SEMESTER 2 EXAMINATIONS 2013/2014

MODULE: CA651/A – Introduction to Networks & Op Systems

PROGRAMME(S):
- GDF Grad Diploma in Information Technology
- GDF
- ECSA Study Abroad (Engineering & Computing)

YEAR OF STUDY: 1,2,X

EXAMINERS:
- Dr Mark Humphrys (Ext:8059)
- Dr. Lorraine McGinty
- Dr. John Cardiff

TIME ALLOWED: 3 Hours

INSTRUCTIONS: Answer all three sections (multiple choice, long questions, bonus question). Detailed instructions inside. Both answer-book and multiple-choice answer-sheet to be handed up.

PLEASE DO NOT TURN OVER THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

The use of programmable or text storing calculators is expressly forbidden.

Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones.

Requirements for this paper (Please mark (X) as appropriate)

☐ Log Tables
☐ Graph Paper
☐ Dictionaries
☐ Statistical Tables
☐ Thermodynamic Tables
☐ Actuarial Tables
☐ MCQ Only – Do not publish
Multiple choice - OS

Answer all 20 multiple-choice questions on the multiple-choice answersheet. Only the filled-in boxes will be looked at. NO additional commentary or analysis will be read. 3 marks each. There is no negative marking. Total 60 marks.

1. On Windows, `C:\Users\me` is the equivalent of what on UNIX/Linux?
   1. `/`
   2. `/bin`
   3. `$PATH`
   4. `$PATH/bin`
   5. `$HOME`
   6. `$HOME/bin`
   7. `/users/group`
   8. `/users`

2. Which of the following does not take you to your home directory?
   1. `cd`
   2. `cd ~`
   3. `cd .`
   4. `cd $HOME`
   5. `cd $HOME/public_html/..`

3. When you login to DCU Linux, the commands `cd /` followed by `mkdir stuff` cause what to happen?
   1. Syntax error.
   2. Permissions error.
   3. Goes to home directory, makes a sub-directory.
   4. Goes to parent directory, makes a sub-directory.
   5. Goes to root directory, makes a sub-directory.
   6. Makes a sub-directory in current directory.
4. When you login to DCU Linux, the commands `cd $HOME/..` followed by `mkdir stuff` cause what to happen?
   1. Syntax error.
   2. Permissions error.
   3. Goes to home directory, makes a sub-directory.
   4. Goes to parent directory, makes a sub-directory.
   5. Goes to root directory, makes a sub-directory.
   6. Makes a sub-directory in current directory.

5. I am in the directory `/stuff/and/things` and I type: `cd ../more/things` - What directory am I in now?
   1. /more/things
   2. /stuff/and/more/things
   3. /stuff/more/things
   4. /stuff/and/things/more/things
   5. The command is an error.

6. I am in the directory `/stuff/and/things` and I type: `cd more/things` - What directory am I in now?
   1. /more/things
   2. /stuff/and/more/things
   3. /stuff/more/things
   4. /stuff/and/things/more/things
   5. The command is an error.

7. If your directory is executable but not readable, what does it mean?
   1. People can list the files in the directory, and access them, but not alter them.
   2. Nobody can access the directory.
   3. People can execute programs in the directory.
   4. People can execute programs in the directory, but not read them.
   5. People can access the files in the directory, but only if they know their names.
   6. People can list the directory contents, but not access the files.
   7. Your directory cannot be executable but not readable.

8. Only one of the following makes any kind of sense as a possible permission field for a UNIX file. Which one?
   1. --w--------
   2. -----rwxrwx
   3. -r--------
   4. --rwx------
   5. -----r-----
9. In UNIX, when 2 programs have the same name:
   1. The one that is found earliest in the PATH will be executed.
   2. The system program will be executed over the user program.
   3. The user program will be executed over the system program.
   4. There is a file system error.

10. Why is it a security risk to put "." in the PATH?
    1. Other users’ programs might use the same names as system programs.
    2. You could end up running system programs instead of your own programs.
    3. You could end up running your own programs instead of system programs.
    4. Other users can then read your current directory.

11. What will this Shell script do?

    ```
    for i in *
    do
        rm $i
    done
    ```

    1. Remove all the files given in the arguments to the program.
    2. Remove all the files in the current directory.
    3. Remove all hidden files in the current directory.
    4. Remove all the files in the current directory, except for hidden files.
    5. It is a syntax error.

12. When you login to DCU Linux, what will this Shell script do?

    ```
    cd /
    ls -alR > outputfile.log
    ```

    1. Build a list of all the files and directories on the disk.
    2. Build a list of some of the files and directories on the disk.
    3. Fail because we cannot read the root directory.
    4. Fail because it cannot write the output.
    5. Fail because the output filename is bad.

13. When you login to DCU Linux, what will this Shell script do?

    ```
    cd /
    ls -alR > $HOME/outputfile.log
    ```
1. Build a list of all the files and directories on the disk.
2. Build a list of some of the files and directories on the disk.
3. Fail because we cannot read the root directory.
4. Fail because it cannot write the output.
5. Fail because the output filename is bad.

14. To search for lines containing "Scot" but excluding lines containing "Scotland" we do:
   1. `grep Scotland | grep Scot`
   2. `grep Scotland | grep -v Scot`
   3. `grep -v Scotland | grep Scot`
   4. `grep -v Scotland | grep -v Scot`
   5. None of the above.

15. In my Shakespeare directory, you are curious if Shakespeare ever wrote an Act 7 of a play. Which of the following will not answer that question?
   1. `echo */act7*`
   2. `ls */act7*`
   3. `ls */act*`
   4. `ls act7*`
   5. `find . -name "act7*"`

16. This shell conditional:
    ```bash
    if test "$1" = "1"
    ```
    is true if:
    1. 1 = 1 (i.e. is always true).
    2. The number of arguments = 1.
    3. The variable "1" is true.
    4. The first argument is true.
    5. The first argument is the string "1".

17. You write a Shell script called "prog" and call it as follows:
    ```bash
    prog *
    ```
    Your program has:
    1. One argument.
    2. Two arguments.
    3. No arguments.
    4. A variable number of arguments.
    5. An infinite number of arguments.
18. This command:
   `sed -e 's|<|\&lt;|g'`
   1. is blanking out the start of HTML tags.
   2. is displaying the start of HTML tags but not getting them interpreted.
   3. is removing HTML tags.
   4. is redirecting output to a file.
   5. is a syntax error.

19. This command:
   `sed -e 's| \&lt;|g'`
   1. is blanking out the start of HTML tags.
   2. is displaying the start of HTML tags but not getting them interpreted.
   3. is removing HTML tags.
   4. is redirecting output to a file.
   5. is a syntax error.

20. Typing the command `man man > man` does what?
   1. Syntax error.
   2. Correct syntax, but bad argument to "man".
   3. "man" should only appear once.
   4. "man" should only appear twice.
   5. Permissions error.
Long question - Networks

Answer 1 out of the 2 long questions. 30 marks.

Question 1 [Total marks: 30]

1(a) Explain the following aspects of modern web sites and web applications. [6 marks, 3 marks each]
   i) HTML
   ii) XML

1(b) Explain the following aspects of modern web sites and web applications. [24 marks, 4 marks each]
   i) CSS
   ii) SSI
   iii) CGI
   iv) PHP
   v) Javascript
   vi) Ajax
Question 2  

2(a) In the basic scheme of IP addressing, how many IP addresses are there?  

2(b) DCU has been assigned the addresses 136.206.0.0 - 136.206.255.255. How many addresses does DCU have?  

2(c) Explain Subnetting.  

2(d) Typing the command "ipconfig" in DCU yields: "Subnet Mask ... 255.255.255.0". What does this mean?  

2(e) In the early ARPANET and BITNET, each host kept a list of all other hosts. What does the Internet do now instead? Why?  

2(f) A site like DCU “doesn’t need permission to add new machines to the Internet, nor does it need to publicise those machines”. How so? What does this mean?  

Bonus questions  

Answer the 2 bonus questions. 5 marks each. Total 10 marks.  

1. Networks: Tell me about some interesting site or software on the Internet, that was not on the course.  

2. OS: Tell me about some interesting feature of an operating system (Windows, Mac, UNIX, Linux, or any other) that was not on the course.
CA651 - Introduction to Networks and Operating Systems - 2014

Answer sheet

Black out the square that matches the correct answer.

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Class:_____________________
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