Matric No: _____

NAPIER UNIVERSITY

SCHOOL OF COMPUTING

CO32034

SERVER ADMINISTRATION

ACADEMIC SESSION: 2004-2005

DIET: MAY

TRIMESTER: TWO

EXAM DURATION: 2 HOURS

READING TIME: NONE

EXAM PAPER INFORMATION

Answer ALL questions.

Write the answers into your answer book.

Number of pages - SEVEN

Number of questions – TWENTY

All exam papers to be returned to the examiner.

OPEN BOOK EXAMINATION

EXAMINERS: UTA PRISS & GORDON RUSSELL

PLEASE READ FULL INSTRUCTIONS BEFORE COMMENCING WRITING

Short Answer Questions: Please answer in your script book

Instructions for short-answer questions: Use complete sentences. The length of your answer should be one to three sentences or, where required, a few lines of code.

1. Basic Unix:
   The following commands are typed on a Unix computer. It can be assumed that the directories and files "root", "etc" and "motd" exist as indicated.

   ```
   cd /root
   mkdir temporary
   cd temporary
   touch hello.txt
   cd /etc
   cp motd /root/temporary
   cd ..
   cd /root/temporary
   pwd; ls *.*
   ```

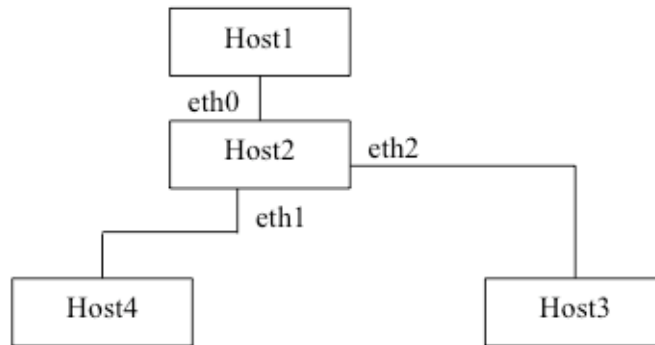   What is printed on the screen in response to the last line of the commands?

   (2)

2. Basic Unix Admin:
   In a future Linux distribution a new daemon called "supportd" might be added, which provides an integrated means for bug reporting and support queries. The commands for interacting with this daemon should be similar to the already existing daemon for system logs. Which directory should be used for the start-up information of the daemon? List the commands for starting and stopping the daemon.

   (2)

3. Networking:
   Consider the following topology:


   ```
   Host1: Provide a Gateway 100.0.1.10/24 for Host2 (100.0.1.11/24).
   Host2: Provides 100.0.1.11/24 towards Host1, 100.0.2.254 towards Host3,
        and 100.0.3.254/24 towards Host4.
   Host3: 100.0.2.5/24
   Host4: 100.0.3.10/24
   ```

   From the point of view of Host2, provide the three ifconfig commands to set up eth0, eth1, and eth2.

   (2)

4. Networking:
   Continuing the previous question, provide route or ip route commands to set up the routing for this configuration, assuming that the Ethernet devices are already configured correctly.

   (2)

5. Firewall:
   A packet that comes in on eth0 and is destined to go out on eth1 will travel through which table and which chain of the iptables structure?

   (2)

6. Firewall:
   Write a firewall rule to provide filtering so that packets arriving on eth0 destined for the localhost will be rejected if the destination port is http, and the source address is not 50.1.2.6.

   (2)

7. User Administration:
   Two departments of an organisation are to be merged. Before the merger, both departments maintain their own Linux systems. Now, all users are to be moved to shared larger server. As a first step, it is required to rename all user accounts to avoid duplicate user names. Using the example of user "smith", write a list of steps to be taken to change this account to "smith01" in a Linux environment. List any commands used or any changes made to any configuration files. After the changes, the user must have the same permissions as before.

   (2)

8. Hacking and Security:
   With respect to a Linux virtual machine as used in the Linuxzoo tutorials, name a command that should be disabled to prevent users from hacking into local resources. Describe briefly why it would be dangerous not to disable that command.

   (2)

9. DNS:
   Find 4 problems in the following zone file:

```
$STL 3D
@    1D  IN      SOA     ns.linux.com. ns. (
                         199802151        ; serial
                         8H               ; refresh
                         2H               ; retry
                         4W               ; expire
                         1D )             ; minimum
     1D  IN      NS      ns
     1D  IN      A       167.154.234.1
 www 1D  IN      A       167.154.234.20
ns   1D  IN      A       167.154.234.2765
```

   (2)

10. DNS:
    For the zone file in the previous question: write lines so that mail addressed to someone@linux.com is handled by mail.linux.com or, if that machine is down, by mail2.linux.com. Use priority numbers 20 and 30.

11. Apache:
    Htaccess uses two files (.htaccess and the password file). In which directories should these two files be stored? Why should they be stored in these directories?

    (2)

12. Apache:
    The following is an htaccess file of a fictitious student on the students' DCS account.

```
AuthType Basics
AuthName "Password Required"
AuthUserFile /home/~09006754/.www-password
AuthGroupFile /dev/nulli
<Limit GET POST>
Request user server_admin
</Limit>
```

    Find 4 errors in the file.

    (2)

13. Apache Rewrite:
    Produce the rules so that all requests which are not for "www.linux.net" are rewritten to "support.linux.net".

    (2)

14. Email:
Consider the following email header:

```
Received: from owatemp.napier.ac.uk [146.176.222.13]
        by localhost with IMAP (fetchmail-5.8.17)
        for u.priss@localhost (single-drop); Fri, 11 Mar 2005 10:51:26 +0000 (GMT)
Received: from mer-w2003-6.napier-mail.napier.ac.uk ([146.176.223.1]) by
    EVS1.napier-mail.napier.ac.uk with Microsoft SMTPSVC(6.0.3790.211);
         Fri, 11 Mar 2005 10:45:58 +0000
Received: from pc162126.napier.ac.uk (Not Verified[81.154.129.122]) by
    mer-w2003-6.napier-mail.napier.ac.uk with NetIQ MailMarshal (v6,0,3,8)
        id <B423176e60000>; Fri, 11 Mar 2005 10:45:58 +0000
Received: by pc162126.napier.ac.uk (8.12.7/8.12.2) id j2BApLq4003485;
        Fri, 11 Mar 2005 10:51:21 GMT
Date: Fri, 11 Mar 2005 10:51:21 +0000 (GMT)
From: Uta Priss <u.priss@napier.ac.uk>
To: u.priss@napier.ac.uk
Message-ID: <Pine.OSX.4.55.0503111051100.3484@pc162126>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
X-OriginalArrivalTime: 11 Mar 2005 10:45:58.0673 (UTC)
    FILETIME=[829B6810:01C52627]
```

From sender to receiver, list the names of the computers which this email message
went through (you can abbreviate the names). How many different computers were
involved?

(2)

15. Email:
According to the email header in the previous question, how long did it take for the
email to travel from the sender to the receiver? What is odd about the timing and how
can that be explained?

(2)

16. Email:
A user Jim has two different email accounts: one on a local server and a hotmail
account. Jim wants to configure his local email client so that he can send email using
his hotmail email address as a return address from the local machine. In addition to
the domain name of his hotmail account, which is different from his local domain, his
username is also different on hotmail and on the local machine. Jim does not have
superuser privileges for his local mail server. Which of the three mail agents, MUA,
MTA, MDA, can be configured by Jim? Which of the three mail agents, MUA, MTA,
MDA, can be used to alter which part of Jim's email address? Can Jim achieve his
goal?

(2)

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17. MySQL:
    A website which uses MySQL for all of its web pages is suffering from poor performance. List 4 key issues that could be done to tackle this performance issue.

    (2)

18. General Systems Administration:
    Name one tool (or command) for monitoring network traffic and one for monitoring process load. For each tool write one sentence explaining how the tool is used.

    (2)

19. Non-Linux OS:
    The following lines originate from a script in some scripting language where backticks (') indicate system calls to the operating system. A Linux system administrator has written this script for the purpose of creating user accounts.

    ```
    for u in $ROOT/newuserlist/*
    do
    'adduser $u'
    done
    ```

    What problems are encountered when this script is used in some Non-Linux Unix operating systems such as Solaris or OS X?

    (2)

20. Non-Linux OS:
    What happens if the command

    ```
    cp Exam.txt exam.txt
    ```

    is executed on OS X? Why is the execution of this command on OS X different from its execution on Solaris? Does this difference also affect the ls command?

    (2)

    Total marks: [40]

End of Paper