



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

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JANUARY – APRIL 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 203: INTRODUCTION TO SYSTEM ADMINISTRATION

Date: APRIL 2018

Duration: 2 Hours

INSTRUCTIONS:

1. Attempt all Questions in Section A and any other two in Section B
2. Points will be given to clear and logical answers.
3. No reading materials are allowed into the exam room.

- Q1. a) Name and explain the role of any **five** top level directories that may be candidates to have their own partition **(5marks)**
- b) A particular Linux system has the user accounts **James, Ann, and John**. The paths below defines the user's directory structure. Reconstruct the Linux directory tree structure showing the users structure. **(5 marks)**
- i. /root/deleteaccounts.sh
 - ii. /home/James/Expenses/Transport.txt, /home/James/Expenses/miscellaneous.txt, /home/James/Expenses/Shoolfees.txt, /home/James/Expenses/Entertainment.txt,
 - iii. /home/James/Expenses/Budget.txt,
 - iv. /home/John/Expenses/January/Transport.txt, /home/John/Expenses/feb/Transport.txt, /home/John/Expenses/March/Transport.txt
 - v. /home/John/Expenses/January/Food.txt, /home/John/Expenses/feb/Food.txt, /home/John/Expenses/March/Food.txt, /home/John/Expenses/March/deleteaccounts.sh
 - vi. /home/John/Expenses/January/Entertainment.txt, /home/John/Expenses/feb/Entertainment.txt, /home/John/Expenses/March/Entertainment.txt,
 - vii. /home/Ann
- c) Refer to the directory structure you have constructed above

It is desired to copy the John's Expenses directory to Ann's home directory

- i) Who can by default do this?. **(1mark)**
 - ii) Give the command that can be used to achieve this. **(3marks)**
 - iii) Who created the /home/John/Expenses directory and sub directories ?. Give the command line used. **(2marks)**
 - iv) What is significance of the directories /home/Ann, /home/James and /home/John . Explain how they are created . **(2marks)**
 - v) You are user James and you wish to **see** a detailed picture of all the files you have in your Expenses directory. Give the command you would use assuming you just logged in. **(2marks)**
 - vi) You are a Linux system administration trainee and you have already learned of some entries in Linux named **.(dot)** and **..(dot dot)** What are their significance and how useful are they to Linux user. **(4marks)**
 - vii) The account James is the working account for the root user. You log in as James and wish to give give the ownership to your Expenses directory and its content to a new employee user **Joyce** who does not have an account. Explain how and the commands you will accomplish this. **(4 marks)**
- d) Give the run levels that will enable the following **(2 marks)**
- i) Disable the X-windows leaving the machine run in the shell.
 - ii) Enter into Linux maintenance mode
- Q2. a) Give four similarities and two Differences between the **stat** and **ls -il** commands when issued to a file. **(5 marks)**
- b) Give the permissions that results for the file /home/John/Expenses/January/Transport.txt when the following commands are executed assuming an initial permission of -rw----r--.
- i. `chmod g+rw /home/John/Expenses/January/Transport.txt` **(1 marks)**
 - ii. `chmod g=rw /home/John/Expenses/January/Transport.txt` **(1 marks)**
 - iii. `chmod 770 /home/John/Expenses/January/Transport.txt` **(2 marks)**
 - iv. `chmod g-rwx /home/John/Expenses/January/Transport.txt` **(2 marks)**
 - v. `chmod 4660 /home/John/Expenses/January/Transport.txt` **(2 marks)**
 - vi. `chmod 6660 /home/John/Expenses/January/Transport.txt` **(2 marks)**
- c) Discuss any six methods you can use to be more efficient when running past commands. **(3 marks)**

- d) Explain the significance of tab completion to a Linux user. (2 marks)
- Q3. a) Consider the file **food.txt as attached** . Also assume you logged in as the **John**. Write down the commands sequences that will factoring in the path to the file:
- ii. Display the number of food items in the shop : (1marks)
 - iii. Display the drinks in the shop : (1marks)
 - iv. Sort the file ascending by the UnitcostP column. (2marks)
 - v. Display the 10 most expensive items in the shop. (2marks)
 - vi. Display all the food items other than drinks sorted by UnitsellingP. (3marks)
 - vii. Redirect all the delmonte drinks sorted by UnitcostP to a file delmonte (4marks)
 - viii. Display the least expensive Soda. (3marks)
- b) Write the command you will need to:
- i) Empty the file food (2marks)
 - 1. *Return detailed information including the inode number of the file **food.txt*** (2marks)
- Q4. a) Explain the term journaling. Give at least any two file system that support journaling. (3 marks)
- b) You want to add a partition named /dev/sda6 from the /dev/sda disk and have it mounted on the /data. Describe the step by step procedure to accomplish this and use appropriate the relevant commands (8 marks)
- c) The **find** command is a utility that every administrator should be able to use. Discuss with **nine** examples. (9marks)
- Q5. a) There is a limits to the full size of a single file that you can have in an ext2 partition. Explain this statement in view of ext2 partition. (12 marks)
- b) Give examples in each on how you can use inode number to : (6 marks)
- i) Display the content of a file .

- ii) Delete a file
 - iii) Display in long format a file
- c) Explain the output of the command **df -i**. **(2 marks)**

food.txt

Category	Item	UnitCostP	Quantity	UnitSellingP
Grains	Beans	50	200	70
Grains	GreenGrams	70	100	80
Starch	Maize	20	500	40
Grains	Njahi	80	160	100
Drinks	TomatoJuiceDelmonte	100	120	125
Grains	Peas	40	200	70
Starch	Rice	40	200	70
Drinks	LimeJuiceDelmonte	100	120	125
Drinks	CokeSoda	40	700	50
Starch	BrownRice	50	150	70
Drinks	KrestSoda	30	400	40
Drinks	FantaSoda	30	300	40
Drinks	OrangeJuiceDelmonte	100	120	125
starch	UngaUgali	100	190	130
Starch	EXE	140	200	160
Drinks	AppleJuiceDelmonte	100	90	125
Fat	Kimbo	160	210	210
Fat	BlueBrand	50	150	70
CookingFat	Rinse	170	250	200
Drinks	QuencherJuice	80	300	120
Fat	SunRose	150	200	180
CookingFat	Kasuku	100	190	130

Drinks	MangoJuice	60	200	120
Fat	Corn	140	200	160
drinks	PepsiSoda	30	700	35
Drinks	DietCokeSoda	60	350	90

END