TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT 13T)

EIT 4420: NETWORK PROGRAMMING

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Define the following terms:
(i) Socket
(ii) Multithreading
(iii) System call **(3 marks)**

b) Outline the steps followed by clients to establish the connection with a server **(4 marks)**

c) Briefly describe and illustrate with diagram the three multithreading models **(6 marks)**

d) Briefly describe the TWO types of (TCP/IP) sockets **(2 marks)**

e) Explain the meaning of the following codes involving sockets.
(i) Int sockid=socket (family, type, protocol) **(3 marks)**
(ii) States = close (sockid) **(3 marks)**

f) Explain the importance of Net remoting **(3 marks)**

g) Explain TWO memory management requirements **(2 marks)**

h) Explain the main difference between UTP and UDP in network programming connections, outlining two specific characteristics in each case. **(4 marks)**

Question Two

a) With the aid of a diagram client-server communication using TCP socket. **(9 marks)**

b) State TWO problems associated with threads **(2 marks)**

c) Outline THREE ways in which a socket can be uniquely identified **(6 marks)**

Question Three

a) Describe TWO of the following operations involving sockets.
- **(i)** Int status = bind (sockid, & addroport, size)
- **(ii)** Int status = listen (sockid, queue limit)
- **(iii)** Int s=accept (sockid, & client Addr, and addrlen) **(4 marks)**

b) Describe TWO circumstances under which the following network topologies can be implemented:
- **(i)** Bus
- **(ii)** Mesh

c) Distinguish between a broader and a gateway. **(2 marks)**

d) Concurrent processing is fundamental to distributed computing and occurs in many forms. State any two of these forms. **(2 marks)**

e) Briefly describe at least four socket APs **(4 marks)**

f) Distinguish between the following process control system calls:
- **(i)** Fork ( ) and malloc ( )
- **(ii)** Free ( ) and waitpid ( ) **(4 marks)**

Question Four

a) Explain how an application program makes system calls. **(6 marks)**

b) Draw a labeled diagram of remoting architecture. **(6 marks)**

c) Outline TWO main differences between normal web services and net remoting **(4 marks)**

d) Describe TWO common network interface connections cards **(4 marks)**

Question Five

a) Write a program in C/C++ that implement communication between client server in socket programming **(10 marks)**

b) Write a program in C/C++ that implement the creating and termination of threads **(10 marks)**