the following figure.

stdin
 stdout

fgets
 fputs

TCP client

writen
 readline

readline
 writen

TCP server
- (c) In the TCP connection, the receiver has to know the number of bytes which it receives, it is a problem of the synchronization, how to solve this problem?

The Fourth Question **(10 marks)**

- (a) Design and implement a network chatting program with exchanging files among a group of clients, How to think about it and by using drawing show the connectivity between the clients. Your answer has to consist of the functions prototype, and the message format.
- (b) If you have a customer needs a program to use in his company that have many branches in the world. Any branch needs to know the time of another branches. Design and write the necessary code for that.

The Fifth Question **(10 marks)**

Design and implement a protocol in application layer that introduces one source to many destination (one-to-many) service, this protocol is called End-System Multicast (ESM). ESM is by nature centralized, everything being controlled by a single host, called Rendezvous Point (RP). Everything is under control of RP.

Achieved ILOS :

	Question No	Q1			Q2				Q3			Q4		Q5
		a	b	c	a	b	c	d	a	b	c	a	b	—
Achieved ILOS	A- Knowledge & Understanding													
	B- Intellectual skills													
	C- Professional and practical skills													
	D- General and transferable skills													