

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

TTP3121 – TCP/IP PROGRAMMING (All Sections / Groups)

08 OCTOBER 2015
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 printed pages including cover page with 5 questions only.
2. Attempt **FOUR** out of **FIVE** questions. All questions carry equal marks and the distribution of marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Question 1 [10 Marks]

- (a) State the differences between connection-oriented and connectionless mode of communication. Give **ONE (1)** example of transport protocol for each of the connection modes.
[4 Marks]
- (b) The network/internet layer in TCP/IP protocols is responsible for addressing, packaging, and routing functions. Apart from Internet Protocol (IP), describe the other **THREE (3)** network layer protocols used to support the functions of this layer.
[3 Marks]
- (c) Describe the Three-Way Handshake procedure in TCP connection management.
[3 Marks]

Question 2 [10 Marks]

- (a) Differentiate between program and process in operating system (OS).
[3 Marks]
- (b) Write a simple C program that displays the following output when it is being executed as the input shown below.

Input:

```
./test My name is Ahmad
```

Output:

```
Input 1: ./test
Input 2: My
Input 3: name
Input 4: is
Input 5: Ahmad
```

[6 Marks]

- (c) Explain the function of `getenv()` system call.

[1 Mark]

Continued ...

Question 3 [10 Marks]

- (a) List two I/O methods available under UNIX systems.

[2 Marks]

- (b) Determine the output of the following code snippet, given the input file as shown below.

```
$ cat testfile.txt
This is a test file that will be used to demonstrate the
use of lseek.
```

```
//code snippet

int main()
{
    int file=0;
    if((file=open("testfile.txt",O_RDONLY)) < -1)
        return 1;

    char buffer[19];
    if(read(file,buffer,19) != 19) return 1;
    printf("%s\n",buffer);

    if(lseek(file,10,SEEK_SET) < 0) return 1;

    if(read(file,buffer,19) != 19) return 1;
    printf("%s\n",buffer);

    return 0;
}
```

[4 Marks]

- (c) Discuss in details **TWO (2)** uses of fork operation.

[4 Marks]

Continued ...

Question 4 [10 Marks]

- (a) Define a signal. [1 Mark]
- (b) Describe **THREE (3)** ways information is shared between UNIX processes. [3 Marks]
- (c) Discuss **TWO (2)** differences between pipes and FIFO in inter-process communication. [4 Marks]
- (d) Identify the function of `msgget()` in message queues. List **TWO (2)** parameters required in this function. [2 Marks]

Question 5 [10 Marks]

- (a) Given two clients with IP addresses 206.168.112.218 and 206.168.112.219 are connecting to a server with an IP address of 12.106.32.254 on TCP port 21. With an aid of diagram, describe how does the server handle the connection requests. [4 Marks]
- (b) Explain briefly the functions of `getsockname()` and `getpeername()`? [2 Marks]
- (c) Discuss the parameter passing limitation in the Remote Procedure Call (RPC) design. Suggest **ONE (1)** solution to overcome this limitation. [4 Marks]

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