UNIVERSITI TUNKU ABDUL RAHMAN

ACADEMIC YEAR 2016/2017

APRIL EXAMINATION

**UEEN3113/UEEN3413 SERVER CONFIGURATION AND MANAGEMENT**

THURSDAY, 4 MAY 2017                TIME : 2.00 PM – 4.00 PM (2 HOURS)

BACHELOR OF SCIENCE (HONS) SOFTWARE ENGINEERING
BACHELOR OF ENGINEERING (HONS) ELECTRONICS
(COMPUTER NETWORKING)

**Instruction to Candidates :**

This question paper consists of **FIVE(5)** questions
**Section A** has **THREE (3)** questions and **Section B** has **TWO(2)** questions

Answer **ALL** questions in **Section A** and **ONE (1)** question in **Section B**. All questions carry equal marks.

Answer the question in the answer booklet provided.

SECTION A: Answer all questions

Q1.  (a)  Explain the following client/server architecture terms:

(i)  Thin Client                                              (3 marks)

(ii)  Fat Client                                              (3 marks)

(iii)  Fat Servers                                            (3 marks)

(b)  Using the following diagram, explain the benefits of multi-tier client/server architecture systems:

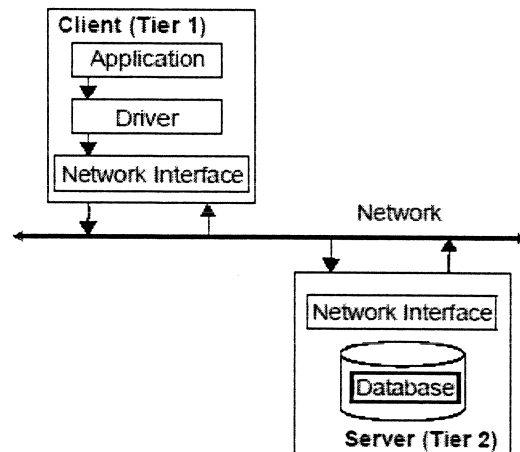(i)  Two- Tier Client Server Model                            (4 marks)



Figure 1.0 Two Tier Client-Server Architecture

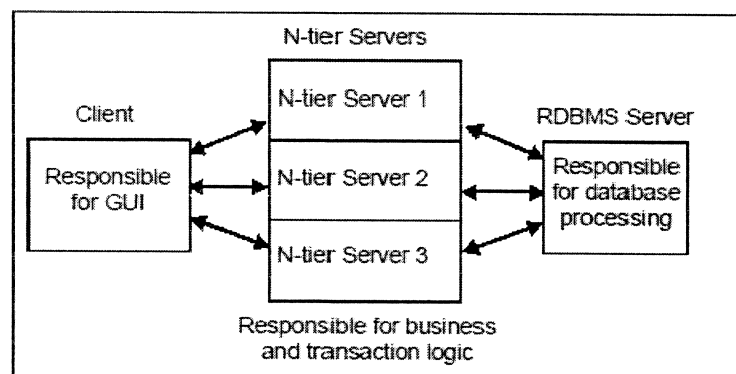(ii)  N-Tier Client Server Model                              (4 marks)



Figure 1.1 Three Tier Client-Server Architecture

Q1. (Continued)

(c)   In Linux, the common types of hard disks are the Integrated Device Electronic (IDE) disk and Native Small Computer System Interface (SCSI) disk. Using an example, explain the value X and Y for the partition /dev/sdXY for both IDE and SCSI type disk. (6 marks)

(d)   A student has just installed an Ubuntu server on his machine. However, his attempt to install the C++ compiler and several other packages ended up in failure. Explain two possible causes to the failure of installation. Note, there is no fault in the network. (2 marks)

[Total : 25 marks]

Q2.   (a)   Figure 2.0 shows an output generated from the invocation of netstat –r.

```
[root@server ~]# netstat -r
Kernel IP routing table
Destination   Gateway      Genmask         Flags  MSS  Window  irtt  Iface
192.168.1.0   0.0.0.0      255.255.255.0   U      0    0       0     eth0
127.0.0.0     0.0.0.0      255.0.0.0       U      0    0       0     lo
Default       192.168.1.1  0.0.0.0         UG     0    0       0     eth0
```

Figure 2.0 The Kernel IP Routing Table

(i)   From the generated output, identify what information can be extracted. (6 marks)

(ii)   If you want to generate an IPv6 routing table instead, how should the *netstat* command be invoked? (1 mark)

(b)   Figure 2.1 shows an output generated from the invocation of another variation of the command netstat.

```
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address       Foreign Address       State
tcp      0      0 0.0.0.0:111          0.0.0.0:*             LISTEN
tcp      0      0 0.0.0.0:22           0.0.0.0:*             LISTEN
tcp      0      0 127.0.0.1:631        0.0.0.0:*             LISTEN
tcp      0      0 0.0.0.0:48600        0.0.0.0:*             LISTEN
tcp      0      0 192.168.1.4:22       192.168.1.135:52248   ESTABLISHED
tcp      0      0 :::111               :::*                  LISTEN
udp      0      0 0.0.0.0:776          0.0.0.0:*
```

Figure 2.1 Active Internet Connections

(i)   What was the netstat command with parameters used to generate the above output? (2 marks)

(ii)   Explain the purpose of each parameter used that resulted in the above output. (8 marks)

This question paper consists of 5 questions on 6 printed pages.

Q1. (Continued)

(c) In Debian like systems, network configuration is done via the /etc/network/interfaces file. Figure 2.2 shows the first few lines of the configuration file.

```
# The loopback network interface
auto lo
iface lo inet loopback

#the first network interface eth0
auto eth0
```

Figure 2.2 Interfaces File Configuration

(i) Write the remaining lines for interface eth0 to be configured as a static interface. The ip address is 192.168.1.55/24 with the gateway as the last usable address. (4 marks)

(ii) If there is a second interface eth1, configure it to use DHCP (2 marks)

(iii) After configuring the file, what steps should be taken to get the configuration up and running. (2 marks)

[Total : 25 marks]

Q3. (a) Explain what drives the rising interest in Information Technology (IT) governance. (8 marks)

(b) The following are SIX(6) classic IT challenges listed in the COBIT framework. Select any THREE(3) and explain the potential risks and control objective. (17 marks)

```
1 Keeping IT Running
2 Managing Costs
3 Value
4 Security
5 Mastering Complexity
6 Aligning IT with Business
```

[Total : 25 marks]

## SECTION B: Answer ONE(1) question only

Q4.   (a)   You have been appointed a new role as a Linux/Ubuntu server administrator. Your first task is to relook into the users permission and groups in the server. Answer the following questions.

        (i)     Write the command to list all the users info (login, UID, encrypted password, GID, home directory, login shell, etc) in the server.

(2 marks)

        (ii)    The list generated from (i) is very long. You want to extract a particular user with the username Simon. Write the necessary command to extract only Simon's details.     (2 marks)

        (iii)   Remove the user selected in (ii) from the server. Write the necessary command to remove the user and all files and directories attached to the user.     (2 marks)

        (iv)   Add yourself into the adm (admin) and sudo group to avoid configuration as a root. Write the necessary commands.     (2 marks)

   (b)   Staff in your organisation wants to have a dedicated webpage. As an administrator, you have enabled this option by writing the following command:

*$ sudo a2enmod userdir*

        (i)     What does the above command do?     (2 marks)

        (ii)    Write down all the remaining steps that the user must do to enable access to the user's directory. Access to the user directory is in the format (http://localhost/~<username>).     (8 marks)

        (iii)   If you decide to block the user John from getting the above access, write the configuration line and the file name where the configuration must take place.     (4 marks)

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Q4. (Continued)

    (c)    The following is an extract from the file /etc/samba/smb.conf in a Samba Server. The configuration is incomplete.

```
[samba-share]
Comment= This folder contains
shared documents
(a)      _____
(b)      _____
(c)      _____
```

        Complete (a),(b),(c) where (a) indicates the actual location of the files, (b) specifies that password is not required for access and (c) indicates that users cannot modify the files stored therein.    **(3 marks)**

        **[Total : 25 marks]**

Q5.    (a)    In Network File System (NFS), write the FIVE(5) steps involved in the client making a request to mount a server's exported file system. Note, the client has all the necessary permission to mount the required partition.    **(10 marks)**

    (b)    You have just installed the Apache2 server on your Ubuntu machine. Answer the following questions:

        (i)    How would you check if the Apache server is running without using a browser?    **(2 marks)**

        (ii)    You planned to add another virtual server named www.mynewserver.com. In which directory would you configure this virtual server?    **(2 marks)**

        (iii)    How would you enable this webserver to be accessed to the outside world?    **(4 marks)**

    (c)    Using the symbolic form for chmod (change mode), change the permission for file testutar.sh so that:

        (i)    It is executable by the owner.    **(2 marks)**

        (ii)    It is executable by the owner and the group.    **(2 marks)**

        (iii)    Other users don't have read, write and execute permissions.    **(3 marks)**

        **[Total : 25 marks]**

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This question paper consists of 5 questions on 6 printed pages.