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# OSYS1000-FINAL PROJECT

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IT-Database Administration

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## 1.0 Introduction

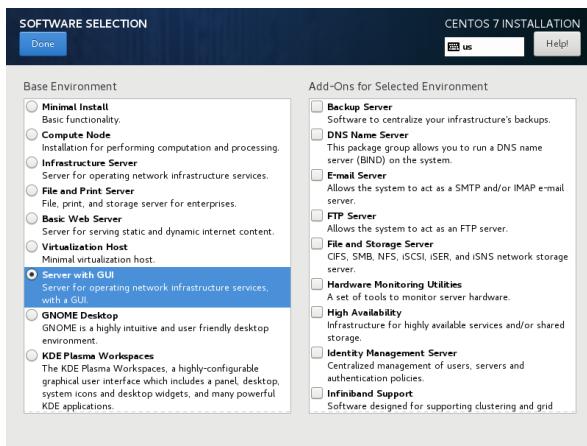
As a final project for operating system-Linux we are required to do a custom Linux VM install and put to use all of the things we learned throughout the semester. In the following document I will step through some basic skills required to be a Linux administrator.

## 2.0 Standard Install

### Step 1

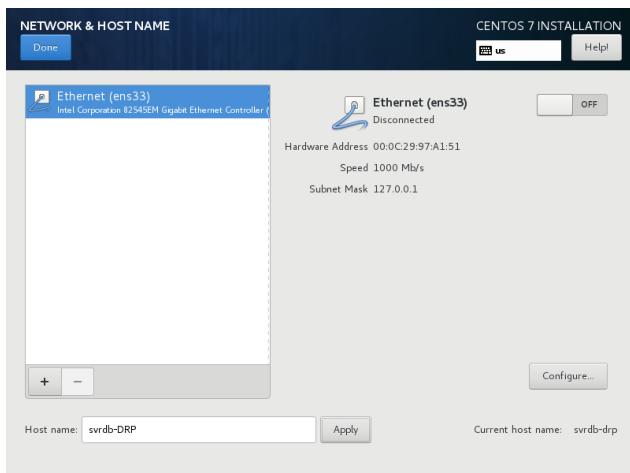
The first step of the final assignment is to install CENTOS7.

Below is a screen shot of server with GUI setting during install. This is selected as specified in the assignment.



(Figure 1.1)Screen shot of software selection

The screen below is the current host name setting. To set this you simply enter the host name you want to use and click apply.

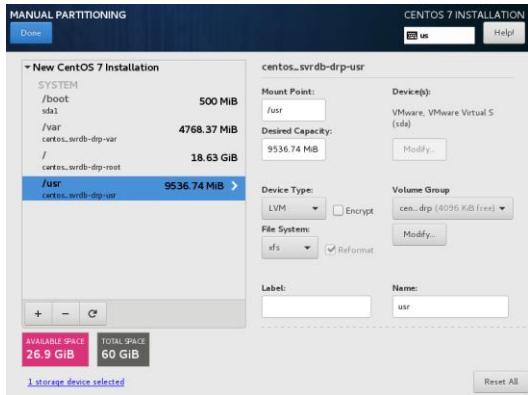


(Figure 1.2)Screen shot of host name

Below is how I configured the partitioning. The XFS file system should be selected and proper sizes for partitions should be created.

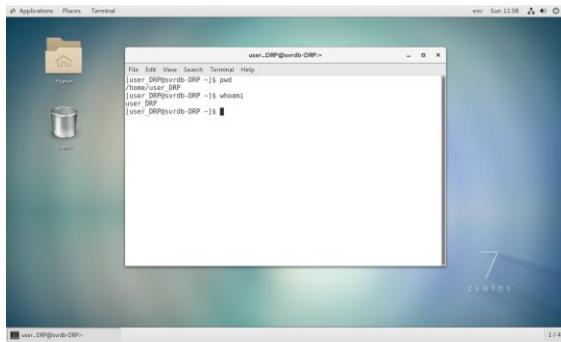
- /Boot → 500MB
- / → 20GB
- /usr → 10GB
- /var → 5GB

It is important to set the proper size at the start to make sure that the OS can run with enough resources. Custom partitioning can actually help your system run faster.



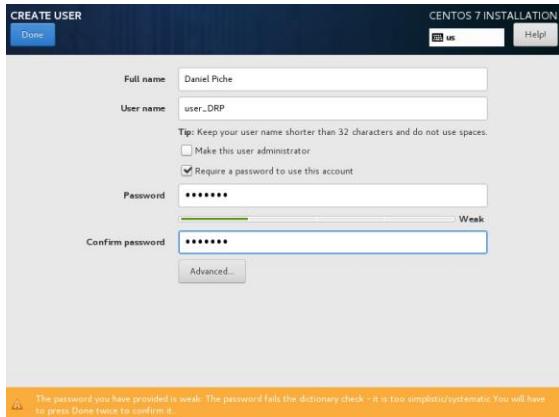
(Figure 1.3) Screen shot of manual partitioning

I forgot to get a screen shot of the user name configuration during the install so the screen shot below show the user name by using the “whoami” command. As you will notice the username matches the requirements of the assignment.



(Figure 1.4)Created user name

As it turned out the initial install did not work out so I was required to go through the install again. The screen below shows a capture of the screen during setup where the username and password are configured.



(Figure 1.5)Username config during install

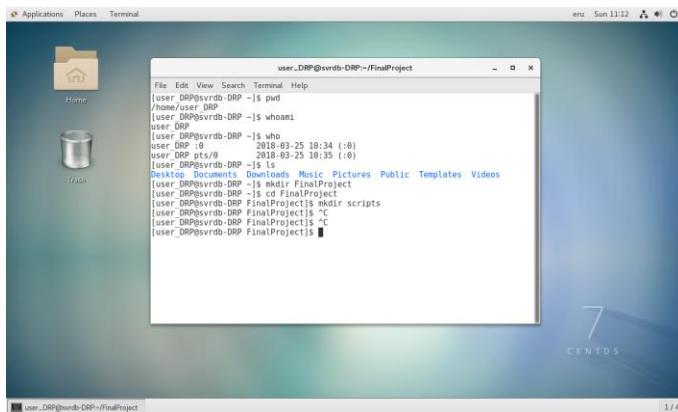
Once the install is complete the instructions ask to create the working directories. Below are the commands used.

`mkdir FinalProject`

`cd FinalProject`

`mkdir scripts`

The screen below shows a screen shot of the commands above being run successfully.



(Figure 1.6)Creating the project directory

## Step 2

For the next step the instructions ask to add the main user to the sudoers file so that it has the same permissions as root.

The first step is to log in as super user. The edit the sudoers file by typing “visudo”. Then add the line

`"user_DRP ALL=(ALL) ALL"`

`[user_DRP@svrdb-DRP ~]$ su`

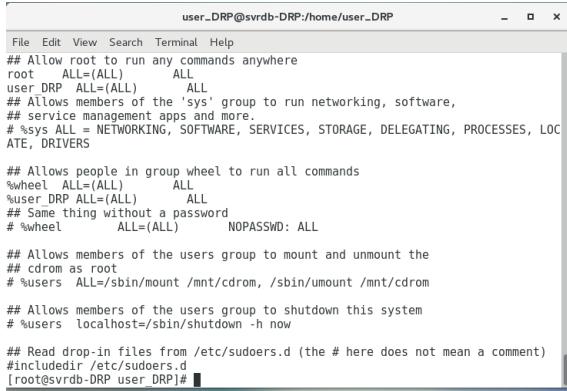
`Password:`

```
[root@svrdb-DRP user_DRP]# visudo
```

```
user_DRP ALL=(ALL) ALL
```

```
[root@svrdb-DRP user_DRP]# cat /etc/sudoers
```

Below is a screen shot of the sudoers file. If you look at it you will notice that a line was entered for the user “user\_DRP”. This line “user\_DRP ALL=(ALL) ALL” will give the user the same privileges as root.



```
user_DRP@svrdb-DRP:/home/user_DRP
File Edit View Search Terminal Help
## Allow root to run any commands anywhere
root    ALL=(ALL)      ALL
user_DRP  ALL=(ALL)      ALL
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys  ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOC
ATE, DRIVERS
## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)      ALL
%user_DRP  ALL=(ALL)      ALL
## Same thing without a password
# %wheel      ALL=(ALL)      NOPASSWD: ALL
## Allows members of the users group to mount and umount the
## cdrom as root
# %users  ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom
## Allows members of the users group to shutdown this system
# %users  localhost=/sbin/shutdown -h now
## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)
#includedir /etc/sudoers.d
[root@svrdb-DRP user_DRP]#
```

(Figure 2.1) sudoers file

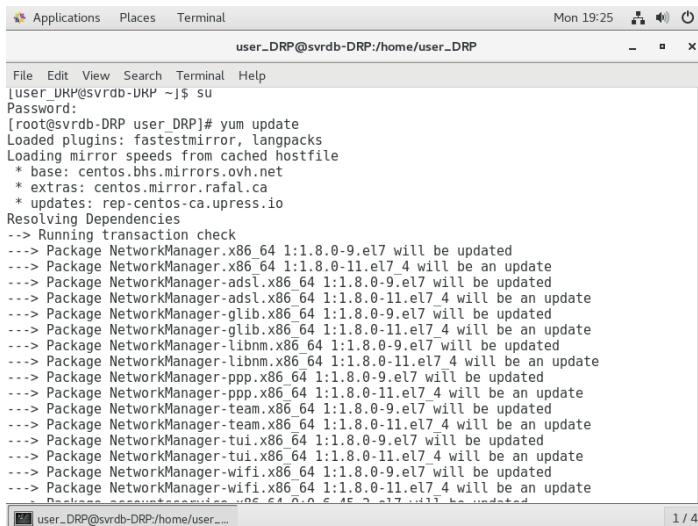
### 3.0 Installing and Updating using YUM

Yum is a very popular tool used in Linux to update software and packages that belong to the OS. To get info about the command simply type “man yum”

#### Step 3

The command I used to update Centos is “**yum update**” This command is very straight forward however very important. Any time you install an OS you should get the latest updates to provide improved security.

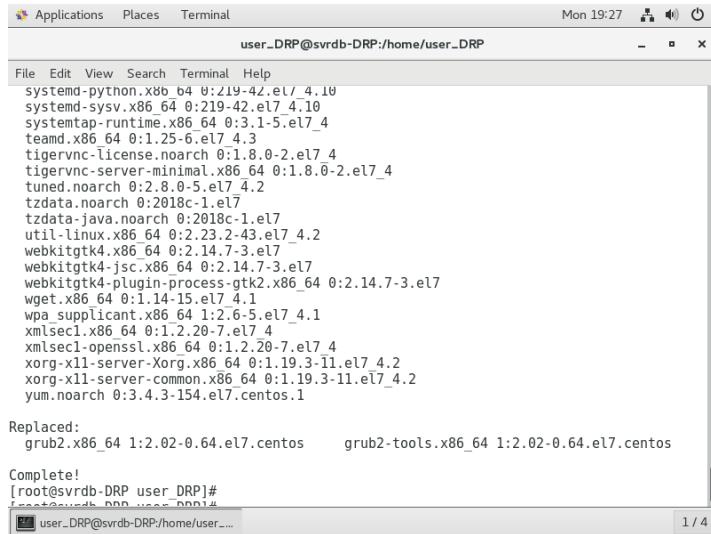
The screen below shows the command and the beginning of the output.



```
user_DRP@svrdb-DRP:/home/user_DRP
File Edit View Search Terminal Help
[User_UKP@svrdb-UKP ~]$ su
Password:
[root@svrdb-DRP user_DRP]# yum update
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: centos.bhs.mirrors.ovh.net
 * extras: centos.mirror.rafal.ca
 * updates: rep-centos-ca.upress.io
Resolving Dependencies
--> Running transaction check
--> Package NetworkManager.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-adsl.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager-adsl.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-glib.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager-glib.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-libnm.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager-libnm.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-ppp.x86_64 1:1.8.0-9.el7 will be an update
--> Package NetworkManager-team.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager-team.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-tui.x86_64 1:1.8.0-11.el7_4 will be an update
--> Package NetworkManager-wifi.x86_64 1:1.8.0-9.el7 will be updated
--> Package NetworkManager-wifi.x86_64 1:1.8.0-11.el7_4 will be an update
[root@svrdb-DRP user_DRP]#
```

(Figure 3.1)Yum update 1

The screen below shows the end of the output from the yum update command.

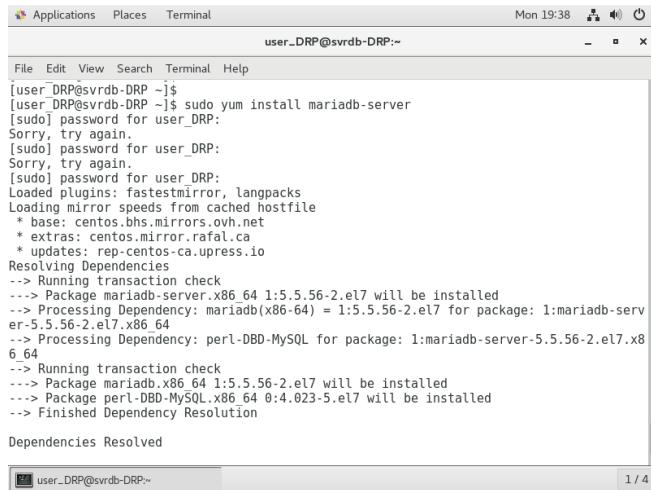


A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:/home/user\_DRP". The window shows the output of a "yum update" command. The output lists numerous packages being updated, including systemd, sysv, systemtap-runtime, teamd, tigervnc-license, tigervnc-server-minimal, tuned, tzdata, noarch, tzdata-java, util-linux, webkitgtk4, wget, vpx-supplicant, xmsec1, xmlsec1, xorg-x11-server-xorg, xorg-x11-server-common, and yum. It also shows a replaced package (grub2.x86\_64) and a completed update process. The terminal window has a standard Linux desktop interface with icons for Applications, Places, and Terminal at the top, and a status bar at the bottom indicating "Mon 19:27".

(Figure 3.2)Yum update 2

## Step 4

The command used to install mariadb and its dependancies is “**sudo yum install mariadb-server**”. The screen below shows the command being entered itself and the beginning of the output.



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The user types the command "sudo yum install mariadb-server". The terminal then prompts for a password, which is entered. The output shows the start of the dependency resolution process, including the loading of mirrors and the resolution of dependencies for mariadb-server, perl-DBD-MySQL, and other packages. The terminal window has a standard Linux desktop interface with icons for Applications, Places, and Terminal at the top, and a status bar at the bottom indicating "Mon 19:38".

(Figure 4.1)mariadb install 1

The screen below shows the end of the output. You will notice by the output that all dependencies were installed in the process.

```

Applications Places Terminal Mon 19:38
user_DRP@svrdb-DRP:~ - x
File Edit View Search Terminal Help
Is this ok [y/d/N]: y
Downloading packages:
(1/3): perl-DBD-MySQL-4.023-5.el7.x86_64.rpm | 140 kB 00:00:00
(2/3): mariadb-5.5.56-2.el7.x86_64.rpm | 8.7 MB 00:00:01
(3/3): mariadb-server-5.5.56-2.el7.x86_64.rpm | 11 MB 00:00:02
Total 8.3 MB/s | 20 MB 00:02
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 1:mariadb-5.5.56-2.el7.x86_64 1/3
  Installing : perl-DBD-MySQL-4.023-5.el7.x86_64 2/3
  Installing : 1:mariadb-server-5.5.56-2.el7.x86_64 3/3
  Verifying : 1:mariadb-server-5.5.56-2.el7.x86_64 1/3
  Verifying : perl-DBD-MySQL-4.023-5.el7.x86_64 2/3
  Verifying : 1:mariadb-5.5.56-2.el7.x86_64 3/3
Installed:
  mariadb-server.x86_64 1:5.5.56-2.el7
Dependency Installed:
  mariadb.x86_64 1:5.5.56-2.el7 perl-DBD-MySQL.x86_64 0:4.023-5.el7
Complete!
[user_DRP@svrdb-DRP ~]$ 7-7-

```

(Figure 4.2) Mariabd 2

sources

<https://www.digitalocean.com/community/tutorials/how-to-install-mariadb-on-centos-7>

(Ocean, How to install mariaDB on CentOS 7 , 2018)

## Step 5

The command to start the mariadb daemon is “**sudo systemctl start mariadb**”. Again this is a very straight forward command and there are lots of examples available on this command. Below is a screen shot of the command running as well as the command itself.

```

Applications Places Terminal Mon 19:43
user_DRP@svrdb-DRP:~ - x
File Edit View Search Terminal Help
sabled)
  Active: inactive (dead)
  [user DRP@svrdb-DRP ~]$ sudo systemctl start mariadb
  [user DRP@svrdb-DRP ~]$ sudo systemctl status mariadb
● mariadb.service - MariaDB database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; disabled; vendor preset: di
   sabled)
   Active: active (running) since Mon 2018-03-26 19:42:18 CDT; 28s ago
     Process: 50116 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, s
tatus=0/SUCCESS)
    Process: 50033 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, stat
us=0/SUCCESS)
   Main PID: 50115 [mysqld_safe]
      Group: /system.slice/mariadb.service
         └─50115 /bin/sh /usr/bin/mysqld_safe --basedir=/usr
            ├─50278 /usr/libexec/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: MySQL manual for more instr...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: Please report any problems ...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: The latest information abou...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: You can find additional inf...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: http://dev.mysql.com
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: Consider joining MariaDB's ...
Mar 26 19:42:15 svrdb-DRP mariadb-prepare-db-dir[50033]: https://mariadb.org/get-inv...
Mar 26 19:42:15 svrdb-DRP mysqld_safe[50115]: 180326 19:42:15 mysqld_safe Logging ...
Mar 26 19:42:15 svrdb-DRP mysqld_safe[50115]: 180326 19:42:15 mysqld_safe Starting...ql

```

(Figure 5.1) start and stop mariaDB

sources

<https://www.digitalocean.com/community/tutorials/how-to-install-mariadb-on-centos-7>

(Ocean, How to install mariaDB, 2018)

## 4.0 Backup Script

If you are going to be a IT specialist you will be placed in situations where you will be required to write scripts.

### Step 6

In step 6 the assignment asks to create two directories. One will be called backup and left empty. The other will be called OSYSDB and will contain the following.

- DB directory
  - Osys\_dev.db
  - Osys\_prod.db
- Conf directory
  - Osys\_dev.conf
  - Osys\_prod.conf
- Logs directory
  - Osys\_dev.log
  - Osys\_prod.log
  - Mariadb.log

Below are the commands used to create the directories

**sudo mkdir OSYSDB**

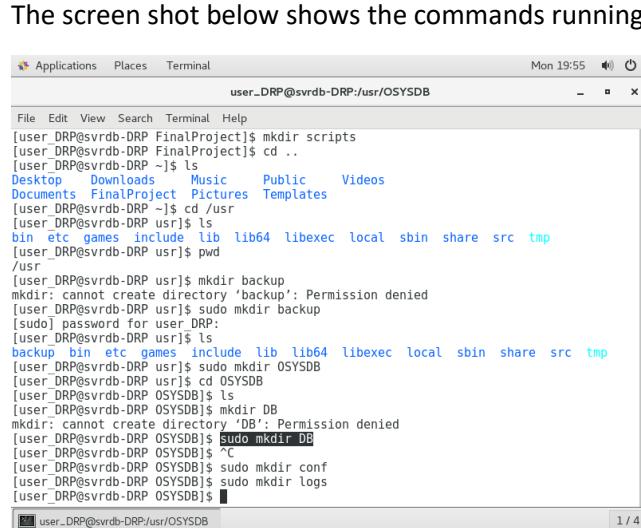
**sudo mkdir backup**

**cd OSYSDB**

**sudo mkdir conf**

**sudo mkdir logs**

The screen shot below shows the commands running



A screenshot of a terminal window titled "Terminal". The window shows a command-line session with the user "user\_DRP@svrdb-DRP:~\$". The user runs several commands to navigate to the "/OSYSDB" directory and create sub-directories "backup", "conf", and "logs". The session ends with a Ctrl+C interrupt. The terminal interface includes standard Linux navigation keys like arrow keys, backspace, and delete.

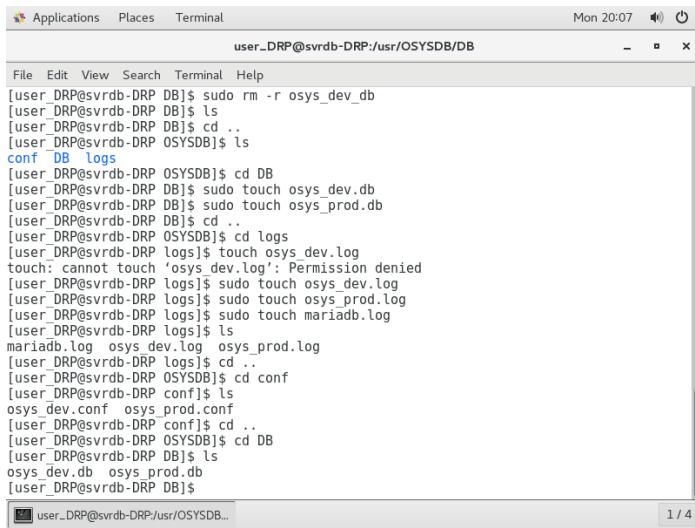
```
Applications Places Terminal Mon 19:55 user_DRP@svrdb-DRP:/usr/OSYSDB
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP:~$] FinalProject]$ mkdir scripts
[user_DRP@svrdb-DRP:~$] FinalProject]$ cd ..
[user_DRP@svrdb-DRP:~$] ls
Desktop Downloads Music Public Videos
Documents FinalProject Pictures Templates
[user_DRP@svrdb-DRP:~$] cd /usr
[user_DRP@svrdb-DRP:~$] ls
bin etc games include lib lib64 libexec local sbin share src tmp
[user_DRP@svrdb-DRP:~$] pwd
/usr
[user_DRP@svrdb-DRP:~$] mkdir backup
mkdir: cannot create directory 'backup': Permission denied
[user_DRP@svrdb-DRP:~$] sudo mkdir backup
[sudo] password for user DRP:
[user_DRP@svrdb-DRP:~$] ls
backup bin etc games include lib lib64 libexec local sbin share src tmp
[user_DRP@svrdb-DRP:~$] sudo mkdir OSYSDB
[user_DRP@svrdb-DRP:~$] cd OSYSDB
[user_DRP@svrdb-DRP:OSYSDB]$ ls
[user_DRP@svrdb-DRP:OSYSDB]$ mkdir DB
mkdir: cannot create directory 'DB': Permission denied
[user_DRP@svrdb-DRP:OSYSDB]$ sudo mkdir DB
[user_DRP@svrdb-DRP:OSYSDB]$ ^C
[user_DRP@svrdb-DRP:OSYSDB]$ sudo mkdir conf
[user_DRP@svrdb-DRP:OSYSDB]$ sudo mkdir logs
[user_DRP@svrdb-DRP:OSYSDB]$
```

### (Figure 6.1) making directories

The commands below are used to create the files in the three directories within the OSYSDB directory.

```
sudo touch osys_dev.db  
sudo touch osys_prod.db  
sudo touch osys_dev.conf  
sudo touch osys_prod.conf  
sudo touch osys_dev.log  
sudo touch osys_prod.log  
sudo touch mariadb.log
```

The screen shot below shows the files being created within each of the directories.



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:/usr/OSYSDB/DB". The window shows a command-line session where the user runs several "sudo touch" commands to create files in sub-directories. The session starts with removing an existing file, then listing the directory, changing to the DB directory, creating files there, changing to logs, and finally listing the directory again to show the new files.

```
user_DRP@svrdb-DRP:/usr/OSYSDB/DB$ sudo rm -r osys_dev_db  
[user_DRP@svrdb-DRP DB]$ ls  
[user_DRP@svrdb-DRP DB]$ cd ..  
[user_DRP@svrdb-DRP OSYSDB]$ ls  
conf DB logs  
[user_DRP@svrdb-DRP OSYSDB]$ cd DB  
[user_DRP@svrdb-DRP DB]$ sudo touch osys_dev.db  
[user_DRP@svrdb-DRP DB]$ sudo touch osys_prod.db  
[user_DRP@svrdb-DRP DB]$ cd ..  
[user_DRP@svrdb-DRP OSYSDB]$ cd logs  
[user_DRP@svrdb-DRP logs]$ touch osys_dev.log  
touch: cannot touch 'osys dev.log': Permission denied  
[user_DRP@svrdb-DRP logs]$ sudo touch osys_dev.log  
[user_DRP@svrdb-DRP logs]$ sudo touch osys_prod.log  
[user_DRP@svrdb-DRP logs]$ sudo touch mariadb.log  
[user_DRP@svrdb-DRP logs]$ ls  
mariadb.log osys dev.log osys_prod.log  
[user_DRP@svrdb-DRP logs]$ cd ..  
[user_DRP@svrdb-DRP OSYSDB]$ cd conf  
[user_DRP@svrdb-DRP conf]$ ls  
osys dev.conf osys_prod.conf  
[user_DRP@svrdb-DRP conf]$ cd ..  
[user_DRP@svrdb-DRP OSYSDB]$ cd DB  
[user_DRP@svrdb-DRP DB]$ ls  
osys_dev.db osys_prod.db  
[user_DRP@svrdb-DRP DB]$
```

### (Figure 6.2)Creating files

## Step 7

For step 7 we are required to create a script that checks to see if a directory exists and if it does the script will prompt the user if they would like to overwrite the directory or not proceed with the copy.

The screen below shows the script running as expected and copies the directory in this step.

To run the script you enter this command “./database\_backup.sh”.

```
touch database_backup.sh
```

The screenshot shows a terminal window titled "user\_DRP@svrdb-DRP:~/FinalProject/scripts". The terminal output is as follows:

```
[user_DRP@svrdb-DRP ~]$ ls
Desktop Downloads Music Public Videos
Documents FinalProject Pictures Templates
[user_DRP@svrdb-DRP ~]$ cd FinalProject/
[user_DRP@svrdb-DRP FinalProject]$ ls
passwd-mod passwd-shadow scripts shadow-mod
[user_DRP@svrdb-DRP FinalProject]$ cd scripts
[user_DRP@svrdb-DRP scripts]$ ls
database_backup2.sh database_backup.sh user_create.sh
[user_DRP@svrdb-DRP scripts]$ vi database_backup2.sh
[user_DRP@svrdb-DRP scripts]$ ./database_backup2.sh
/usr/backup/OSYSDB-04-08-2018 Not found!?
Would you like to copy /usr/OSYSDB-04-08-2018 to /usr/backup(y/n)?y
[sudo] password for user_DRP:
Copied directory
Stopping mariadb
mariadb stoped
starting mariadb
mariadb started
[user_DRP@svrdb-DRP scripts]$
```

(Figure 7.1) Script that copies a directory

The screen below shows the script running as expected however this time the script will check if the directory has been copied. Then it will ask the user if they want to create the copy with an override of the current directory. For this step we will not make the copy.

The screenshot shows a terminal window titled "user\_DRP@svrdb-DRP:~/FinalProject/scripts". The terminal output is as follows:

```
[user_DRP@svrdb-DRP scripts]$ ./database_backup2.sh
Found /usr/backup/OSYSDB-04-08-2018
Would you like to copy /usr/OSYSDB-04-08-2018 to /usr/backup(y/n)?n
No directories were copied
Stopping mariadb
mariadb stoped
starting mariadb
mariadb started
[user_DRP@svrdb-DRP scripts]$
```

(Figure 7.2)Running script without copy

In the next section for step 7 we are asked to set the permissions to the script. The command for this is straight forward.

**chmod 774 database\_backup.sh**

The screen shot below shows the output of the command running successfully.

A screenshot of a Linux terminal window titled "user\_DRP@svrdb:~/FinalProject/scripts". The terminal shows the command "chmod 774 database\_backup2.sh" being run, followed by an "ls -l" command listing three files: "database\_backup2.sh", "database\_backup.sh", and "user\_create.sh". The terminal window has a title bar with "Applications", "Places", "Terminal", and "Sun 08:25". Below the terminal is a dock with icons for "user\_DRP@svrdb/usr" and "user\_DRP@svrdb:~/FinalProject...".

```
user_DRP@svrdb:~/FinalProject/scripts
[user_DRP@svrdb:~/FinalProject]chmod 774 database_backup2.sh
[user_DRP@svrdb:~/FinalProject]ls -l
total 12
-rwxrwxr-- 1 user DRP user DRP 739 Apr  8 08:10 database_backup2.sh
-rwxrwxr-- 1 user DRP user DRP 603 Apr  8 07:18 database_backup.sh
-rw-rw-r-- 1 user DRP user DRP 346 Apr  2 14:38 user_create.sh
[user_DRP@svrdb:~/FinalProject]
```

(Figure 7.3) Changing permissions to script

Below is another screen shot of the scripts running successfully.

A screenshot of a Linux terminal window titled "user\_DRP@svrdb:~/FinalProject/scripts". The terminal shows the command "./database\_backup2.sh" being run, which finds a backup file at "/usr/backup/OSYSDB-04-08-2018" and asks if it should be copied to "/usr/backup". It then performs a sudo password prompt, copies the directory, stops and starts mariadb, and finally starts mariadb again. The terminal window has a title bar with "Applications", "Places", "Terminal", and "Sun 08:28". Below the terminal is a dock with icons for "user\_DRP@svrdb/usr" and "user\_DRP@svrdb:~/FinalProject...".

```
user_DRP@svrdb:~/FinalProject/scripts
[user_DRP@svrdb:~/FinalProject]./database_backup2.sh
Found /usr/backup/OSYSDB-04-08-2018
Would you like to copy /usr/backup/OSYSDB-04-08-2018 to /usr/backup(y/n)?y
[sudo] password for user_DRP:
Copied directory
Stopping mariadb
mariadb stopped
starting mariadb
mariadb started
[user_DRP@svrdb:~/FinalProject]
```

(Figure 7.4) Script running as expected

## Sources

<https://stackoverflow.com/questions/226703/how-do-i-prompt-for-yes-no-cancel-input-in-a-linux-shell-script>

<https://stackoverflow.com/questions/59838/check-if-a-directory-exists-in-a-shell-script>

(Used script from assignment 6-2 for this step)

(Overflow, 2018)

(StackOverflow, 2018)

## 5.0 User Group Management

### Step 8

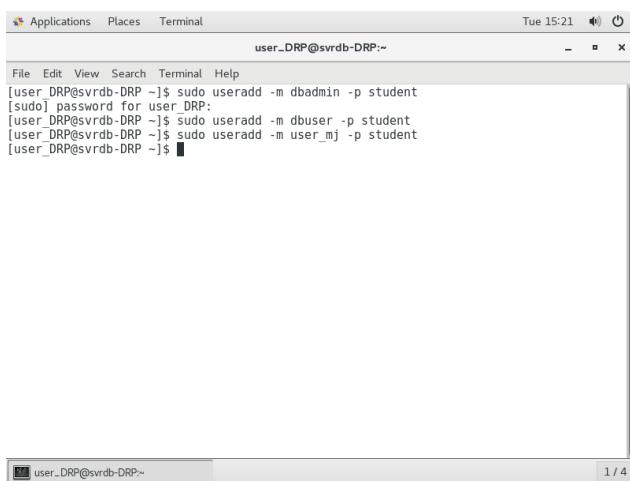
Step 8 requires that groups and users be created using the useradd and groupadd commands. Below are the commands that were used to create the users themselves.

```
sudo useradd -m dbadmin -p student
```

```
sudo useradd -m dbuser -p student
```

```
sudo useradd -m user_mj -p student
```

The screen shot below shows the commands being run successfully.



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The window shows the following command history:

```
[user DRP@svrdb-DRP ~]$ sudo useradd -m dbadmin -p student
[sudo] password for user DRP:
[user DRP@svrdb-DRP ~]$ sudo useradd -m dbuser -p student
[user DRP@svrdb-DRP ~]$ sudo useradd -m user_mj -p student
[user DRP@svrdb-DRP ~]$
```

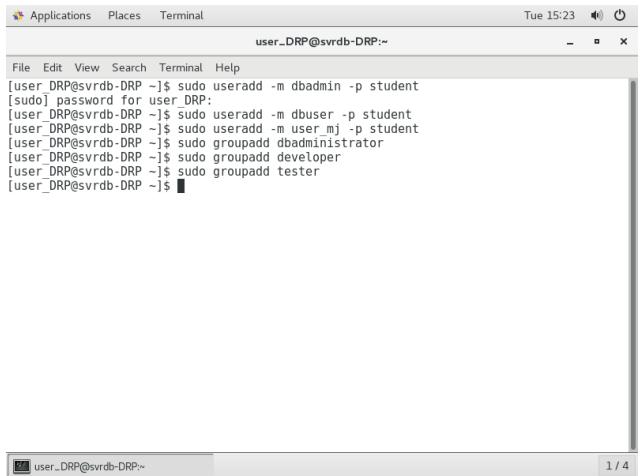
(Figure 8.1) Create users

The next step in this section is to create the groups specified in the assignment.

```
sudo groupadd dbadministrator
```

```
sudo groupadd developer
```

```
sudo groupadd tester
```



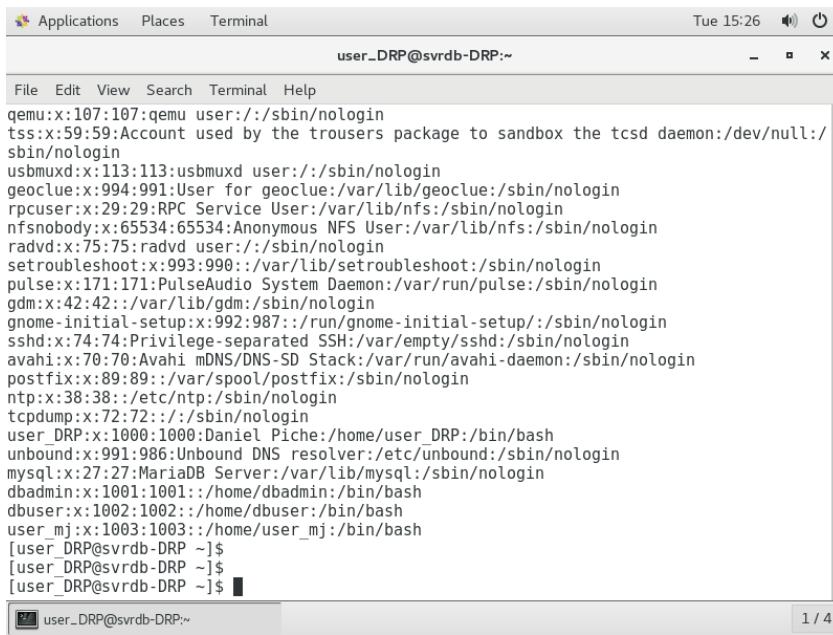
```
[user_DRP@svrdb-DRP ~]$ sudo useradd -m dbadmin -p student
[sudo] password for user_DRP:
[User_DRP@svrdb-DRP ~]$ sudo useradd -m dbuser -p student
[User_DRP@svrdb-DRP ~]$ sudo useradd -m user_mj -p student
[User_DRP@svrdb-DRP ~]$ sudo groupadd dbadministrator
[User_DRP@svrdb-DRP ~]$ sudo groupadd developer
[User_DRP@svrdb-DRP ~]$ sudo groupadd tester
[User_DRP@svrdb-DRP ~]$
```

(Figure 8.2)Create groups

After the users and groups are created you need to check the “/etc/shadow” and “/etc/password” files to make sure they have been created. The command to view the “passwd ” file is below.

### Sudo cat /etc/passwd

The screen shot below shows the output when the cat command is used on the “/etc/passwd” file.



```
[user_DRP@svrdb-DRP ~]$ cat /etc/passwd
gemu:x:107:107:qemu user:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcscd daemon:/dev/null:/sbin/nologin
usbmuxd:x:113:113:usbmuxd user:/sbin/nologin
geoclue:x:994:991:User for geoclue:/var/lib/geoclue:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
radvd:x:75:75:radvd user:/sbin/nologin
setroubleshoot:x:993:990::/var/lib/setroubleshoot:/sbin/nologin
pulse:x:171:171:PulseAudio System Daemon:/var/run/pulse:/sbin/nologin
gdm:x:42:42::/var/lib/gdm:/sbin/nologin
gnome-initial-setup:x:992:987::/run/gnome-initial-setup:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
postfix:x:89:89::/var/spool/postfix:/sbin/nologin
ntp:x:38:38::/etc/ntp:/sbin/nologin
tcpdump:x:72:72::/sbin/nologin
user_DRP:x:1000:1000:Daniel Piche:/home/user_DRP:/bin/bash
unbound:x:991:986:Unbound DNS resolver:/etc/unbound:/sbin/nologin
mysql:x:27:27:MySQL Server:/var/lib/mysql:/sbin/nologin
dbadmin:x:1001:1001:/home/dbadmin:/bin/bash
dbuser:x:1002:1002:/home/dbuser:/bin/bash
user_mj:x:1003:1003:/home/user_mj:/bin/bash
[User_DRP@svrdb-DRP ~]$
[User_DRP@svrdb-DRP ~]$
[User_DRP@svrdb-DRP ~]$\
```

(Figure 8.2)Show “/etc/passwd”

The screen shot below shows the command that was used in the terminal to generate the “/etc/passwd” file

```

Applications Places Terminal Fri 10:34 ● user_DRP@svrdb-DRP:~
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP ~]$ sudo cat /etc/passwd
[sudo] password for user DRP:
root:x:0:0:root:/bin/bash
bin:x:1:1:bin:/bin/nologin
daemon:x:2:2:daemon:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:/sbin/nologin
dbus:x:81:81:System message bus:/sbin/nologin
polkitd:x:999:998:User for polkitd:/sbin/nologin
abrt:x:173:173:/etc/abrt:/sbin/nologin
libstoragemgmt:x:998:997:daemon account for libstoragemgmt:/var/run/lsm:/sbin/nologin
rpc:x:32:32:bind Daemon:/var/lib/rpcbind:/sbin/nologin
colord:x:997:996:User for colord:/var/lib/colord:/sbin/nologin
saslauthd:x:996:76:Saslauthd user:/run/saslauthd:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
chrony:x:995:993:/var/lib/chrony:/sbin/nologin
qemu:x:107:107:qemu user:/sbin/nologin
1 / 4

```

(Figure 8.3)Show “/etc/passwd” command

Below is the command used to view the contents of the shadow file.

**Sudo cat /etc/shadow**

The screen shot below shows the lines where the users are located in the shadow file.

```

Applications Places Terminal Tue 15:27 ● user_DRP@svrdb-DRP:~
File Edit View Search Terminal Help
rtkit:!:17616:::::
chrony:!:17616:::::
qemu:!:17616:::::
tss:!:17616:::::
usbmuxd:!:17616:::::
geoclue:!:17616:::::
rpcluser:!:17616:::::
nfsnobody:!:17616:::::
radvd:!:17616:::::
setroubleshoot:!:17616:::::
pulse:!:17616:::::
gdm:!:17616:::::
gnome-initial-setup:!:17616:::::
sshd:!:17616:::::
avahi:!:17616:::::
postfix:!:17616:::::
ntp:!:17616:::::
tcpdump:!:17616:::::
user_DRP:$6$yoAIDQZ3qWCs9US$dkKhKmJRoFpWlrEKzybcjafzvAADCnuBnMauTINA9lvxCvUUN7UZLqndLKZ
v8CeV1to1la8UCaz4DTd4mFoHJ.:0:99999:7:::
unbound:!:17617:::::
mysql:!:17617:::::
dbadmin:student:17617:0:99999:7:::
dbuser:student:17617:0:99999:7:::
user_mj:student:17617:0:99999:7:::
[User DRP@svrdb-DRP ~]
1 / 4

```

(Figure 8.4)Show “/etc/shadow”

The screen below shows a screen shot of the beginning of the shadow file with the command as requested in the documentation.

```

Applications Places Terminal Fri 10:38
user_DRP@svrdb-DRP:~ File Edit View Search Terminal Help
[User DRP@svrdb-DRP ~]$ sudo cat /etc/passwd
[sudo] password for user_DRP:
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP user:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/sbin/nologin
systemd-network:x:192:192:system Network Management:/sbin/nologin
dbus:x:81:81:System message bus:/sbin/nologin
polkitd:x:999:998:User for polkitd:/sbin/nologin
abrt:x:172:173:abrt:/var/lib/abrt:/sbin/nologin
libstoragemgmt:x:998:997:daemon account for libstoragemgmt:/var/run/lsm:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
colord:x:997:996:User for colord:/var/lib/colord:/sbin/nologin
saslauthd:x:996:76:Saslauthd user:/run/saslauthd:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
chrony:x:995:993:/var/lib/chrony:/sbin/nologin
qemu:x:107:107:qemu user:/sbin/nologin
[User DRP@svrdb-DRP ~]

```

(Figure 8.5)shadow file

#### sources

<https://www.techrepublic.com/article/how-to-create-users-and-groups-in-linux-from-the-command-line/>

(Republic, 2018)

## Step 9

In step 9, the instructions ask to change ownership of the “/usr/OSYSDB” directory so that it is owned by user “dbadmin” and group “dbadministrator”. Below is the command to do that.

**Sudo chown -R dbadmin:dbadministrator /usr/OSYSDB/**

The screen shot below shows the command that is successfully run as well as a directory listing that shows the owner and group.

```

Applications Places Terminal Tue 15:43
user_DRP@svrdb-DRP:/usr/OSYSDB File Edit View Search Terminal Help
conf DB logs
[User DRP@svrdb-DRP OSYSDB]$ ls -l
total 0
drwxr-xr-x. 2 root root 49 Mar 26 20:03 conf
drwxr-xr-x. 2 root root 45 Mar 26 20:06 DB
drwxr-xr-x. 2 root root 66 Mar 26 20:07 logs
[User DRP@svrdb-DRP OSYSDB]$ sudo chown -R dbadmin:dbadministrator /usr/OSYSDB/
chown: changing ownership of '/usr/OSYSDB/DB/osys_dev.db': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/DB/osys_prod.db': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/DB': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/conf/osys_dev.conf': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/conf/osys_prod.conf': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/conf': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/logs': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/logs/osys_dev.log': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/logs/osys_prod.log': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/logs/mariadb.log': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/logs': Operation not permitted
chown: changing ownership of '/usr/OSYSDB/': Operation not permitted
[User DRP@svrdb-DRP OSYSDB]$ sudo chown -R dbadmin:dbadministrator /usr/OSYSDB/
[sudo] password for user_DRP:
[User DRP@svrdb-DRP OSYSDB]$ ls -l
total 0
drwxr-xr-x. 2 dbadmin dbadministrator 49 Mar 26 20:03 conf
drwxr-xr-x. 2 dbadmin dbadministrator 45 Mar 26 20:06 DB
drwxr-xr-x. 2 dbadmin dbadministrator 66 Mar 26 20:07 logs
[User DRP@svrdb-DRP OSYSDB]$ 

```

(Figure 9.1)Changing ownership

sources

<https://www.cyberciti.biz/faq/how-to-use-chmod-and-chown-command/>

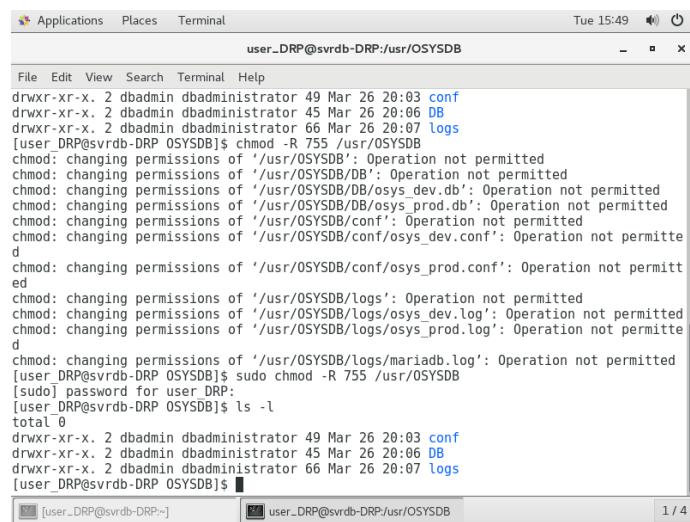
(NixCraft, 2018)

## Step 10

For the next step we will be changing the permissions to the /usr/OSYSDB directory and all subdirectories and files to “755”. The command to do this is below.

**Sudo chmod -R 755 /usr/OSYSDB**

This first screen shot shows that the chmod command from above actually worked because you can see the directory listing showing the correct permissions.



The screenshot shows a terminal window titled "user\_DRP@svrdb-DRP:/usr/OSYSDB". The terminal displays the following command and its execution:

```
user_DRP@svrdb-DRP:/usr/OSYSDB$ chmod -R 755 /usr/OSYSDB
chmod: changing permissions of '/usr/OSYSDB': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/DB': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/DB/osys dev.db': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/DB/osys prod.db': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/conf': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/conf/osys dev.conf': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/conf/osys prod.conf': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/logs': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/logs/osys dev.log': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/logs/osys prod.log': Operation not permitted
chmod: changing permissions of '/usr/OSYSDB/logs/mariadb.log': Operation not permitted
[sudo] password for user DRP:
[user_DRP@svrdb-DRP:/usr/OSYSDB]$ sudo chmod -R 755 /usr/OSYSDB
[user_DRP@svrdb-DRP:/usr/OSYSDB]$ ls -l
total 0
drwxr-xr-x. 2 dbadmin dbadministrator 49 Mar 26 20:03 conf
drwxr-xr-x. 2 dbadmin dbadministrator 45 Mar 26 20:06 DB
drwxr-xr-x. 2 dbadmin dbadministrator 66 Mar 26 20:07 logs
[user_DRP@svrdb-DRP:/usr/OSYSDB]$
```

(Figure 10.1)Permissions on “OSYSDB” directory

The screen shot below shows the permission listing for all of the files within the three directories. You will also notice that the correct permissions are set here as well.

```

Applications Places Terminal Sat 08:53 • 🔍 ⚡
user_DRP@svrdb-DRP:/usr/OSYSDB/logs
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP OSYSDB]$ ls
conf DB logs
[user_DRP@svrdb-DRP OSYSDB]$ ls -l
total 0
drwxr-xr-x. 2 dbadmin dbadministrator 49 Mar 26 20:03 conf
drwxr-xr-x. 2 dbadmin dbadministrator 45 Mar 26 20:06 DB
drwxr-xr-x. 2 dbadmin dbadministrator 66 Mar 26 20:07 logs
[user_DRP@svrdb-DRP OSYSDB]$ cd conf
[user_DRP@svrdb-DRP conf]$ ls -l
total 0
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:03 osys_dev.conf
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:03 osys_prod.conf
[user_DRP@svrdb-DRP conf]$ cd ..
[user_DRP@svrdb-DRP OSYSDB]$ cd DB
[user_DRP@svrdb-DRP DB]$ ls -l
total 0
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:05 osys_dev.db
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:06 osys_prod.db
[user_DRP@svrdb-DRP DB]$ cd ..
[user_DRP@svrdb-DRP OSYSDB]$ cd logs
[user_DRP@svrdb-DRP logs]$ ls -l
total 0
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:07 mariadb.log
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:06 osys_dev.log
-rw-r--r--. 1 dbadmin dbadministrator 0 Mar 26 20:06 osys_prod.log
[user_DRP@svrdb-DRP logs]$ 

```

(Figure 10.2) Permissions on files within “OSYSDB”

## Sources

<https://stackoverflow.com/questions/3740152/how-do-i-set-chmod-for-a-folder-and-all-of-its-subfolders-and-files-in-linux-ubuntu>

(StackOverflow, 2018)

## Step 11

For this next step we will change permissions to the /usr/backup/OSYSDB\_MM-DD-YYY directory recursively using the “chmod” command. Below is the command to do this.

**Sudo chmod -R 700 /usr/backup/OSYSDB-03-27-2018**

The screen shot below shows that the chmod command has run successfully.

```

Applications Places Terminal Tue 15:58 🔍 ⚡
user_DRP@svrdb-DRP:/
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP backup]$ ls
OSYSDB-03-26-18  OSYSDB-03-26-2018  OSYSDB-03-27-2018  OSYSDB-2018-03-26
[user_DRP@svrdb-DRP backup]$ ls
OSYSDB-03-26-18  OSYSDB-03-26-2018  OSYSDB-03-27-2018  OSYSDB-2018-03-26
[user_DRP@svrdb-DRP backup]$ cd OSYSDB-03-27-2018
[user_DRP@svrdb-DRP OSYSDB-03-27-2018]$ ls
conf DB logs
[user_DRP@svrdb-DRP OSYSDB-03-27-2018]$ cd conf
[user_DRP@svrdb-DRP conf]$ ls
osys_dev.conf  osys_prod.conf
[user_DRP@svrdb-DRP conf]$ ls -l
total 0
-rw-r--r--. 1 root root 0 Mar 27 15:00 osys_dev.conf
-rw-r--r--. 1 root root 0 Mar 27 15:00 osys_prod.conf
[user_DRP@svrdb-DRP conf]$ cd ..
[user_DRP@svrdb-DRP OSYSDB-03-27-2018]$ cd ..
[user_DRP@svrdb-DRP backup]$ cd ..
[user_DRP@svrdb-DRP user]$ cd ..
[user_DRP@svrdb-DRP /]$ ls
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root  shbin  sys  usr
[user_DRP@svrdb-DRP /]$ sudo chmod -R 700 /usr/backup/OSYSDB-03-27-2018
[sudo] password for user DRP:
[user_DRP@svrdb-DRP /]$ 

```

(Figure 11.1) chmod command

As you can see in the screen shot below, the directory permissions for the owner has been set to “rwx” for the user only.

```

Applications Places Terminal Tue 16:01
user_DRP@svrdb-DRP:/usr/backup
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP usr]$ cd ..
[user_DRP@svrdb-DRP /]$ ls
bin dev home lib64 mnt proc run srv tmp var
boot etc media opt root sbin sys usr
[user_DRP@svrdb-DRP /]$ sudo chmod -R 700 /usr/backup/OSYSDB-03-27-2018
[sudo] password for user_DRP:
[user_DRP@svrdb-DRP /]$ cd /usr/backup/OSYSDB-03-27-2018
bash: cd: /usr/backup/OSYSDB-03-27-2018: Permission denied
[user_DRP@svrdb-DRP /]$ cd /usr
[user_DRP@svrdb-DRP usr]$ cd backup
[user_DRP@svrdb-DRP backup]$ OSYSDB-03-27-2018
bash: OSYSDB-03-27-2018: command not found...
[user_DRP@svrdb-DRP backup]$ cd OSYSDB-03-27-2018
bash: cd: OSYSDB-03-27-2018: Permission denied
[user_DRP@svrdb-DRP backup]$ sudo cd OSYSDB-03-27-2018
[user_DRP@svrdb-DRP backup]$ ls
OSYSDB-03-26-18 OSYSDB-03-26-2018 OSYSDB-03-27-2018 OSYSDB-2018-03-26
[user_DRP@svrdb-DRP backup]$ ls -l
total 0
drwxr-xr-x. 5 root root 40 Mar 26 21:01 OSYSDB-03-26-18
drwxr-xr-x. 5 root root 40 Mar 26 21:05 OSYSDB-03-26-2018
drwx----- 5 root root 40 Mar 27 15:00 OSYSDB-03-27-2018
drwxr-xr-x. 5 root root 40 Mar 26 29:56 OSYSDB-2018-03-26
[user_DRP@svrdb-DRP backup]$ cd OSYSDB-03-27-2018
bash: cd: OSYSDB-03-27-2018: Permission denied
[user_DRP@svrdb-DRP backup]$ 

```

(Figure 11.2)chmod command directory

There are no sources used to answer this question because it is straight forward.

## Step 12

In this next step we will delete the user\_mj account that we created previously as well as the home folder. The command to do this is below. The “-r” switch is used to delete the account recursively. What that means is that the home directory will be deleted as well.

**sudo userdel -r user\_mj**

**sudo cat /etc/passwd**

**sudo cat /etc/shadow**

The screen shot below shows that the command ran successfully.

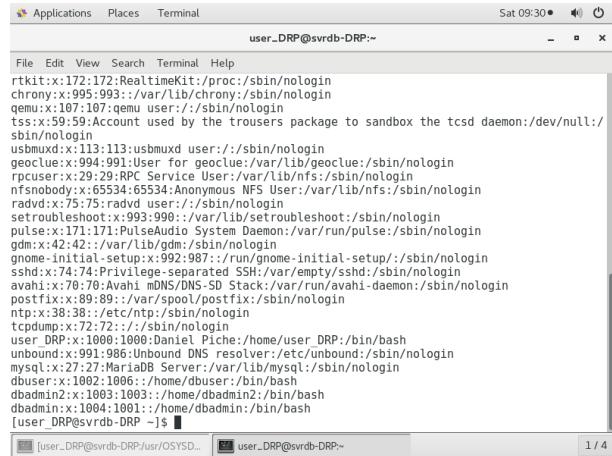
```

Applications Places Terminal Tue 16:09
user_DRP@svrdb-DRP:/home
File Edit View Search Terminal Help
postfix:!!:17616::::::
ntp:!!:17616::::::
tcpdump:!!:17616::::::
user_DRP:$yo5AlDQZ3gWCs9US$dKhKmJRQfpWrEKzybcjafzAADCnhuBnMauIINA9lvxCvUUN7UZLqndLKZ
v8CeulVtolla8UCazD4TD4mFoHJ.:.:0:99999:7::::
unbound:!!:17617::::::
mysql:!!:17617::::::
dbadmin:student:17617:0:99999:7:::
dbuser:student:17617:0:99999:7:::
user_mj:student:17617:0:99999:7:::
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ pwd
/home/user_DRP
[user_DRP@svrdb-DRP ~]$ cd /home
[user_DRP@svrdb-DRP home]$ ls
dbadmin dbuser user_DRP user_mj
[user_DRP@svrdb-DRP home]$ userdel -r user_mj
bash: /usr/sbin/userdel: Permission denied
[user_DRP@svrdb-DRP home]$ sudo userdel -r user_mj
[sudo] password for user_DRP:
[user_DRP@svrdb-DRP home]$ 
dbadmin dbuser user_DRP
[user_DRP@svrdb-DRP home]$ 

```

(Figure 12.1) userdel command

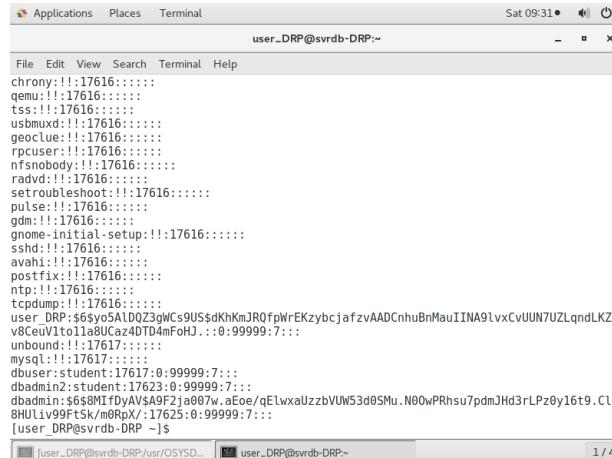
Also, if you look at the screen shot below you will notice that it is the passwd file and the “user\_mj” user is not there.



```
File Edit View Search Terminal Help
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
chrony:x:995:993:/:/var/lib/chrony:/sbin/nologin
qemu:x:107:107:qemu user:/sbin/nologin
tss:x:59:59:Account used by the trowsers package to sandbox the tcsl daemon:/dev/null:/sbin/nologin
usbmuxd:x:113:113:usbmuxd user:/sbin/nologin
geoclue:x:994:991:User for geoclue:/var/lib/geoclue:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
radvd:x:75:75:radvd user:/sbin/nologin
setroubleshoot:x:993:990:/:/var/lib/setroubleshoot:/sbin/nologin
pulse:x:171:171:PulseAudio System Daemon:/var/run/pulse:/sbin/nologin
gdm:x:42:42:/var/lib/gdm:/sbin/nologin
gnome-initial-setup:x:992:987:/:/run/gnome-initial-setup:/sbin/nologin
sshd:x:74:74:Privileged-separated SSH:/var/empty/sshd:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
postfix:x:89:89:/var/vmail/postfix:/sbin/nologin
ntp:x:172:172::/etc/ntp:/sbin/nologin
tcpdump:x:72:72::/sbin/nologin
user_DRP:x:1000:1000:Daniel Piche:/home/user_DRP:/bin/bash
unbound:x:991:986:Unbound DNS resolver:/etc/unbound:/sbin/nologin
mysql:x:27:27:MariaDB Server:/var/lib/mysql:/sbin/nologin
dbuser:x:1002:1006:/home/dbuser:/bin/bash
dbadmin2:x:1003:1003:/home/dbadmin2:/bin/bash
dbadmin:x:1004:1001:/home/dbadmin:/bin/bash
[User DRP@svrdb-DRP ~]$
```

(Figure 12.2) “etc/passwd” file

Below is the shadow file. This is even more proof that user\_mj does not exist.



```
File Edit View Search Terminal Help
chrony:!:17616::::::
qemu:!:17616::::::
tss:!:17616::::::
usbmuxd:!:17616::::::
geoclue:!:17616::::::
rpcuser:!:17616::::::
nfsnobody:!:17616::::::
radvd:!:17616::::::
setroubleshoot:!:17616::::::
pulse:!:17616::::::
gdm:!:17616::::::
gnome-initial-setup:!:17616::::::
sshd:!:17616::::::
avahi:!:17616::::::
postfix:!:17616::::::
ntp:!:17616::::::
tcpdump:!:17616::::::
user_DRP:$6$yo5ALD0Z3ohCs9US$dkKhKmJRQfpHrEKzybcjafzvAADCnhuBnMauIIINA91vxvJUN7UZLqndLKZ
v8CeV1tol1a8Ucaz4DTd4mFoHJ.:.:0:99999:7::
unbound:!:17617::::::
mysql:!:17617::::::
dbuser:student:17617:0:99999:7::
dbadmin2:student:17623:0:99999:7::
dbadmin:$6$8MIfDyAVSA9F2ja007w.a5oe/qElwxalUzzbVUW53d05Mu.N00wPRhsu7pdmJHd3rLPz0y16t9.Cl
8HUi1v9ftSk/m0RpQx/17625:0:99999:7::
[User DRP@svrdb-DRP ~]$
```

(Figure 12.3) shadow file

## Sources

<https://www.cyberciti.biz/faq/linux-remove-user-command/>

(nixCraft, Linux:Delete/remove user accounts, 2018)

## Step 13

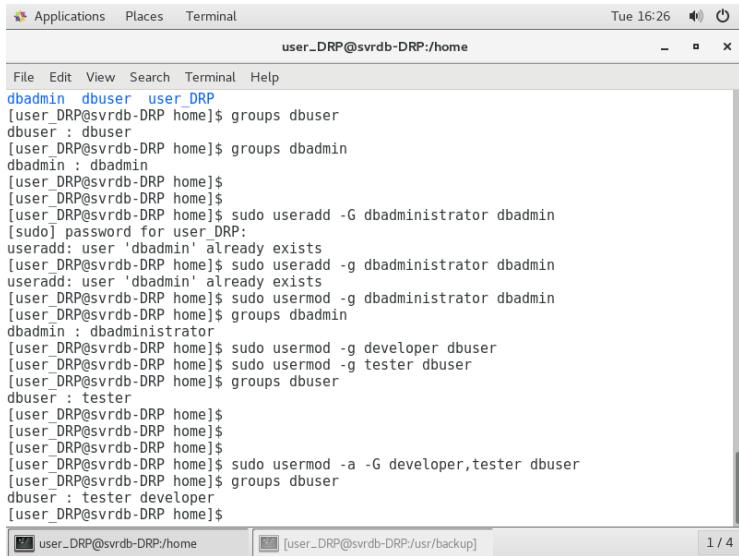
Adding users to a group is a fairly straight forward process as long as you can wrap your head around the commands. For this step we are instructed to add dbadmin to dbadministrators and dbuser to developer and tester groups. Below are the commands used.

**Useradd -G {groupname} username**

**Sudo usermod -g dbadministrator dbadmin**

**Sudo usermod -a -G developer,tester dbuser**

The screen shot below shows that the groups were created successfully and the users where added to them successfully.



A screenshot of a Linux terminal window titled "user\_DRP@svrdb-DRP:/home". The window shows the following command-line session:

```
File Edit View Search Terminal Help
user_DRP@svrdb-DRP:~$ groups dbuser
dbuser : dbuser
user_DRP@svrdb-DRP:~$ groups dbadmin
dbadmin : dbadmin
user_DRP@svrdb-DRP:~$ sudo useradd -G dbadministrator dbadmin
[sudo] password for user_DRP:
useradd: user 'dbadmin' already exists
user_DRP@svrdb-DRP:~$ sudo usermod -g dbadministrator dbadmin
useradd: user 'dbadmin' already exists
user_DRP@svrdb-DRP:~$ sudo usermod -g dbadmin dbadmin
user_DRP@svrdb-DRP:~$ groups dbadmin
dbadmin : dbadministrator
user_DRP@svrdb-DRP:~$ sudo usermod -g developer dbuser
user_DRP@svrdb-DRP:~$ sudo usermod -g tester dbuser
user_DRP@svrdb-DRP:~$ groups dbuser
dbuser : tester
user_DRP@svrdb-DRP:~$ 
user_DRP@svrdb-DRP:~$ sudo usermod -a -G developer,tester dbuser
user_DRP@svrdb-DRP:~$ groups dbuser
dbuser : tester developer
user_DRP@svrdb-DRP:~$
```

(Figure 13.1)usermod command

#### [sources](#)

<https://www.cyberciti.biz/faq/howto-linux-add-user-to-group/>

<https://superuser.com/questions/95972/how-do-i-add-a-user-to-multiple-groups-in-ubuntu>

(nixCraft, Linux add user to a group, 2018)

(StackExchange, How do I add a user to multiple groups, 2018)

## Step 14

Creating scripts is a very important skill to have as a IT professional. In this section I will create a script that prompts a person for their information and creates a user based on the info.

Below is a screen shot of the script running successfully.

```

user_DRP@svrdb-DRP:~/FinalProject/scripts$ ./user_create2.sh
Hello
What is your first name?
Daniel
What is your last name?
Piche
What username would you like to use?
test
What password would you like to use?
q
Daniel Piche test q
User does not exist!!!
Would you like to create test?
y
Created user test
[user_DRP@svrdb-DRP scripts]$ ./user_create2.sh
Hello
What is your first name?
Daniel
What is your last name?
Piche
What username would you like to use?
test
What password would you like to use?
q
Daniel Piche test q
test:x:1005:1007::/home/test:/bin/bash
User already exists!
Did not create test!!
[user_DRP@svrdb-DRP scripts]$ 

```

(Figure 14.1) Run user create script

Below is a screen shot of the “/etc/passwd” file. If you look at the bottom you will notice that the user from above was created.

```

user_DRP@svrdb-DRP:~/FinalProject/scripts$ cat /etc/passwd
root:x:0:root:/root:/bin/bash
bin:x:1:bin:/bin:/bin/nologin
daemon:x:2:daemon:/sbin:/bin/nologin
adm:x:3:adm:/var/adm:/bin/nologin
lp:x:4:lp:/var/spool/lpd:/bin/nologin
sync:x:5:sync:/sbin:/bin/sync
shutdown:x:6:shutdown:/sbin:/sbin/shutdown
halt:x:7:halt:/sbin:/sbin/halt
mail:x:12:mail:/var/spool/mail:/bin/nologin
operator:x:13:operator:/root:/bin/nologin
games:x:12:100:games:/usr/games:/bin/nologin
ftp:x:14:50:FTP User:/var/ftp:/bin/nologin
nobody:x:99:nobody:/var/empty/nobody:/bin/nologin
systemd-network:x:192:192:system Network Management:/sbin/nologin
nousr:x:101:81:Message bus:/var/run/dbus:/bin/nologin
polkitd:x:102:999:User polkitd:/var/run/polkitd:/bin/nologin
abrt:x:173:/etc/abrt:/sbin/nologin
libstoragemgmt:x:174:libstoragemgmt:/var/run/lsm:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
colorad:x:997:996:User for colorad:/var/lib/colorad:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
crond:x:173:173:CRON daemon:/var/spool/cron:/bin/nologin
omen:x:107:107:omen:/sbin/nologin
tss:x:190:Account used by the trousers package to sandbox the tcsd daemon:/dev/null:/sbin/nologin
ubntuser:x:108:108:Ubnt User:/var/lib/ubntuser:/sbin/nologin
geoclue:x:994:991:User for geoclue:/var/lib/geoclue:/sbin/nologin
rpccard:x:27:27:RPC Card Service User:/var/run/rpc:/sbin/nologin
rfisproxy:x:65535:65535:RFIS proxy:/var/lib/rfis:/sbin/nologin
radvdx:x:75:75:radvdx user:/sbin/nologin
servicing:x:171:171:Ubuntu Oneonta:/:/sbin/nologin
pulse:x:171:171:PulseAudio System Daemon:/var/pulse:/sbin/nologin
gdm:x:42:/var/lib/gdm:/sbin/nologin
gnome-session:x:172:GNOME Session:GNOME session initial setup:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
avahi:x:106:106:Avahi daemon:/var/run/avahi-daemon:/sbin/nologin
postfix:x:89:89:Postfix Mail Transport Agent Stack:/var/run/postfix:/sbin/nologin
ntp:x:38:38:et:ntp:/sbin/nologin
tcpdump:x:109:109:tcpdump:/var/run/tcpdump:/sbin/nologin
user_DRP:x:1008:1008:Daniel Piche:/home/user_DRP:/bin/bash
user_DRP:x:993:996:Unbound DNS resolver:/var/run/unbound:/sbin/nologin
mysql:x:1003:1003:MySQL Server:/var/run/mysqld:/sbin/nologin
dbsuser:x:1002:1006:/home/dbsuser:/bin/bash
dbsadmin:x:1004:1002:/home/dbsadmin:/bin/bash
dbadmin:x:1004:1001:/home/dbadmin:/bin/bash
test:x:1005:1007:/home/test:/bin/bash
[user_DRP@svrdb-DRP scripts]$ 

```

(Figure 14.1) “/etc/passwd” file

The next step is to set the permissions of the script so that users have “rwx” privileges, group has “rwx” privileges and others have read only.

**chmod 774 user\_create2.sh**

Below is a screen shot that shows the successful config of the permissions.

```

user_DRP@svrdb-DRP:~/FinalProject/scripts$ ls -l
total 12
-rwxrwx-- 1 user DRP user DRP 739 Apr  8 08:43 database backup2.sh
-rwxrwx-- 1 user DRP user DRP 727 Apr  8 09:31 user_create2.sh
-rwxrwx-- 1 user DRP user DRP 346 Apr  2 14:38 user_create.sh
user_DRP@svrdb-DRP scripts$ chmod 774 user_create.sh
user_DRP@svrdb-DRP scripts$ ls -l
total 12
-rwxrwx-- 1 user DRP user DRP 739 Apr  8 08:43 database backup2.sh
-rwxrwx-- 1 user DRP user DRP 727 Apr  8 09:31 user_create2.sh
-rwxrwx-- 1 user DRP user DRP 346 Apr  2 14:38 user_create.sh

```

(Figure 14.2) Permissions

Below is a screen shot of the script running successfully

```

user_DRP@svrdb-DRP:~/FinalProject/scripts$ ./user_create2.sh
Hello
What is your first name?
Daniel
What is your last name?
Piche
What username would you like to use?
test
What password would you like to use?
q
Daniel Piche test q
User does not exists!!!
Would you like to create test?
y
Created user test!!!
user_DRP@svrdb-DRP scripts$ ./user_create2.sh
Hello
What is your first name?
Daniel
What is your last name?
Piche
What username would you like to use?
test
What password would you like to use?
q
Daniel Piche test q
test:x:1005:1007:/home/test/:bin/bash
User already exist!!!
Did not create test!!!

```

(Figure 14.3) Script after being run

sources

<https://serverfault.com/questions/377092/bash-set-e-and-check-if-a-user-exists-make-script-exit>

<https://ryanstutorials.net/bash-scripting-tutorial/bash-input.php>

(Used script from assignment 6-2)

(Tutorials, 2018)

(StackExchange, Check if a user exists, 2018)

## Step 16

Modify the sudoers file to include a line for the dbadministrators group. This group should have the same level of access of the root user account.

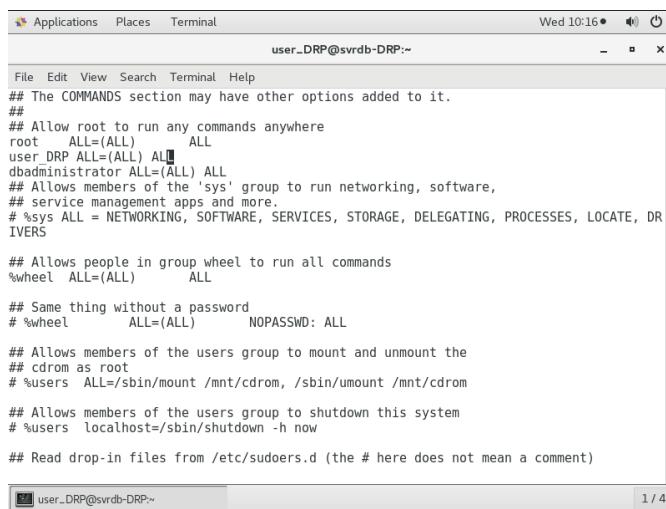
The commands to use are:

**Sudo visudo**

Once in the file enter the following:

**dbadministrator ALL=(ALL) ALL**

The screen shot below shows the line successfully entered in the file.

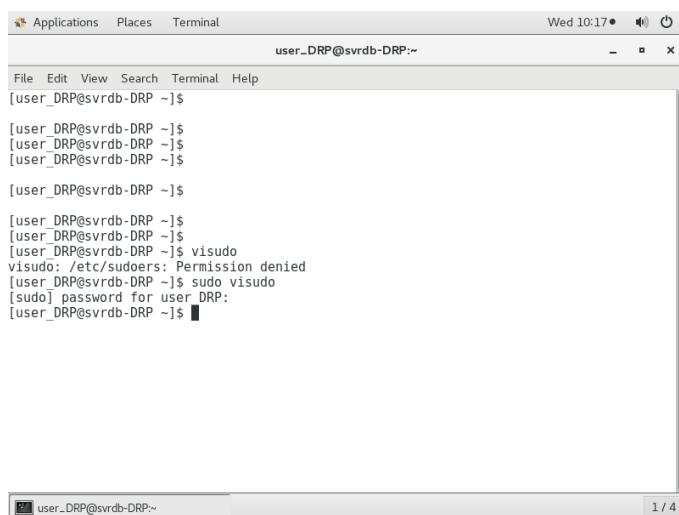


```
user_DRP@svrdb-DRP:~$ cat /etc/sudoers
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)      ALL
user_DRP ALL=(ALL)      ALL
dbadministrator ALL=(ALL)      ALL
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# sys      ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DR
IVERS
## Allows people in group wheel to run all commands
%wheel   ALL=(ALL)      ALL
## Same thing without a password
# %wheel      ALL=(ALL)      NOPASSWD: ALL
## Allows members of the users group to mount and umount the
## cdrom as root
# users   ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom
## Allows members of the users group to shutdown this system
# users   localhost/sbin/shutdown -h now
## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)

user_DRP@svrdb-DRP:~$
```

(Figure 16.1)Modifying visudo

The screen shot below shows that I entered into the file correctly



```
[user_DRP@svrdb-DRP ~]$ visudo
visudo: /etc/sudoers: Permission denied
[user_DRP@svrdb-DRP ~]$ sudo visudo
[sudo] password for user DRP:
[user_DRP@svrdb-DRP ~]$
```

(Figure 16.1)Modifying visudo Part 2

## 5.0 OS Configuration

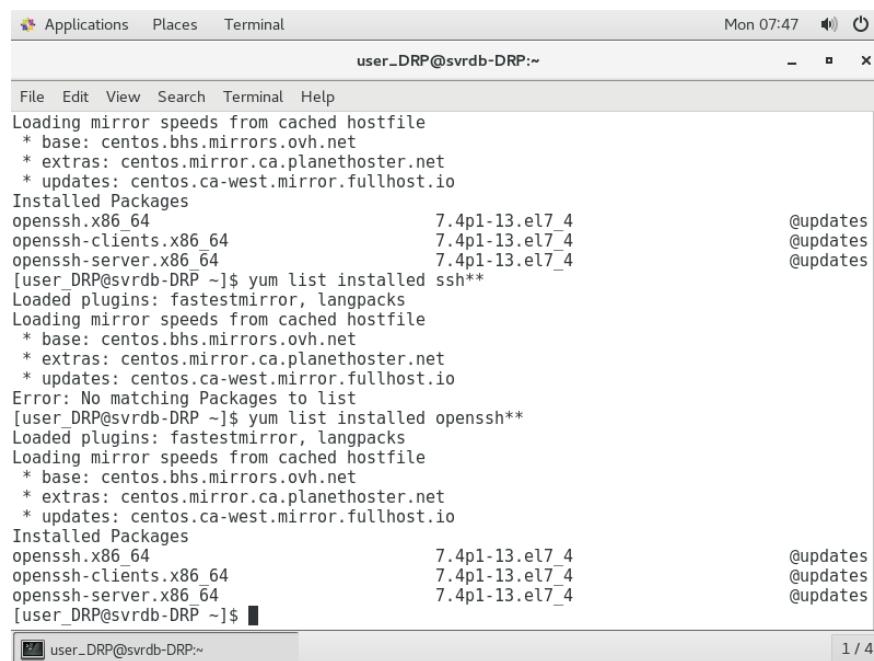
As an IT professional, your job is to configure operating systems. In this section we will work with ssh, network settings, firewalls and network daemons. We will also set environment variable, work with crontab and manage system processes.

### Step 17

In this next step we will verify that ssh and all dependencies are installed. The command to do that is below.

**yum list installed openssh\*\***

In the screen shot below you will see the command and results. You will notice that ssh and all dependancies have been installed.



The screenshot shows a terminal window titled "user\_DRP@svrdb-DRP:~". The window contains the following text:

```
user_DRP@svrdb-DRP:~
```

File Edit View Search Terminal Help

Loading mirror speeds from cached hostfile

- \* base: centos.bhs.mirrors.ovh.net
- \* extras: centos.mirror.ca.planethoster.net
- \* updates: centos.ca-west.mirror.fullhost.io

Installed Packages

Packages	Version	Release	Source RPM
openssh.x86_64	7.4p1-13.el7_4		@updates
openssh-clients.x86_64	7.4p1-13.el7_4		@updates
openssh-server.x86_64	7.4p1-13.el7_4		@updates

[user\_DRP@svrdb-DRP ~]\$ yum list installed ssh\*\*

Loaded plugins: fastestmirror, langpacks

Loading mirror speeds from cached hostfile

- \* base: centos.bhs.mirrors.ovh.net
- \* extras: centos.mirror.ca.planethoster.net
- \* updates: centos.ca-west.mirror.fullhost.io

Error: No matching Packages to list

[user\_DRP@svrdb-DRP ~]\$ yum list installed openssh\*\*

Loaded plugins: fastestmirror, langpacks

Loading mirror speeds from cached hostfile

- \* base: centos.bhs.mirrors.ovh.net
- \* extras: centos.mirror.ca.planethoster.net
- \* updates: centos.ca-west.mirror.fullhost.io

Installed Packages

Packages	Version	Release	Source RPM
openssh.x86_64	7.4p1-13.el7_4		@updates
openssh-clients.x86_64	7.4p1-13.el7_4		@updates
openssh-server.x86_64	7.4p1-13.el7_4		@updates

[user\_DRP@svrdb-DRP ~]\$

(Figure 17.1) SSH dependancies

\*\*\*Got the answer from week 10 assignment

### Step 18

To enable SSH for use on the default port you will use the command below.

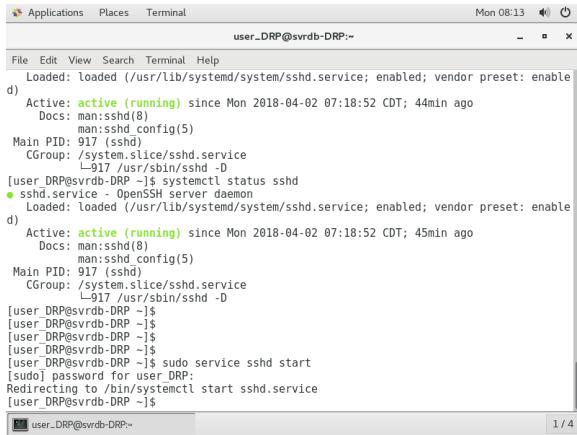
**Systemctl status sshd**

**Sudo service sshd start;**

**Sudo vi sshd\_config**

\*Remove the shebang in front of “#Port22”

The screen shot below confirms that ssh is running.



```
user_DRP@svrdb-DRP:~
```

```
File Edit View Search Terminal Help
```

```
Mon 08:13
```

```
Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enable
```

```
d) Active: active (running) since Mon 2018-04-02 07:18:52 CDT; 44min ago
```

```
Docs: man:sshd(8)
```

```
Main PID: 917 (sshd)
```

```
CGroup: /system.slice/sshd.service
```

```
└─917 /usr/sbin/sshd -D
```

```
[user_DRP@svrdb-DRP ~]$ systemctl status sshd
```

```
● sshd.service - OpenSSH server daemon
```

```
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enable
```

```
d) Active: active (running) since Mon 2018-04-02 07:18:52 CDT; 45min ago
```

```
   Docs: man:sshd(8)
```

```
   Main PID: 917 (sshd)
```

```
   CGroup: /system.slice/sshd.service
```

```
      └─917 /usr/sbin/sshd -D
```

```
[user_DRP@svrdb-DRP ~]$
```

```
[user_DRP@svrdb-DRP ~]$ sudo service sshd start
```

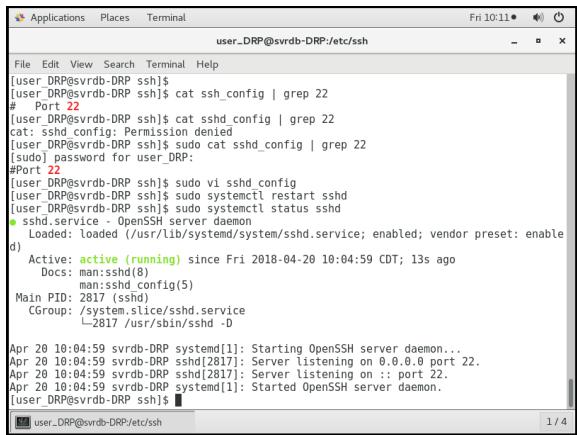
```
[sudo] password for user_DRP:
```

```
Redirecting to /bin/systemctl start sshd.service
```

```
[user_DRP@svrdb-DRP ~]$
```

(Figure 18.1)ssh services

The screen shot below shows the proper commands to use and the output.



```
user_DRP@svrdb-DRP:/etc/ssh
```

```
Fri 10:11
```

```
File Edit View Search Terminal Help
```

```
[user_DRP@svrdb-DRP ssh]$
```

```
[user_DRP@svrdb-DRP ssh]$ cat ssh_config | grep 22
```

```
# Port 22
```

```
[user_DRP@svrdb-DRP ssh]$ cat sshd_config | grep 22
```

```
cat: /etc/ssh/sshd_config: Permission denied
```

```
[user_DRP@svrdb-DRP ssh]$ sudo cat sshd_config | grep 22
```

```
[sudo] password for user_DRP:
```

```
#Port 22
```

```
[user_DRP@svrdb-DRP ssh]$ sudo vi sshd config
```

```
[user_DRP@svrdb-DRP ssh]$ sudo systemctl restart sshd
```

```
[user_DRP@svrdb-DRP ssh]$ sudo systemctl status sshd
```

```
● sshd.service - OpenSSH server daemon
```

```
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enable
```

```
d) Active: active (running) since Fri 2018-04-20 10:04:59 CDT; 13s ago
```

```
   Docs: man:sshd(8)
```

```
   Main PID: 2817 (sshd)
```

```
   CGroup: /system.slice/sshd.service
```

```
      └─2817 /usr/sbin/sshd -D
```

```
Apr 20 10:04:59 svrdb-DRP systemd[1]: Starting OpenSSH server daemon...
```

```
Apr 20 10:04:59 svrdb-DRP sshd[2817]: Server listening on 0.0.0.0 port 22.
```

```
Apr 20 10:04:59 svrdb-DRP sshd[2817]: Server listening on :: port 22.
```

```
Apr 20 10:04:59 svrdb-DRP systemd[1]: Started OpenSSH server daemon.
```

```
[user_DRP@svrdb-DRP ssh]$
```

(Figure 18.2)Enable ssh services

## Sources

<https://bytefreaks.net/gnulinux/centos-6-install-start-and-stop-enable-and-disable-ssh-server>

\*\*server went down before I was able to cite this source

\*\*Matt Joseph helped me with this question

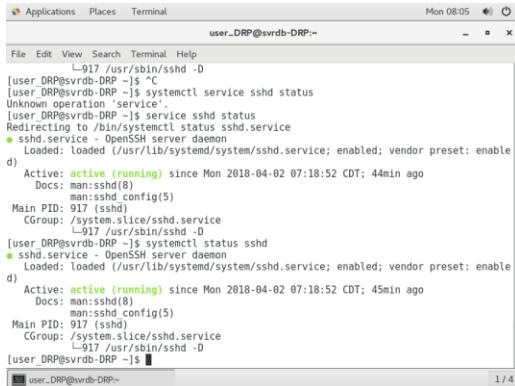
## Step 19

### Part1

Verify that the required SSH daemons are running.

**systemctl status sshd**

The screen shot below shows the results of the command above. You will notice by the output that ssh is running.



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The window shows the command "sshd" being run and its output. The output includes the command itself, followed by several lines of text describing the service: "Unknown operation 'service'", "Redirecting to /bin/systemctl status sshd.service", "● sshd.service - OpenSSH server daemon", "Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enable)", "d) Active: active (running) since Mon 2018-04-02 07:18:52 CDT; 44min ago", "Docs: man:sshd(8)", "Main PID: 917 (sshd)", "CGroup: /system.slice/sshd.service", "└─917 /usr/sbin/sshd -D". The terminal prompt "[user\_DRP@svrdb-DRP ~]\$ " is visible at the bottom.

(Figure 19.1) Verify SSH is running

#### sources

[http://www.techotopia.com/index.php/Configuring\\_CentOS\\_Remote\\_Access\\_using\\_SSH](http://www.techotopia.com/index.php/Configuring_CentOS_Remote_Access_using_SSH)

(Techotopia, 2016)

#### Part2

A very important skill that is used in Linux administration is using ssh to log into another host machine. Below are the commands that were used in this process. As you will notice the user name dbadmin is used because that is the user that is asked to use to connect with ssh.

An important thing to note is that when you create a new user there is an issue with the password being associated with the account so you actually have to log in as "su" and override the password.

su

passwd dbadmin

#Enter password#

Ifconfig

[dbadmin@192.168.208.156](http://dbadmin@192.168.208.156)

The screen shot below shows the output from the "ifconfig" command.

```

Applications Places Terminal
Sat 10:21 • 🔍 ⚡ 🌐 ⚡
user_DRP@svrdb-DRP:~ - x
File Edit View Search Terminal Help
inet 192.168.222.130 netmask 255.255.255.0 broadcast 192.168.222.255
inet6 fe80::b498:7ele:918b:f9fd prefixlen 64 scopeid 0x20<link>
ether 00:0c:29:2b:3e:68 txqueuelen 1000 (Ethernet)
RX packets 47 bytes 6618 (6.4 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 91 bytes 12129 (11.8 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1 (Local Loopback)
RX packets 1070 bytes 87266 (85.2 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1070 bytes 87266 (85.2 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
inet 192.168.122.1 netmask 255.255.255.0 broadcast 192.168.122.255
ether 52:54:00:5d:c8:e3 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

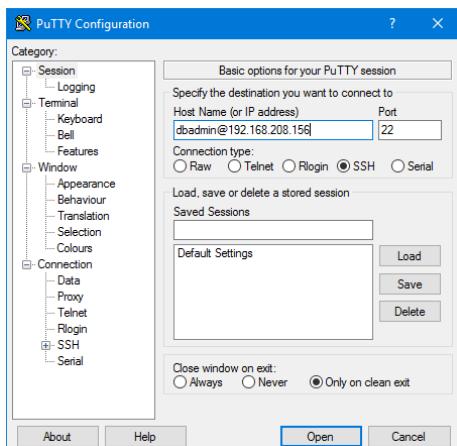
[user_DRP@svrdb-DRP ~]$ █

```

user\_DRP@svrdb-DRP:/usr/OSYSD... user\_DRP@svrdb-DRP:~ 1 / 4

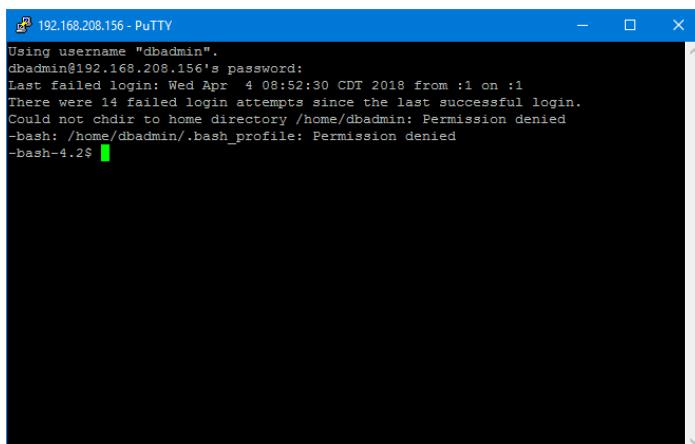
(Figure 19.2.1)ifconfig output

The screen shot below shows the physical login to my vm with the dbadmin account.



(Figure 19.2.2)Login with Putty

Below is the window that opens when the connection is in the process of being established.



(Figure 19.2.3) Console window/login with Putty

sources

<https://www.cyberciti.biz/faq/linux-set-change-password-how-to/>

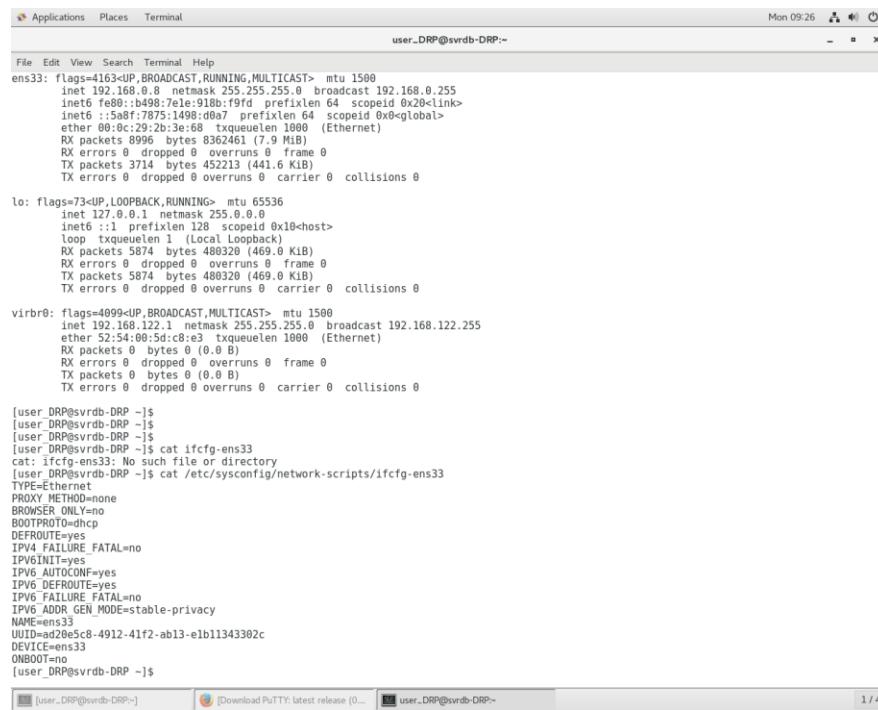
(nixCraft, Linux Set or change user password, 2018)

## Step 20

Using the cat command, show your current network configuration settings for your NIC. In red is the command used

**cat /etc/sysconfig/network-scripts/ifcfg-ens33**

Below is a screen shot of the output from the command above.



The screenshot shows a terminal window titled "Terminal" with the command "cat /etc/sysconfig/network-scripts/ifcfg-ens33" entered. The output displays detailed network interface configurations for ens33, lo, and virbr0. The configuration for ens33 includes flags (4163), broadcast address (192.168.0.255), netmask (255.255.255.0), and MAC address (00:0c:29:2b:3e:68). The configuration for lo includes flags (73), broadcast address (127.0.0.1), netmask (255.0.0.0), and MAC address (00:00:00:00:00:00). The configuration for virbr0 includes flags (4099), broadcast address (192.168.122.255), netmask (255.255.255.0), and MAC address (52:54:00:5d:c8:e3). The terminal window also shows the user's session information and the command history.

(Figure 20.1)Network configurations

sources

[https://www.centos.org/docs/5/html/Deployment\\_Guide-en-US/ch-networkscripts.html](https://www.centos.org/docs/5/html/Deployment_Guide-en-US/ch-networkscripts.html)

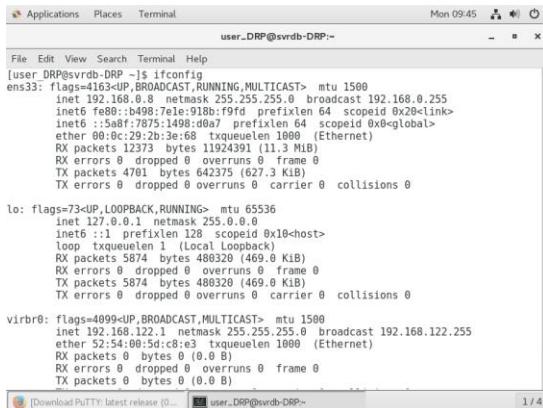
(RedHat.inc, n.d.)

## Step 21

Use the proper command to show your current network settings. Below is the command in red.

**Ifconfig**

The screen shot below is a screen capture of the output from the command.



The screenshot shows a terminal window titled "user\_DRP@svrdb:DRP:~". The window displays the output of the "ifconfig" command. The output lists several network interfaces: ens33, lo, and virbr0. Each interface shows its flags, MTU, link layer address, broadcast address, netmask, and various statistics like RX/TX bytes, errors, and collisions.

```
[user DRP@svrdb:DRP ~]$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.0.8  brd 192.168.0.255  netmask 255.255.255.0  broadcast 192.168.0.255
              inet6 fe80::a8c2:1ff:fe08:8%ens33  brd fe80::ff:fe08:ff  scopeid 0x20<link>
                ether 00:0c:29:b3:3e:68  txqueuelen 1000  (Ethernet)
              RX packets 12373  bytes 11924391 (11.3 MB)
              RX errors 0  dropped 0  overrun 0  frame 0
              TX packets 4701  bytes 642375 (627.3 KiB)
              TX errors 0  dropped 0  overrun 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
          inet6 ::1  prefixlen 128  scopeid 0x10<host>
            loop  txqueuelen 1  (Local Loopback)
          RX packets 5874  bytes 480320 (469.0 KiB)
          RX errors 0  dropped 0  overrun 0  frame 0
          TX packets 5874  bytes 480320 (469.0 KiB)
          TX errors 0  dropped 0  overrun 0  carrier 0  collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 192.168.122.1  brd 192.168.122.255  netmask 255.255.255.0  broadcast 192.168.122.255
          ether 52:54:00:5d:c8:e3  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overrun 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
```

(Figure 21.1) ifconfig output

No resources were used for this question as it was straight forward.

## Step 22

Restart the two network daemons that are used for managing your network connections. Below are the commands. For some reason one of the commands does not work as expected which is strange because the command worked in the past.

Sudo systemctl restart network-service

sudo systemctl restart NetworkManager

sudo systemctl restart NetworkManager.service

Below is a screen shot of the commands being run. You will notice that one command leaves the output "Failed to restart network-service.service: Unit not found".

```

Applications Places Terminal Mon 09:56
user_DRP@svrdb-DRP:~ - x
File Edit View Search Terminal Help
loop txqueuelen 1 (Local Loopback)
RX packets 5874 bytes 480320 (469.0 Kib)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 5874 bytes 480320 (469.0 Kib)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
inet 192.168.122.1 netmask 255.255.255.0 broadcast 192.168.122.255
ether 52:54:00:5d:c8:e3 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$ sudo systemctl restart network-service
[sudo] password for user_DRP:
Failed to restart network-service.service: Unit not found.
[user_DRP@svrdb-DRP ~]$ sudo systemctl restart NetworkManager
[user_DRP@svrdb-DRP ~]$ sudo systemctl restart network-service
Failed to restart network-service.service: Unit not found.
[user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$
```

[Download PuTTY: latest release (0... user\_DRP@svrdb-DRP:~ 1 / 4]

(Figure 22.1) Restarting the two network daemons

(Got answers from assignment 10-2)

## Step 23

Display the current status of the firewall daemon. Below is the command to complete this step.

**sudo systemctl status firewalld**

As you can see in the screen shot below, the firewalld service is running.

```

Applications Places Terminal Mon 10:07
user_DRP@svrdb-DRP:~ - x
File Edit View Search Terminal Help
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: reject-route: INVALID_ICMPTYPE:...e.
Hint: Some lines were ellipsized, use -l to show in full.
[user_DRP@svrdb-DRP ~]$ sudo systemctl restart network service
Failed to restart service.service: Unit not found.
[user_DRP@svrdb-DRP ~]$ sudo systemctl restart Network-Service
Failed to restart Network-Service.service: Unit not found.
[user_DRP@svrdb-DRP ~]$ sudo systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: e
abled)
   Active: active (running) since Mon 2018-04-02 07:18:49 CDT; 2h 47min ago
     Docs: man:firewalld(1)
 Main PID: 656 (firewalld)
    Group: /system.slice/firewalld.service
           ↳ 656 /usr/bin/python -Es /usr/sbin/firewalld --nofork --nopid

Apr 02 07:18:47 svrdb-DRP systemd[1]: Starting firewalld - dynamic firewall daemon...
Apr 02 07:18:49 svrdb-DRP systemd[1]: Started firewalld - dynamic firewall daemon.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: ICMP type 'beyond-scope' is not...6.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: beyond-scope: INVALID_ICMPTYPE:...e.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: ICMP type 'failed-policy' is no...6.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: failed-policy: INVALID_ICMPTYPE:...e.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: ICMP type 'reject-route' is not...6.
Apr 02 07:18:51 svrdb-DRP firewalld[656]: WARNING: reject-route: INVALID_ICMPTYPE:...e.
Hint: Some lines were ellipsized, use -l to show in full.
[user_DRP@svrdb-DRP ~]$ [user_DRP@svrdb-DRP ~]$
```

[Download PuTTY: latest release (0... user\_DRP@svrdb-DRP:~ 1 / 4]

(Figure 23.1)Firewalld status

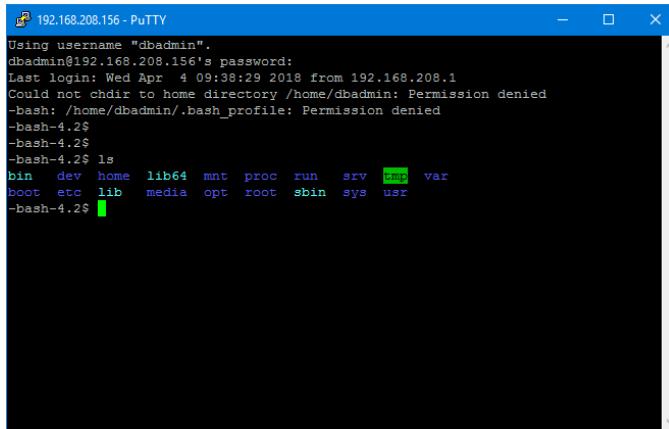
(Answer to this question was taken from assignment 10-2)

## Step 24

Block the port that ssh uses in your firewall configuration. Using Putty try to ssh into your VM.

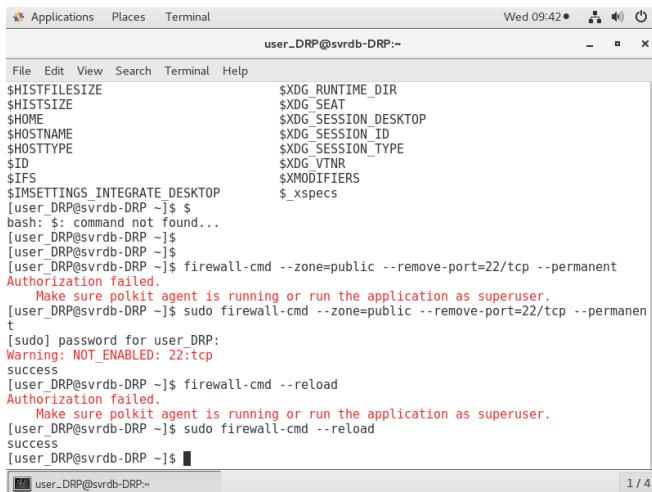
```
sudo firewall-cmd --zone=public --remove-port=22/tcp --permanent
```

```
sudo firewall-cmd --runtime-to-permanent  
sudo firewall-cmd -reload  
sudo systemctl restart firewalld
```



A screenshot of a Putty terminal window titled "192.168.208.156 - Putty". The session is using the username "dbadmin". The terminal output shows:

```
Using username "dbadmin".  
dbadmin@192.168.208.156's password:  
Last login: Wed Apr  4 09:38:29 2018 from 192.168.208.1  
Could not chdir to home directory /home/dbadmin: Permission denied  
-bash: /home/dbadmin/.bash_profile: Permission denied  
-bash-4.2$  
-bash-4.2$ ls  
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var  
boot etc  lib   media  opt  root  sbin  sys  usr  
-bash-4.2$
```



A screenshot of a terminal window on an Ubuntu desktop environment. The title bar says "user\_DRP@svrdb-DRP:~". The terminal output shows:

```
File Edit View Search Terminal Help  
user_DRP@svrdb-DRP:~  
$HISTFILESIZE  
$HISTSIZE  
$HOME  
$HOSTNAME  
$HOSTTYPE  
$ID  
$IFS  
$IMSETTINGS_INTEGRATE_DESKTOP  
[user_DRP@svrdb-DRP ~]$ $  
bash: $: command not found...  
[user_DRP@svrdb-DRP ~]$  
[user_DRP@svrdb-DRP ~]$  
[user_DRP@svrdb-DRP ~]$ firewall-cmd --zone=public --remove-port=22/tcp --permanent  
Authorization failed.  
Make sure polkit agent is running or run the application as superuser.  
[user_DRP@svrdb-DRP ~]$ sudo firewall-cmd --zone=public --remove-port=22/tcp --permanen  
t  
[sudo] password for user_DRP:  
Warning: NOT_ENABLED: 22:tcp  
success  
[user_DRP@svrdb-DRP ~]$ firewall-cmd --reload  
Authorization failed.  
Make sure polkit agent is running or run the application as superuser.  
[user_DRP@svrdb-DRP ~]$ sudo firewall-cmd --reload  
success  
[user_DRP@svrdb-DRP ~]$
```

<https://serverfault.com/questions/818996/how-to-remove-access-to-a-port-using-firewall-on-centos7>

<https://www.tecmint.com/firewalld-rules-for-centos-7/>

(Used examples from assignment 10-2)

## Step 25

Using the cat and grep commands display an entry in the sudo authorization log file of you successfully using the sudo command. Below in red is the actual command used.

**cat /var/log/secure**

The screen shot below show the entry in the “/var/log/secure” file that contains succesfull usage of the sudo command.

```
user_DRP@svrdb-DRP:~
```

```
File Edit View Search Terminal Help
```

```
Mon 10:44
```

```
ess:7498:942953 (system bus name :1.254, object path /org/freedesktop/PolicyKit1/Authen
ticationAgent, locale en CA.UTF-8) (disconnected from bus)
Apr 2 10:00:59 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl status firewalld
Apr 2 10:05:02 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart network.service
Apr 2 10:05:02 svrdb-DRP polkitd[589]: Registered Authentication Agent for unix-proces
ses:7689:999540 (system bus name :1.262 [/usr/bin/pktyagent --notify-fd 5 --fallback], o
bject path /org/freedesktop/PolicyKit1/AuthenticationAgent, locale en CA.UTF-8)
Apr 2 10:05:03 svrdb-DRP polkitd[589]: Unregistered Authentication Agent for unix-proc
ess:7689:999540 (system bus name :1.262, object path /org/freedesktop/PolicyKit1/Authen
ticationAgent, locale en CA.UTF-8) (disconnected from bus)
Apr 2 10:05:17 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart Network-Service
Apr 2 10:05:17 svrdb-DRP polkitd[589]: Registered Authentication Agent for unix-proces
ses:8014:1001070 (system bus name :1.280 [/usr/bin/pktyagent --notify-fd 5 --fallback],
object path /org/freedesktop/PolicyKit1/AuthenticationAgent, locale en CA.UTF-8)
Apr 2 10:05:17 svrdb-DRP polkitd[589]: Unregistered Authentication Agent for unix-proc
ess:8014:1001070 (system bus name :1.280, object path /org/freedesktop/PolicyKit1/Authe
nticationAgent, locale en CA.UTF-8) (disconnected from bus)
Apr 2 10:06:10 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl status firewalld
Apr 2 10:41:39 svrdb-DRP gdm-passwordd: gkr-pam: unlocked login keyring
Apr 2 10:42:00 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/cat /var/log/secure
[user_DRP@svrdb-DRP ~]$
```

```
[Download PuTTY: latest release (0...)] [user_DRP@svrdb-DRP:~]
```

(Figure 25.1) View “/var/log/secure” file

Below is the output of the same command but contains the command entry.

```
user_DRP@svrdb-DRP:~
```

```
File Edit View Search Terminal Help
```

```
Mon 10:49
```

```
[user_DRP@svrdb-DRP ~]$ sudo cat /var/log/secure
[sudo] password for user_DRP:
Mar 26 16:08:35 svrdb-DRP polkitd[583]: Loading rules from directory /etc/polkit-1/rule
.s.d
Mar 26 16:08:35 svrdb-DRP polkitd[583]: Loading rules from directory /usr/share/polkit-
1/rules.d
Mar 26 19:08:36 svrdb-DRP polkitd[583]: Finished loading, compiling and executing 8 rul
es
Mar 26 19:08:36 svrdb-DRP polkitd[583]: Acquired the name org.freedesktop.PolicyKit1 on
the system bus
Mar 26 19:08:44 svrdb-DRP sshd[968]: Server listening on 0.0.0.0 port 22.
Mar 26 19:08:44 svrdb-DRP sshd[968]: Server listening on :: port 22.
Mar 26 19:09:41 svrdb-DRP polkitd[583]: Registered Authentication Agent for unix-proces
ses:11293:8611 (system bus name :1.196 [/usr/bin/pktyagent --notify-fd 5 --fallback], ob
ject path /org/freedesktop/PolicyKit1/AuthenticationAgent, locale en CA.UTF-8)
Mar 26 19:09:41 svrdb-DRP polkitd[583]: Unregistered Authentication Agent for unix-proc
ess:11293:8611 (system bus name :1.196, object path /org/freedesktop/PolicyKit1/Authent
icationAgent, locale en CA.UTF-8) (disconnected from bus)
Mar 26 19:09:41 svrdb-DRP polkitd[583]: Registered Authentication Agent for unix-proces
ses:11316:8654 (system bus name :1.197 [/usr/bin/pktyagent --notify-fd 5 --fallback], ob
ject path /org/freedesktop/PolicyKit1/AuthenticationAgent, locale en CA.UTF-8)
Mar 26 19:09:41 svrdb-DRP polkitd[583]: Unregistered Authentication Agent for unix-proc
ess:11316:8654 (system bus name :1.197, object path /org/freedesktop/PolicyKit1/Authent
icationAgent, locale en CA.UTF-8) (disconnected from bus)
Mar 26 19:09:42 svrdb-DRP gdm-launch-environment]: pam_unix(gdm-launch-environment:ses
sion): session opened for user gdm by (uid=0)
```

```
[Download PuTTY: latest release (0...)] [user_DRP@svrdb-DRP:~]
```

(Figure 25.2) View “/var/log/secure” file

The screen shot below shows the same but using grep instead. The command used is in red.

grep user\_DRP /var/log/secure

Below are two screen shots showing output from the same command. The first screen shot shows the end of the output with lines where the sudo command where successfully used and the other screen capture shows the actual command being entered.

```

Applications Places Terminal Mon 10:47
user_DRP@svrdb-DRP:~ - x

File Edit View Search Terminal Help
COMMAND=/sbin/useradd dbadmin -p student
Apr 2 08:58:34 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/sbin/useradd dbadmin2 -p student
Apr 2 09:35:05 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/sbin/ethtool ens33
Apr 2 09:38:57 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/cat /etc/shadow
Apr 2 09:54:11 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart network-service
Apr 2 09:55:19 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart NetworkManager
Apr 2 09:55:36 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart network-service
Apr 2 10:00:59 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl status firewalld
Apr 2 10:05:02 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart network.service
Apr 2 10:05:17 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl restart Network-Service
Apr 2 10:06:10 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/systemctl status firewalld
Apr 2 10:42:00 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/cat /var/log/secure
Apr 2 10:47:16 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/grep user_DRP /var/log/secure
[user_DRP@svrdb-DRP ~]$ █

```

(Figure 25.3) View “/var/log/secure” file with grep

```

Applications Places Terminal Mon 10:51
user_DRP@svrdb-DRP:~ - x

File Edit View Search Terminal Help
Apr 2 10:41:39 svrdb-DRP gdm-password]: gkr-pam: unlocked login keyring
Apr 2 10:42:00 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/cat /var/log/secure
[user_DRP@svrdb-DRP ~]$ grep user_DRP /var/log/secure
grep: /var/log/secure: Permission denied
[user_DRP@svrdb-DRP ~]$ sudo grep user_DRP /var/log/secure
[sudo] password for user_DRP:
Mar 26 19:10:00 svrdb-DRP gdm-password]: pam_unix(gdm-password:session): session opened
for user user_DRP by (uid=0)
Mar 26 19:15:51 svrdb-DRP unix_chkpwd[13308]: password check failed for user (user_DRP)
Mar 26 19:15:51 svrdb-DRP sudo: pam_unix(sudo:auth): authentication failure; logname=us
er_DRP uid=1000 euid=0 tty=/dev/pts/0 ruser=user_DRP rhost= user=user_DRP
Mar 26 19:16:01 svrdb-DRP unix_chkpwd[13312]: password check failed for user (user_DRP)
Mar 26 19:16:10 svrdb-DRP sudo: user_DRP : user NOT in sudoers ; TTY=pts/0 ; PWD=/home/
user_DRP ; USER=root ; COMMAND=/sbin/visudo
Mar 26 19:16:26 svrdb-DRP su: pam_unix(su:session): session opened for user root by use
r_DRP(uid=1000)
Mar 26 19:18:06 svrdb-DRP su: pam_unix(su:session): session opened for user root by use
r_DRP(uid=1000)
Mar 26 19:34:47 svrdb-DRP unix_chkpwd[49826]: password check failed for user (user_DRP)
Mar 26 19:34:47 svrdb-DRP sudo: pam_unix(sudo:auth): authentication failure; logname=us
er_DRP uid=1000 euid=0 tty=/dev/pts/0 ruser=user_DRP rhost= user=user_DRP
Mar 26 19:34:58 svrdb-DRP unix_chkpwd[49828]: password check failed for user (user_DRP)
Mar 26 19:35:08 svrdb-DRP sudo: user_DRP : TTY=pts/0 ; PWD=/home/user_DRP ; USER=root ;
COMMAND=/bin/yum install mariadb-server
Mar 26 19:41:50 svrdb-DRP unix_chkpwd[50014]: password check failed for user (user_DRP)

```

(Figure 25.3) View “/var/log/secure” file with grep

## Sources

<https://www.techrepublic.com/article/10-ways-to-use-grep-to-search-files-in-linux/>

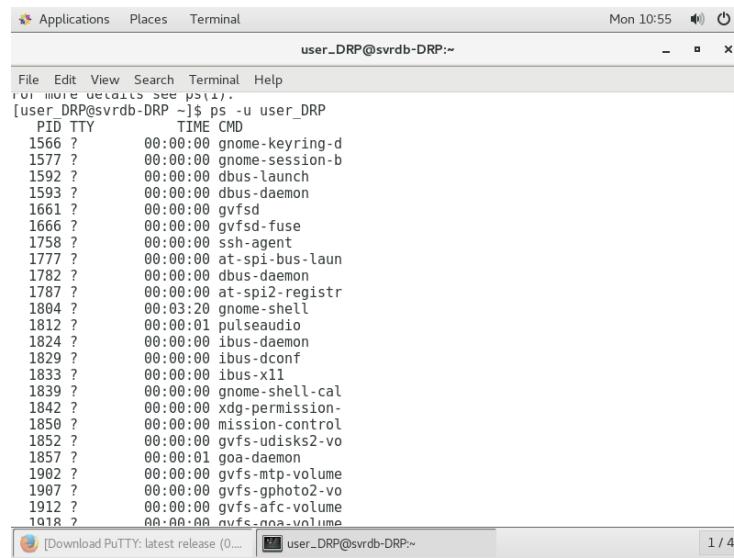
(TechRepublic, 2018)

## Step 26

Displaying processes used by a specific user account is a very important skill to have as a network administrator. Below is the command used to display processes by a specific user.

`ps -u user_DRP`

The screen shot below is the output from the command showing that the command was entered correctly.

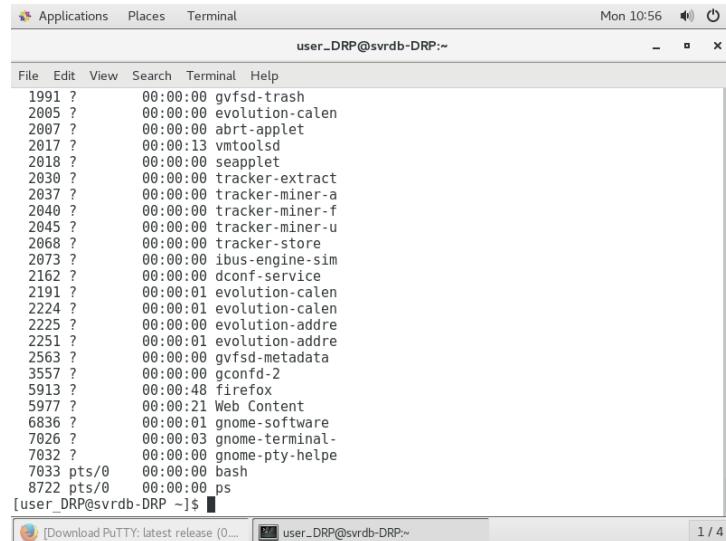


A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The window shows the output of the command "ps -u user\_DRP". The output lists numerous processes running under the user "user\_DRP", including system daemons like gvfsd, ssh-agent, and pulseaudio, as well as application processes like evolution-calen and gnome-terminal. The terminal window has a standard Linux-style interface with tabs for Applications, Places, and Terminal, and a status bar at the bottom.

```
user_DRP@svrdb-DRP:~$ ps -u user_DRP
  PID TTY      TIME CMD
1566 ?    00:00:00 gnome-keyring-d
1577 ?    00:00:00 gnome-session-b
1592 ?    00:00:00 dbus-launch
1593 ?    00:00:00 dbus-daemon
1661 ?    00:00:00 gvfsd
1666 ?    00:00:00 gvfsd-fuse
1758 ?    00:00:00 ssh-agent
1777 ?    00:00:00 at-spi-bus-laun
1782 ?    00:00:00 dbus-daemon
1787 ?    00:00:00 at-spi2-registr
1804 ?    00:03:20 gnome-shell
1812 ?    00:00:01 pulseaudio
1824 ?    00:00:00 ibus-daemon
1829 ?    00:00:00 ibus-dconf
1833 ?    00:00:00 ibus-x11
1839 ?    00:00:00 gnome-shell-cal
1842 ?    00:00:00 xdg-permission-
1850 ?    00:00:00 mission-control
1852 ?    00:00:00 gvfs-udisks2-vo
1857 ?    00:00:01 goa-daemon
1902 ?    00:00:00 gvfs-mtp-volume
1907 ?    00:00:00 gvfs-gphoto2-vo
1912 ?    00:00:00 gvfs-afc-volume
1918 ?    00:00:00 nvfs-nna-volume
```

(Figure 26.1) Processes 1

Below shows the rest of the output displayed by the “ps -u user\_DRP” command



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The window shows the continuation of the output of the command "ps -u user\_DRP". It lists more processes, including evolution-calen, evolution-addre, and gnome-terminal, along with other system and application processes. The terminal window has a standard Linux-style interface with tabs for Applications, Places, and Terminal, and a status bar at the bottom.

```
user_DRP@svrdb-DRP:~$ ps -u user_DRP
 1991 ?    00:00:00 gvfsd-trash
2005 ?    00:00:00 evolution-calen
2007 ?    00:00:00 abrt-applet
2017 ?    00:00:13 vmtoolsd
2018 ?    00:00:00 seapplet
2030 ?    00:00:00 tracker-extract
2037 ?    00:00:00 tracker-miner-a
2040 ?    00:00:00 tracker-miner-f
2045 ?    00:00:00 tracker-miner-u
2068 ?    00:00:00 tracker-store
2073 ?    00:00:00 ibus-engine-sim
2162 ?    00:00:00 dconf-service
2191 ?    00:00:01 evolution-calen
2224 ?    00:00:01 evolution-calen
2225 ?    00:00:00 evolution-addre
2251 ?    00:00:01 evolution-addre
2563 ?    00:00:00 gvfsd-metadata
3557 ?    00:00:00 qconfd-2
5913 ?    00:00:48 firefox
5977 ?    00:00:21 Web Content
6836 ?    00:00:01 gnome-software
7026 ?    00:00:03 gnome-terminal-
7032 ?    00:00:00 gnome-pty-helpe
7033 pts/0  00:00:00 bash
8722 pts/0  00:00:00 ps
[user_DRP@svrdb-DRP ~]$
```

(Figure 26.2) Processes 2

## Sources

<https://unix.stackexchange.com/questions/85466/how-to-see-process-created-by-specific-user-in-unix-linux>

(StackExchange, How to see processes created by a user in Linux, 2018)

## Step 27

Display all of your currently set environment variables (Just the name of the variables, not what they are set to). The command for this is below.

## Printenv

The “printenv” command is typically the command used to print all the environment variables with the path but the assignment calls for only the names of the variables. There is actually not a command for this.

Instead type “\$ TAB”

Below is what the output should look like.

## (Figure 27.1) Environment variables

## **sources**

<https://www.computerhope.com/unix/printenv.htm>

(ComputerHope, 2018)

## Step 28

Working with path variables is a very important skill to have as a Linux administrator because it gives you the ability to manage how processes run and where they run from. Below is the command to append a path.

```
export PATH="$PATH:/usr/OSYSDB"
```

The screen shots below show that the command was run successfully and that the intended path was appended to the current path.

### (Figure 28.1) Export path 1

Below shows the rest of the screen shot

### (Figure 28.1) Export path 2

## Sources

<https://askubuntu.com/questions/60218/how-to-add-a-directory-to-the-path>

(StackExchange, How to add a directory to the path, 2018)

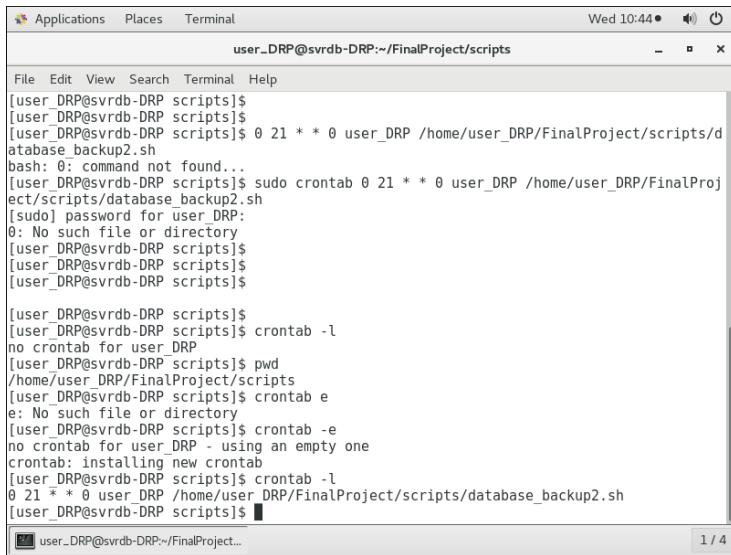
## Step 29

Create a new cron job that will run your database\_backup.sh script at 9:00pm on Sundays only. Below is the command to edit the crontab file as well as the line to put in it.

## Crontab -e

0 21 \* \* 0 user\_DRP /home/user\_DRP/FinalProject/scripts/database\_backup2.sh

The screen below shows the content of the crontab file.



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~/FinalProject/scripts". The window shows a command-line session where a user is creating a cron job. The user runs "sudo crontab 0 21 \* \* 0 user\_DRP /home/user\_DRP/FinalProject/scripts/database\_backup2.sh", which fails because it cannot find the file. The user then runs "crontab -l" to list existing cron jobs, which also fails. Finally, the user runs "crontab -e" to edit the cron tab, and the command "0 21 \* \* 0 user\_DRP /home/user\_DRP/FinalProject/scripts/database\_backup2.sh" is added to the end of the file.

```
[user_DRP@svrdb-DRP scripts]$ 
[user_DRP@svrdb-DRP scripts]$ 
[user_DRP@svrdb-DRP scripts]$ 0 21 * * 0 user_DRP /home/user_DRP/FinalProject/scripts/database_backup2.sh
bash: 0: command not found...
[user_DRP@svrdb-DRP scripts]$ sudo crontab 0 21 * * 0 user_DRP /home/user_DRP/FinalProject/scripts/database_backup2.sh
[sudo] password for user_DRP:
0: No such file or directory
[user_DRP@svrdb-DRP scripts]$ 
[user_DRP@svrdb-DRP scripts]$ 
[user_DRP@svrdb-DRP scripts]$ 
[user_DRP@svrdb-DRP scripts]$ crontab -l
no crontab for user_DRP
[user_DRP@svrdb-DRP scripts]$ pwd
/home/user_DRP/FinalProject/scripts
[user_DRP@svrdb-DRP scripts]$ crontab e
e: No such file or directory
[user_DRP@svrdb-DRP scripts]$ crontab -e
no crontab for user_DRP - using an empty one
crontab: installing new crontab
[user_DRP@svrdb-DRP scripts]$ crontab -l
0 21 * * 0 user_DRP /home/user_DRP/FinalProject/scripts/database_backup2.sh
[user_DRP@svrdb-DRP scripts]$ 
```

(Figure 29)Using Crontab

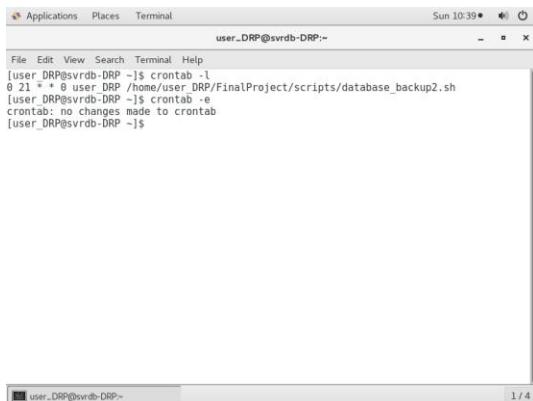
<https://www.computerhope.com/unix/ucrontab.htm>

(Hope, 2018)

## Step 30

List your cron jobs that are currently configured. The command to list the current cron jobs is listed below as well as the screen shot of the command running successfully.

crontab -l



A screenshot of a terminal window titled "user\_DRP@svrdb-DRP:~". The window shows a command-line session where the user runs "crontab -l", which lists the existing cron job: "0 21 \* \* 0 user\_DRP /home/user\_DRP/FinalProject/scripts/database\_backup2.sh".

```
[user_DRP@svrdb-DRP ~]$ crontab -l
0 21 * * 0 user_DRP /home/user_DRP/FinalProject/scripts/database_backup2.sh
[user_DRP@svrdb-DRP ~]$ crontab -e
crontab: no changes made to crontab
[user_DRP@svrdb-DRP ~]$ 
```

(Figure 30)List current cron jobs

<https://www.liquidweb.com/kb/how-to-display-list-all-jobs-in-cron-crontab/>

(Web, 2018)

## 6.0 File Manipulation

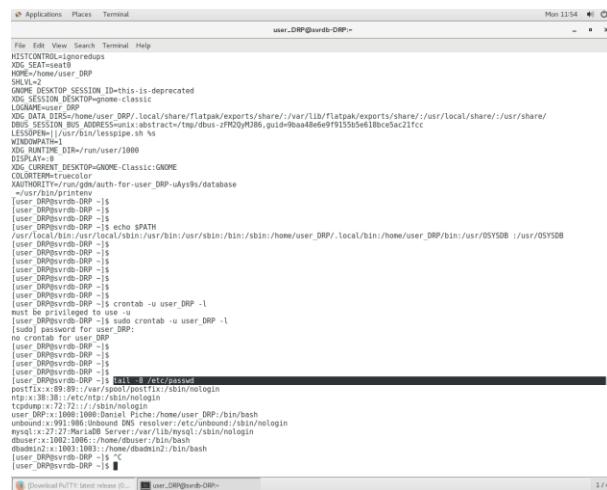
Being able to redirect file content into other files and using grep to search for strings are very powerfull tools for a network administrator. In the section below we will go into some standard file manipulation commands.

### Step 31

- List the last 8 lines of the /etc/passwd file. Below is the command to do this.

**tail -8 /etc/passwd**

The screen shot below shows the successful use of the command by it's output.



A screenshot of a terminal window titled "user\_DRP@svrd-DRP:~". The window shows the command "tail -8 /etc/passwd" being run and its output. The output includes various environment variables and user entries from the /etc/passwd file, such as "user\_DRP:x:1001:1001::/home/user\_DRP:/bin/bash", "dbsa:x:1002:1002::/home/dbsa:/bin/bash", and "dbadmin102:x:1003:1003::/home/dbadmin102:/bin/bash". The terminal window has a standard Linux desktop interface with icons for Applications, Places, Terminal, Help, and a menu bar.

(Figure 31.1)Tail command

- Using the same command above redirect the output to a new file named passwd-mod and move it to your FinalProject directory. Below is the command for this.

**tail -8 /etc/passwd > /home/user\_DRP/FinalProject/passwd-mod**

As you can see in the screen shot below, the passwd-mod file was created and contains the output from the tail command. This file will be included with the submission so that you can verify that the the command did what it was intended to do.

### (Figure 31.2) Tail command 2

## **sources**

<https://kb.iu.edu/d/acrj>

(University, 2018)

## Step 32

- a) List the first 3 lines of the /etc/shadow file. Below is the command to get the output.

`sudo head -3 /etc/shadow`

Below is a screen shot of the output.

(Figure 32.1) Head command1

- b) Using the same command above redirect the output to a new file named shadow-mod and move it to your FinalProject directory. In red below is the command to complete this task.

```
sudo head -3 /etc/shadow > /home/user_DRP/FinalProject/shadow-mod
```

Below shows the command being successfully run and the content of the file. This file will be included with the submission.

## (Figure 32.2) Head command2

<https://kb.iu.edu/d/acrj>

(University, 2018)

## Step 33

Using the proper command combine the passwd-mod and shadow-mod files into a single file named passwd-shadow. Below in red is the command to complete this task.

```
cat passwd-mod shadow-mod > passwd-shadow
```

In the screen shot below you will see the command being run successfully and the content of the file being displayed using the cat command.

```

Applications Places Terminal Mon 12:22
user_DRP@svrdb-DRP:~/FinalProject
File Edit View Search Terminal Help
root@172.17.0.2:~#
ravd@172.17.0.2:~#
service@172.17.0.2:~#
pulse@172.17.0.2:~#
gdm@172.17.0.2:~#
gnome-session@172.17.0.2:~#
sshd@172.17.0.2:~#
avahi-daemon@172.17.0.2:~#
postfix@172.17.0.2:~#
ntp@172.17.0.2:~#
tunctl@172.17.0.2:~#
user_DRP@169.254.102.10:~#
mysql@172.17.0.2:~#
dbuser@172.17.0.2:~# 0:99999:7:-
dsoud@172.17.0.2:~# 0:99999:7:-
[user_DRP@svrdb-DRP FinalProject]$
[user_DRP@svrdb-DRP FinalProject] ls
passed-mod scripts shadow-mod
[user_DRP@svrdb-DRP FinalProject] cat shadow-mod
root@169.254.102.10:~# 0:99999:7:-
bin@172.17.0.2:~# 0:99999:7:-
dsoud@172.17.0.2:~# 0:99999:7:-
[user_DRP@svrdb-DRP FinalProject] ls
passed-mod scripts shadow-mod
[user_DRP@svrdb-DRP FinalProject] cat passed-mod shadow-mod > passwd-shadow
[root@169.254.102.10 ~]# 0:99999:7:-
passed-mod shadow scripts shadow-mod
[user_DRP@svrdb-DRP FinalProject] cat passed-mod shadow
postfix@172.17.0.2:~# 0:99999:7:-
root@172.17.0.2:~# 0:99999:7:-
httpd@172.17.0.2:~# 0:99999:7:-
[root@169.254.102.10 ~]# 0:99999:7:-
user_DRP@169.254.102.10:~#
dsoud@172.17.0.2:~# 0:99999:7:-
MySQL@172.17.0.2:~# 0:99999:7:-
root@169.254.102.10:~# 0:99999:7:-
bin@172.17.0.2:~# 0:99999:7:-
dsoud@172.17.0.2:~# 0:99999:7:-
[user_DRP@svrdb-DRP FinalProject] $

```

(Figure 33.1) Combine content of two files

## Sources

<https://www.howtogeek.com/278599/how-to-combine-text-files-using-the-cat-command-in-linux/>

(Geek, 2018)

## Step 34

Archive and zip your FinalProject directory. Below are the two commands for zipping and archiving a directory.

*tar cvf FinalProject.tar /home/user\_DRP/FinalProject*

*gzip FinalProject.tar*

Below the commands are the results showing a successful running of zip and tar commands.

```

Applications Places Terminal Sun 16:32
user_DRP@svrdb-DRP:~
File Edit View Search Terminal Help
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ 
[user_DRP@svrdb-DRP ~]$ tar cvf FinalProject.tar /home/user_DRP/FinalProject
tar: Removing leading '/' from member names
/home/user_DRP/FinalProject/
/home/user_DRP/FinalProject/scripts/
/home/user_DRP/FinalProject/scripts/user_create2.sh
/home/user_DRP/FinalProject/scripts/.database_backup.sh.swp
/home/user_DRP/FinalProject/scripts/user_create.sh
/home/user_DRP/FinalProject/scripts/database_backup.sh
/home/user_DRP/FinalProject/scripts/database_backup2.sh
/home/user_DRP/FinalProject/scripts/.user_create.sh.swp
/home/user_DRP/FinalProject/password_mod
/home/user_DRP/FinalProject/shadow_mod
/home/user_DRP/FinalProject/password_shadow
/home/user_DRP/FinalProject/group_backup
/home/user_DRP/FinalProject/password_backup
/home/user_DRP/FinalProject/shadow_backup
[user_DRP@svrdb-DRP ~]$ ls
Desktop Downloads FinalProject.tar Pictures Templates
Documents FinalProject Music Public Videos
[user_DRP@svrdb-DRP ~]$ gzip FinalProject.tar
[user_DRP@svrdb-DRP ~]$ ls
Desktop Downloads FinalProject.tar.gz Pictures Templates
Documents FinalProject Music Public Videos
[user_DRP@svrdb-DRP ~]$ 

```

(Figure 34.1) tar and gzip

## Sources

<https://www.howtogeek.com/248780/how-to-compress-and-extract-files-using-the-tar-command-on-linux/>

(geek, 2018)

## Step 35

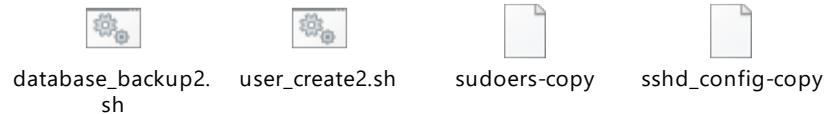
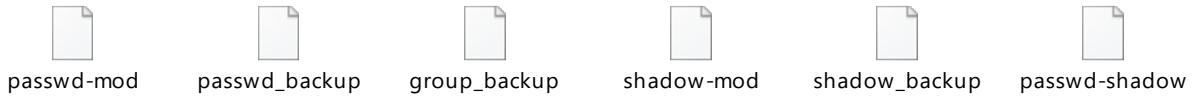
Shutdown your VM. Below is the command for this.

**Shutdown -h now**

**sources**

<https://www.cyberciti.biz/faq/centos-rhel-redhat-linux-6-server-shutdown-command/>

(nixCraft, CentOS/RHEL 6: Shutdown Command, 2018)



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