qqLab 2 – Linux Account Management and ACLs [10 Marks total]

Due Date – 26/3/2023

- Follow the instructions in this document
- Answer the questions in the order they appear in this document and in the labs included in this document See each lab's document for more instructions
- Submit the file .doc .docx .pdf using the ecs submission system i.e. Lab2. https://apps.ecs.vuw.ac.nz/submit/CYBR371

Instructions:

Sign in into the NETLAB https://netlab.ecs.vuw.ac.nz/ with the provided credentials and complete the following labs:

- **Lab 1: Linux Account Management**
- **Lab 2: Linux Access Control List**

Part 1 - Linux Account Management

Complete the lab 1 "**Linux Account Management**" and answer the following questions:

Question 1.1 [2 Marks] - What is the numerical octal or string representation of the following permissions?

working:
r= 4 w=2 x=1
suid = 4 sgid = 2 sticky bit = 1
S or T=not counted s or t = counted
rwxrw-r-t = 001 421 420 401 = 1765
r-S-wx--x = 400 400 021 001 = 4431
rwxr-xr-- = 000 421 401 400 = 0754
r-Sr-sr-x = 420 400 401 401 = 6455
432 = 000 400 021 020 = r---wx-w-
3532 = 021 401 021 020 = r-x-ws-wT
6713 = 420 421 001 021 = rws--s-wx
1530 = 001 401 021 000 = r-x-wx--T

Question 1.2 [1 Mark] - If the umask value for a user is 035 what are the default file and directory permissions set for the user? Write the permissions and how they were calculated.

working:

Directory	**777**
Mask	**035**
Result	**742**
String	**rwx r-- -w-**

File	**666**
Mask	**035**
Result	**631**
String	**rw- -wx --x**

Question 1.3 [1 Mark] - If the default permissions given to files the user xyz creates are rw-r--r-- what are the default permissions set for the directories created by the user? Write the permissions and how they were calculated.

Working:
Default File: 666
Umask Value = Default File - rw-r--r– = 666 - 644 = 022
Default directory permission = 777 - 022 = 755 = rwx-r-xr-x

Part 2 - Linux Access Control List (ACL)

Complete the lab “**Linux Access Control List**” and answer the questions highlighted in this document in the order they appear in the lab document. Please note that the questions below are dependent on the sequence of the lab instructions and must be followed and answered step by step as they appear in the **Linux Access Control List** lab document.

Question 2.1 [1 Mark]: Write the command(s) you used to add the users above with their associated provided information

CYBR271

```
useradd -g sudo -d /home/cybr371 -m  -s /bin/bash cybr371
Passwd cybr371 dees
```

Ben

```
Useradd -g sudo -d /home/ben -m -s /bin/bash ben
```

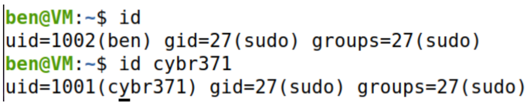
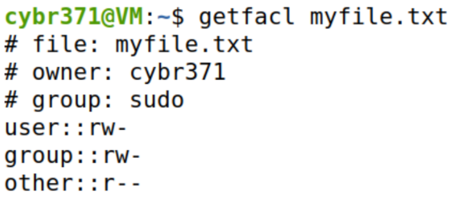
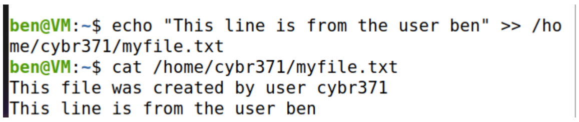
Password ben dees

David
useradd -m -d /home/david -s /bin/bash david
Passwd david dees

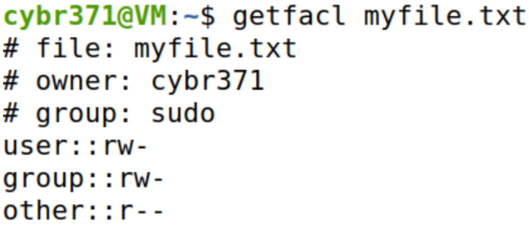
Mary
useradd -m -d /home/mary -s /bin/bash mary
Passwd mary dees

Masood
useradd -m -d /home/masood -s /bin/bash masood
Passwd masood dees

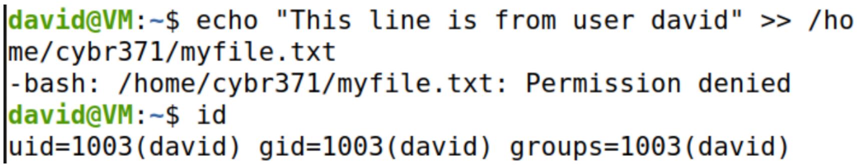
Question 2.2 [1 Mark]: after completion of step 6, Write the command you used to append the line and explain the output (i.e. did you manage to append the line? Explain why the command was successful and/or why it failed).

 ben@VM:~$ id uid=1002(ben) gid=27(sudo) groups=27(sudo) ben@VM:~$ id cybr371 uid=1001(cybr371) gid=27(sudo) groups=27(sudo)	Background: ben and cybr371 share the same group (sudo), ben does not own the file ‘myfile.txt’
 cybr371@VM:~$ getfacl myfile.txt # file: myfile.txt # owner: cybr371 # group: sudo user::rw- group::rw- other::r--	Reason: The file ‘myfile.txt’ created by cybr371 has read and write permission for users in the group sudo. Because ben is in group sudo he is able to write to the file
 ben@VM:~$ echo "This line is from the user ben" >> /ho me/cybr371/myfile.txt ben@VM:~$ cat /home/cybr371/myfile.txt This file was created by user cybr371 This line is from the user ben	Outcome: Yes, I successfully appended the line

Question 2.3 [1 Mark]: after completion of step 7, what was the command you used to write to the file? Explain whether the operation is successful or not).



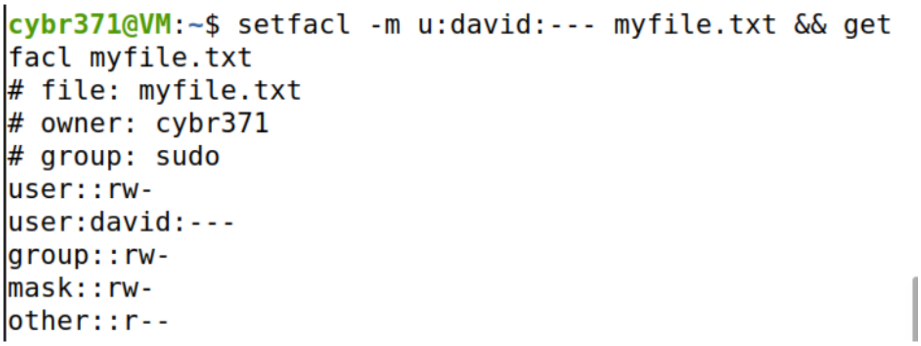
```
cybr371@VM:~$ getfacl myfile.txt
# file: myfile.txt
# owner: cybr371
# group: sudo
user::rw-
group::rw-
other::r--
```



```
david@VM:~$ echo "This line is from user david" >> /ho
me/cybr371/myfile.txt
-bash: /home/cybr371/myfile.txt: Permission denied
david@VM:~$ id
uid=1003(david) gid=1003(david) groups=1003(david)
```

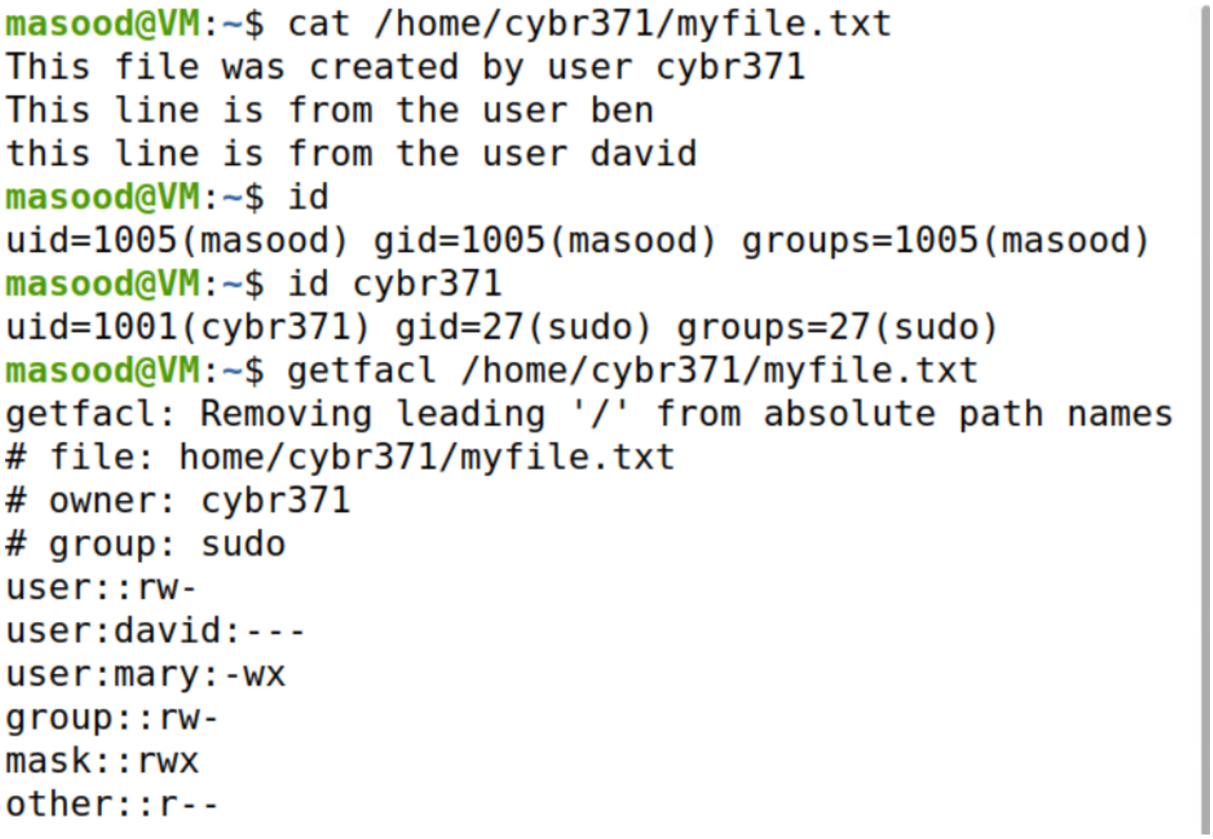
Background: david is not in the group sudo and is not the owner of ‘myfile.txt’
Reason: the file ‘myfile.txt’ created by cybr371 only has read permission for other users (those who are not owner or in the group sudo).
Outcome: Because david is given only read permission as an ‘other’ user he is not able to write to the file.

Question 2.4 [1 Mark]: after completion of step 12, Write a command to set an ACL to deny all access (read, write and execute) to myfile.txt for user david.



```
cybr371@VM:~$ setfacl -m u:david:--- myfile.txt && get
facl myfile.txt
# file: myfile.txt
# owner: cybr371
# group: sudo
user::rw-
user:david:---
group::rw-
mask::rw-
other::r--
```

Question 2.5 [1 Mark] – after completion of step 12, Login as user masood and issue a command to read the content of the file mytext.txt in the cybr371’s home directory. Can the user masood read the file? Write the command and explain the output of the command.

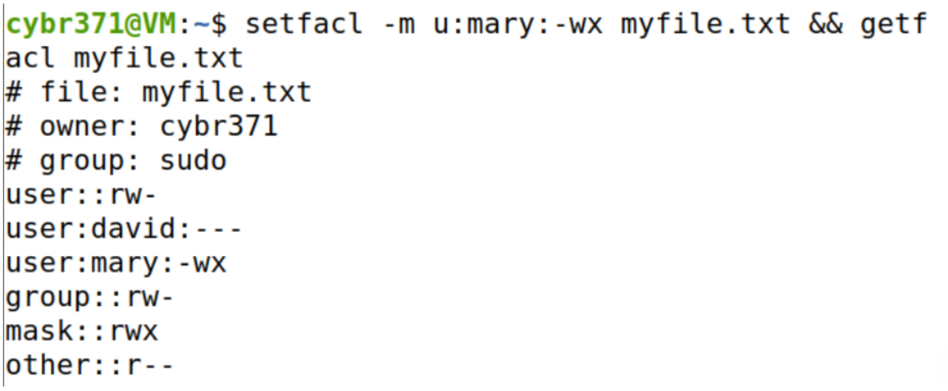


```
masood@VM:~$ cat /home/cybr371/myfile.txt
This file was created by user cybr371
This line is from the user ben
this line is from the user david
masood@VM:~$ id
uid=1005(masood) gid=1005(masood) groups=1005(masood)
masood@VM:~$ id cybr371
uid=1001(cybr371) gid=27(sudo) groups=27(sudo)
masood@VM:~$ getfacl /home/cybr371/myfile.txt
getfacl: Removing leading '/' from absolute path names
# file: home/cybr371/myfile.txt
# owner: cybr371
# group: sudo
user::rw-
user:david:---
user:mary:-wx
group::rw-
mask::rwx
other::r--
```

Background: masood is not in the group sudo and is not the owner of ‘myfile.txt’
Reason: the file ‘myfile.txt’ created by cybr371 only has read permission for other users (those who are not owner or in the group sudo).

Outcome: Because masood is given read permission he is able to read the file.

Question 2.6 [1 Mark]: Write a command to create an ACL entry for user mary with write and execute permissions only on the file myfile.txt.



```
cybr371@VM:~$ setfacl -m u:mary:-wx myfile.txt && getf
acl myfile.txt
# file: myfile.txt
# owner: cybr371
# group: sudo
user::rw-
user:david:---
user:mary:-wx
group::rw-
mask::rwx
other::r--
```