Tutor-marked assignment
TMA 03

Introduction

The cut-off date is **29 April 2021** (12 noon UK local time).

This TMA counts for 20% of the assessment on TM129. The weightings of the other assignments are listed in the *Module Guide*. Each TMA is marked out of 100.

Submitting your TMA

This module uses the online TMA/EMA (eTMA) service for submission of TMAs. To submit your TMA go to the Assessment page and follow the link provided.

Give your name, your personal identifier, the module code and the assignment number at the start of your assignment. It will help your tutor if you save your TMA document with a file name that includes your name, the module code and the TMA identifier – for example `ChrisSmith_TM129_TMA03.doc`.

You should create **one** file for this TMA. This file should contain your answers to all TMA questions including the ePortfolio question.

If you foresee any difficulty with submitting your assignment on time, contact your tutor well in advance of the cut-off date.

For further information about policy, procedure and general submission of assignments please refer to the Assessment Handbook, which can be accessed via your StudentHome page.

Checklist before submission

Check the following before you submit your assignment:

- Have you answered mainly in your own words?
- If you have used short quotes, are they shown in quotation marks?
- Have you given references to your sources in the Cite Them Right Harvard style?
- Have you complied with the word limits?
- Are your screenshots legible? Are they cropped to show just important material?
- Is your document in an acceptable file format (.doc, .docx or .rtf)?

See the *Module Guide* and *Writing in your own words* for further guidance on these issues.

Question 1 (30 marks)

This question tests your knowledge of key concepts of operating systems.

a. Answer each of the following questions with a sentence or two.

    i. What is a daemon? State two roles that might be carried out by daemons.
    ii. What are the three types of access permissions for a file or directory?
    iii. What is the difference between physical and virtual memory?
    iv. What is the difference between Linux and GNU?
    v. Give two advantages of using Bash scripts over commands entered on the command line.

(10 marks)

b. In Linux, how is user management conducted? Include in your answer a brief description of what users and groups are, an explanation of types of user accounts and the main benefits of using groups. You should write no more than 150 words for this part of the question.

(10 marks)

c. Using the information in Table 1, fill in the correct values for the directory, File Allocation Table (FAT) and the disk blocks. The characters 'EOF' indicate the last block of a file. The file `aaa` contains a number of `a` characters, `bbb` contains `b` characters and `ccc` contains `c` characters.

(10 marks)

Table 1

Directory

file	start
aaa	1
bbb	
ccc	2

FAT

0	
1	6
2	
3	
4	5
5	9
6	7
7	
8	14
9	10
10	13
11	
12	
13	EOF

Disk bl

0	
1	aaaaaaa
2	ccccccc
3	
4	bbbbbbb
5	bbbbbbb
6	aaaaaaa
7	aaaaaaa
8	ccccccc
9	bbbbbbb
10	
11	aaaaaaa
12	
13	bbbbbbb

14	EOF	14	cccccccc
15		15	

Question 2 (30 marks)

This question tests your practical skills of using Linux.

For Linux, everything is considered a file, including regular files, directories, hardware devices and sockets. In this question, you are asked to carry out some practical activities to manipulate files using Linux. Include either screenshots or output from the command line to document your answers.

a. Outline how you would approach working out how to achieve a task through the command line when you don't know the appropriate commands.

   (4 marks)

b. Recursively list the subdirectories of `/usr/lib`, showing their contents by file size. For this question, you only need to display the command and first few lines (about 10) of the output.

   (6 marks)

c. Add a new user `fred` to your system, giving their account a userid of `1300`.

   (4 marks)

d. Create a new directory named `NewDir` which includes a new file `NewFile`. Using octal values, change the permissions of `NewFile` so that the user can write and execute but not read the file, and the group and others can write the file but not read or execute it.

(6 marks)

e. Describe what the command `base64 /dev/urandom | head -n 700 > NewFile.txt` does.

   (6 marks)

f. Compress `NewFile` into a new file named `NewFileComp` and make `NewFileComp` read-only for all users.

   (4 marks)

Question 3 (30 marks)

This question tests your ability to discuss topics around Linux and to perform basic research.

Imagine you have a spare desktop at home that you want to turn into a media centre using a Linux distribution.

a. Identify three different media centre Linux distributions. For each distribution, discuss two key features. Make a justified recommendation as to which distribution you should install, giving a brief reason for your choice.

   (12 marks)

b. Outline two ways of testing the distribution you have selected without installing it as your main operating system. Provide a positive and negative aspect of each way of testing the distribution you have outlined. Make a justified recommendation as to which mechanism you should use, giving a brief reason for your choice.

   (18 marks)

You should write no more than 500 words for this question. This word count is an indication of how much detail you should provide.

To answer this question, you will need to find additional information from the Internet. Reference the sources of information you obtained using the Cite Them Right Harvard style and following the guidance on Referencing and plagiarism. References do not count towards the word limit.

Question 4 (10 marks)

This question tests your engagement with your ePortfolio.

a. Pick two of the TM129 ePortfolio activities from the operating systems block.

   For each activity, first state which activity it is. Then provide a piece of evidence for having attempted the activity. This can take the form of a single screenshot (e.g. a screenshot of the command line showing your work), or a textual answer to an ePortfolio question.

   (2 marks)

b. Write a short description in which you tell your tutor about your experience of the ePortfolio activities. You can either focus on the two activities you chose for part (a), or consider all the ePortfolio activities across the block.

   In your description, you could discuss:

   - any aspects you found particularly interesting or challenging
   - any problems you encountered and how you dealt with them
   - anything you found surprising
   - what you found out that was new

- what skills you developed through the activity – this could be in terms of content (e.g. something specific about operating systems), technical skills (e.g. using command-line tools), study skills (e.g. communicating results), or soft skills (e.g. overcoming problems).

You do not need to reflect on all of these areas to receive full marks.

You should write no more than 250 words.

(8 marks)