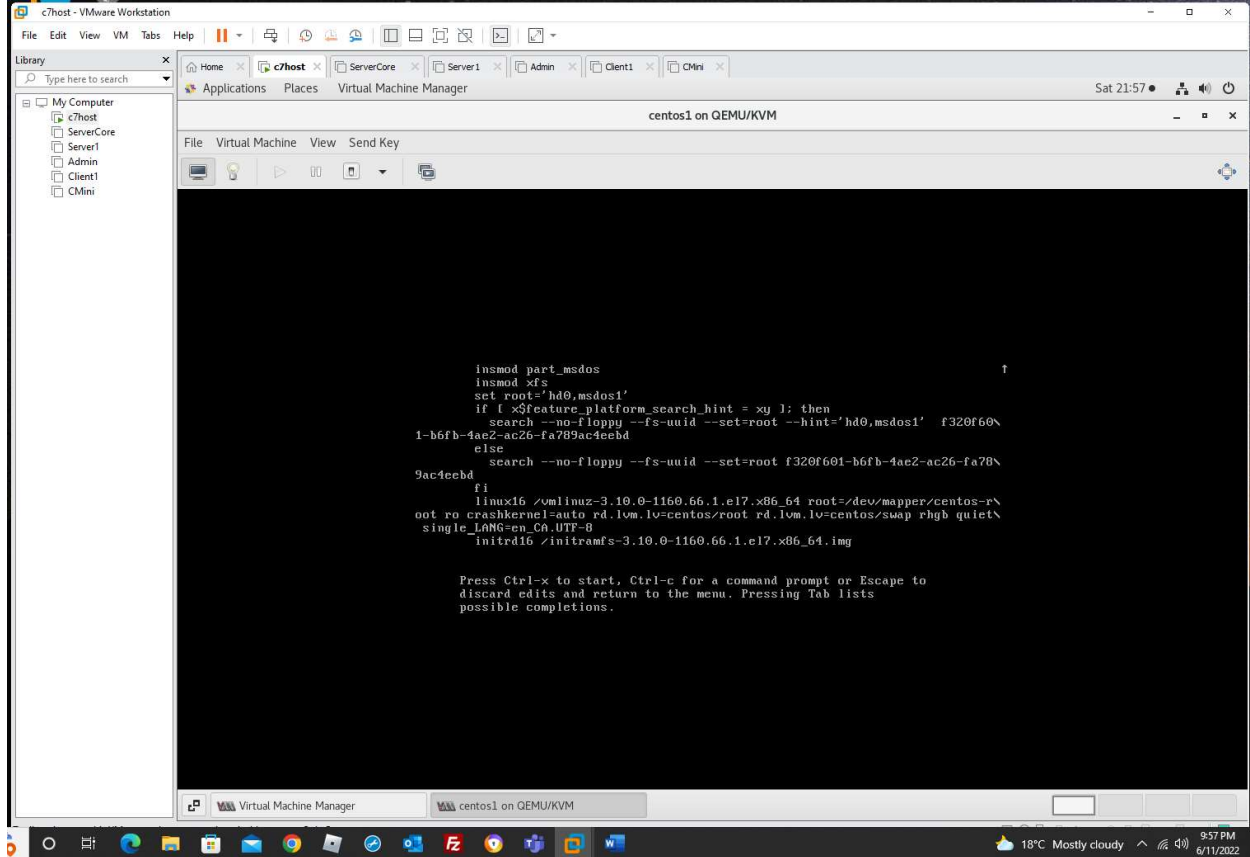
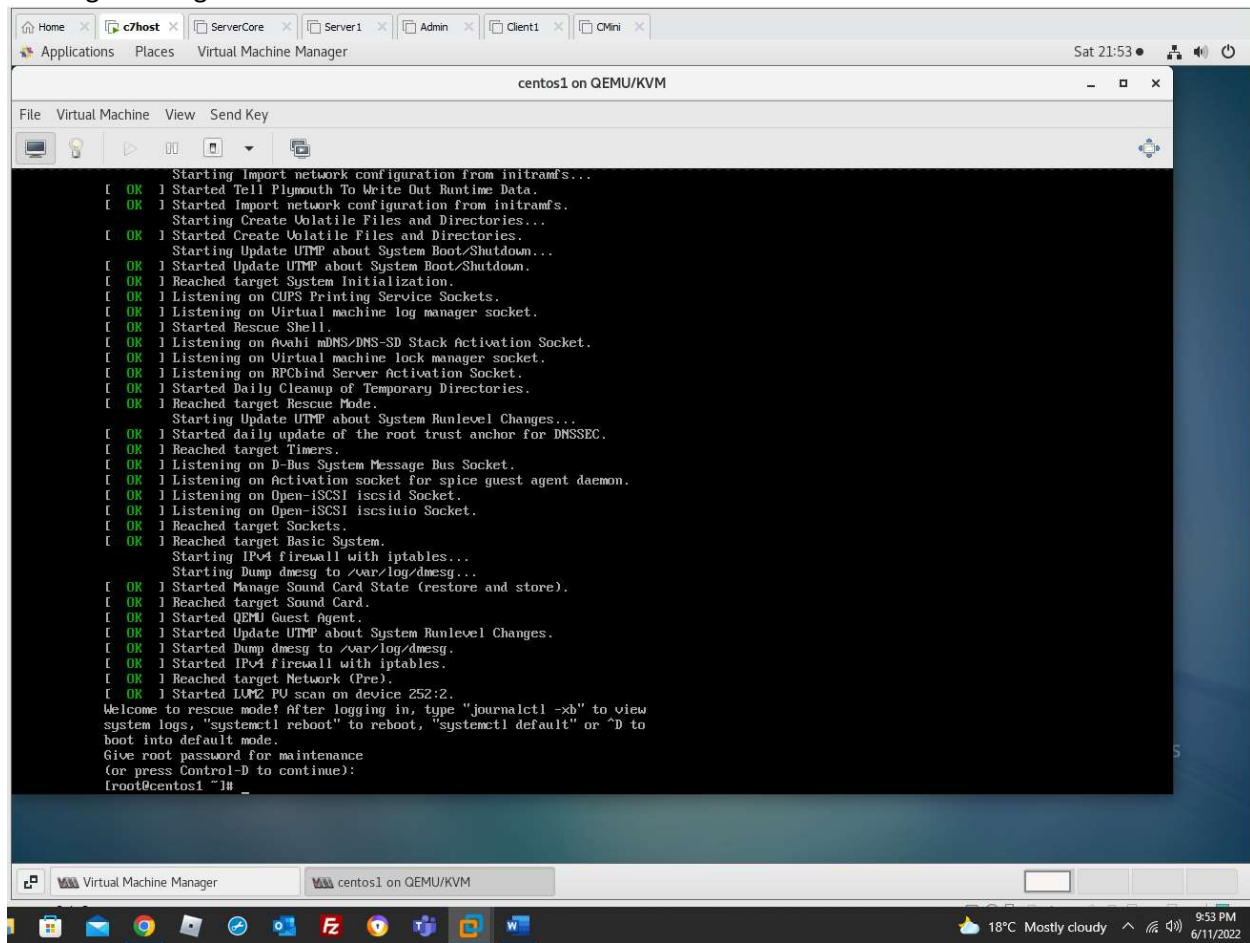


## Investigation 1: Grub boot menu.



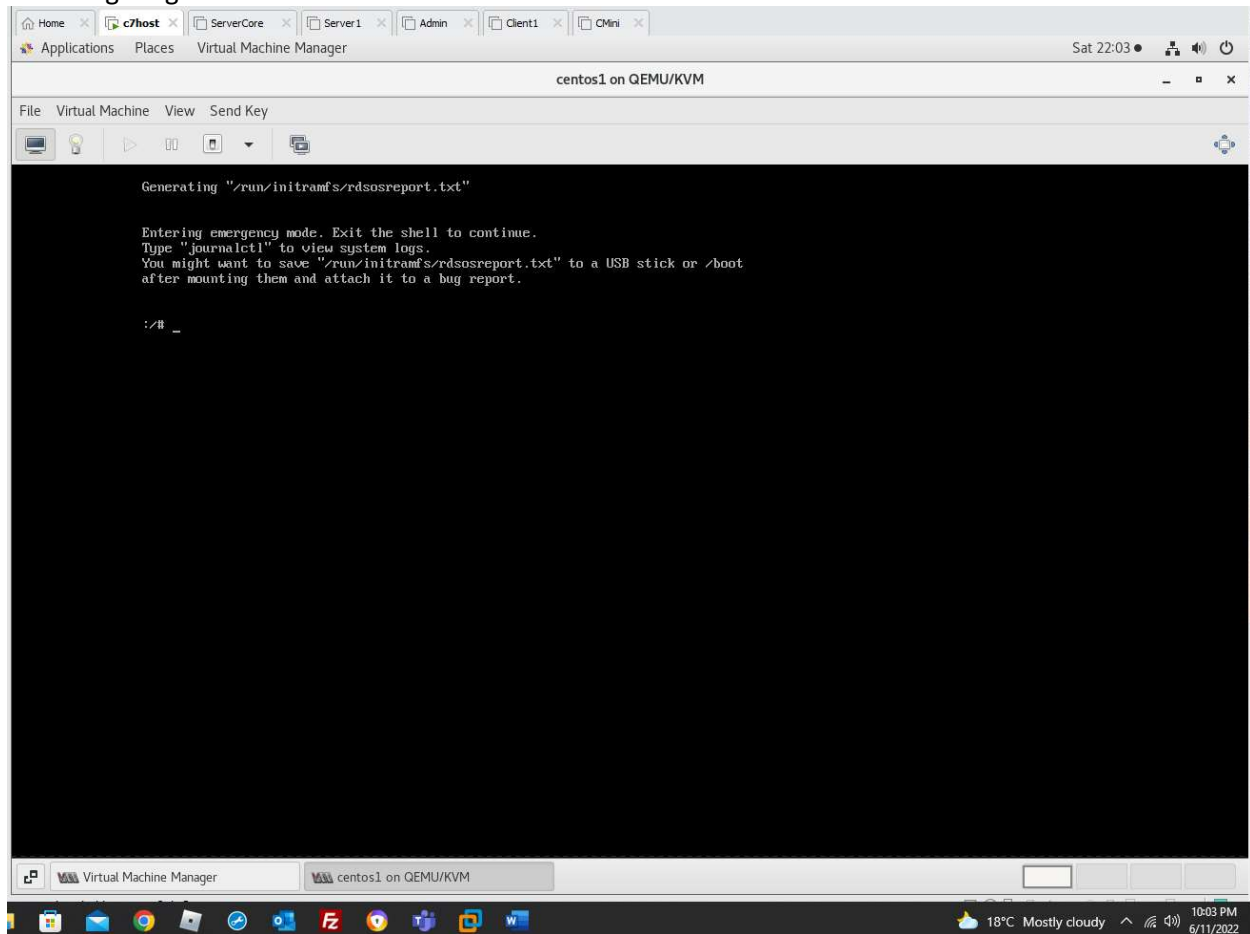
## Booting into single user mode.



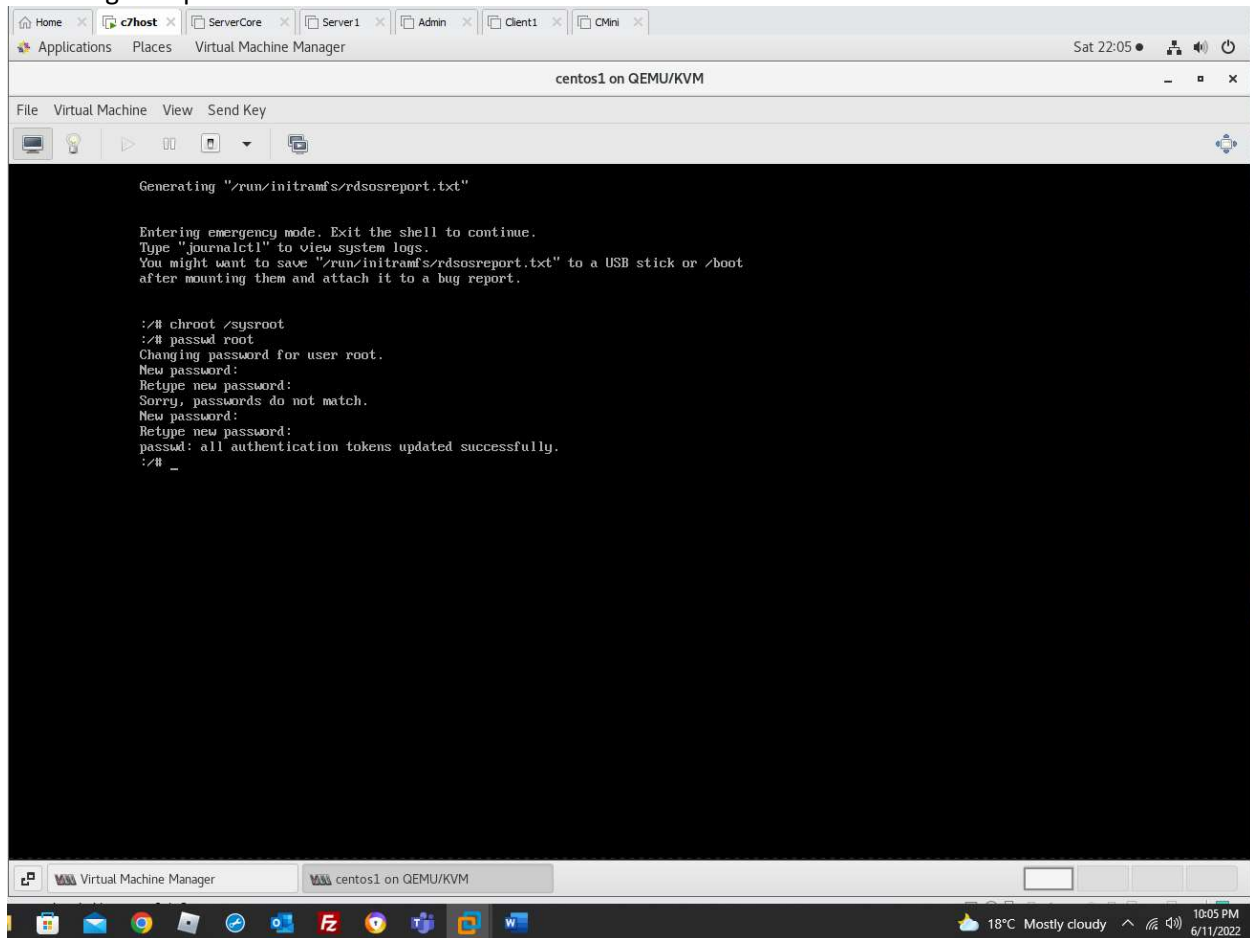
```
centos1 on QEMU/KVM
File Virtual Machine View Send Key

[ OK ] Starting Import network configuration from initramfs...
[ OK ] Started Tell Plymouth To Write Out Runtime Data.
[ OK ] Starting Import network configuration from initramfs.
[ OK ] Starting Create Volatile Files and Directories...
[ OK ] Started Create Volatile Files and Directories.
[ OK ] Starting Update UTMPI about System Boot/Shutdown...
[ OK ] Started Update UTMPI about System Boot/Shutdown.
[ OK ] Reached target System Initialization.
[ OK ] Listening on CUPS Printing Service Sockets.
[ OK ] Listening on Virtual machine log manager socket.
[ OK ] Started Rescue Shell.
[ OK ] Listening on Avahi mDNS/DNS-SD Stack Activation Socket.
[ OK ] Listening on Virtual machine lock manager socket.
[ OK ] Listening on RPCbind Server Activation Socket.
[ OK ] Started Daily Cleanup of Temporary Directories.
[ OK ] Reached target Rescue Mode.
[ OK ] Starting Update UTMPI about System Runlevel Changes...
[ OK ] Started daily update of the root trust anchor for DNSSEC.
[ OK ] Reached target Timers.
[ OK ] Listening on D-Bus System Message Bus Socket.
[ OK ] Listening on Activation socket for spice guest agent daemon.
[ OK ] Listening on Open-iSCSI iscsid Socket.
[ OK ] Listening on Open-iSCSI iscsiui Socket.
[ OK ] Reached target Sockets.
[ OK ] Reached target Basic System.
[ OK ] Starting IPV4 firewall with iptables...
[ OK ] Starting Dump dmesg to /var/log/dmesg...
[ OK ] Started Manage Sound Card State (restore and store).
[ OK ] Reached target Sound Card.
[ OK ] Started QEMU Guest Agent.
[ OK ] Started Update UTMPI about System Runlevel Changes.
[ OK ] Started Dump dmesg to /var/log/dmesg.
[ OK ] Started IPV4 firewall with iptables.
[ OK ] Reached target Network (Pre).
[ OK ] Started LVM2 PV scan on device 252:2.
Welcome to rescue mode! After logging in, type "journalctl -xb" to view
system logs, "systemctl reboot" to reboot, "systemctl default" or "D" to
boot into default mode.
Give root password for maintenance
(or press Control-D to continue):
root@centos1 ~#
```

## Resetting Forgotten Root Password.



## Resetting root password:



The screenshot shows a Windows 10 desktop with the Virtual Machine Manager application open. A virtual machine named 'centos1 on QEMU/KVM' is running. The terminal window inside the VM shows the following text:

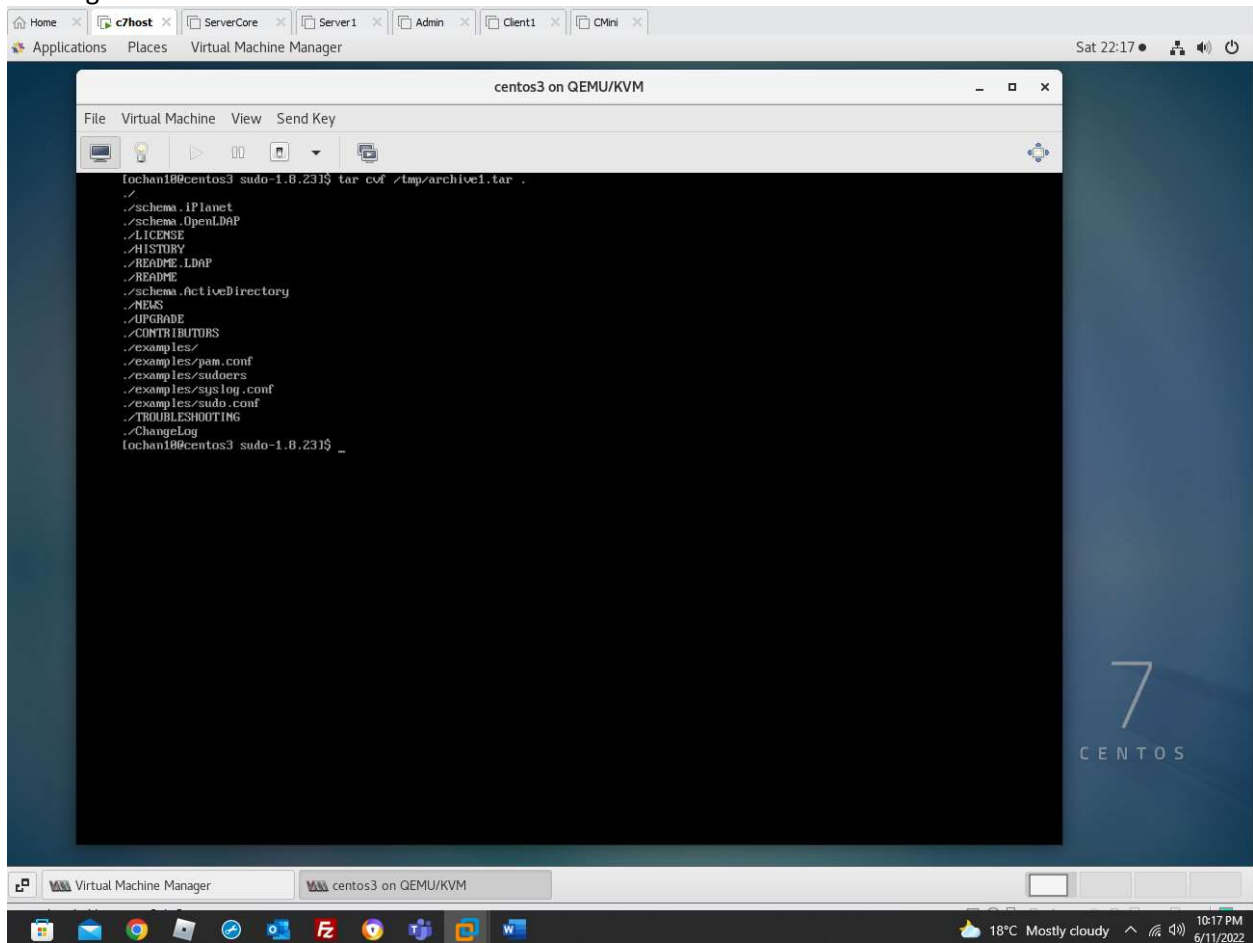
```
Generating "/run/initramfs/rdsosreport.txt"

Entering emergency mode. Exit the shell to continue.
Type "journalctl" to view system logs.
You might want to save "/run/initramfs/rdsosreport.txt" to a USB stick or /boot
after mounting them and attach it to a bug report.

:/# chroot /sysroot
:/# passwd root
Changing password for user root.
New password:
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
:/# _
```

The bottom of the screen shows the Windows taskbar with various application icons and a system tray indicating the date and time as 10:05 PM on 6/11/2022.

## Investigation 2:



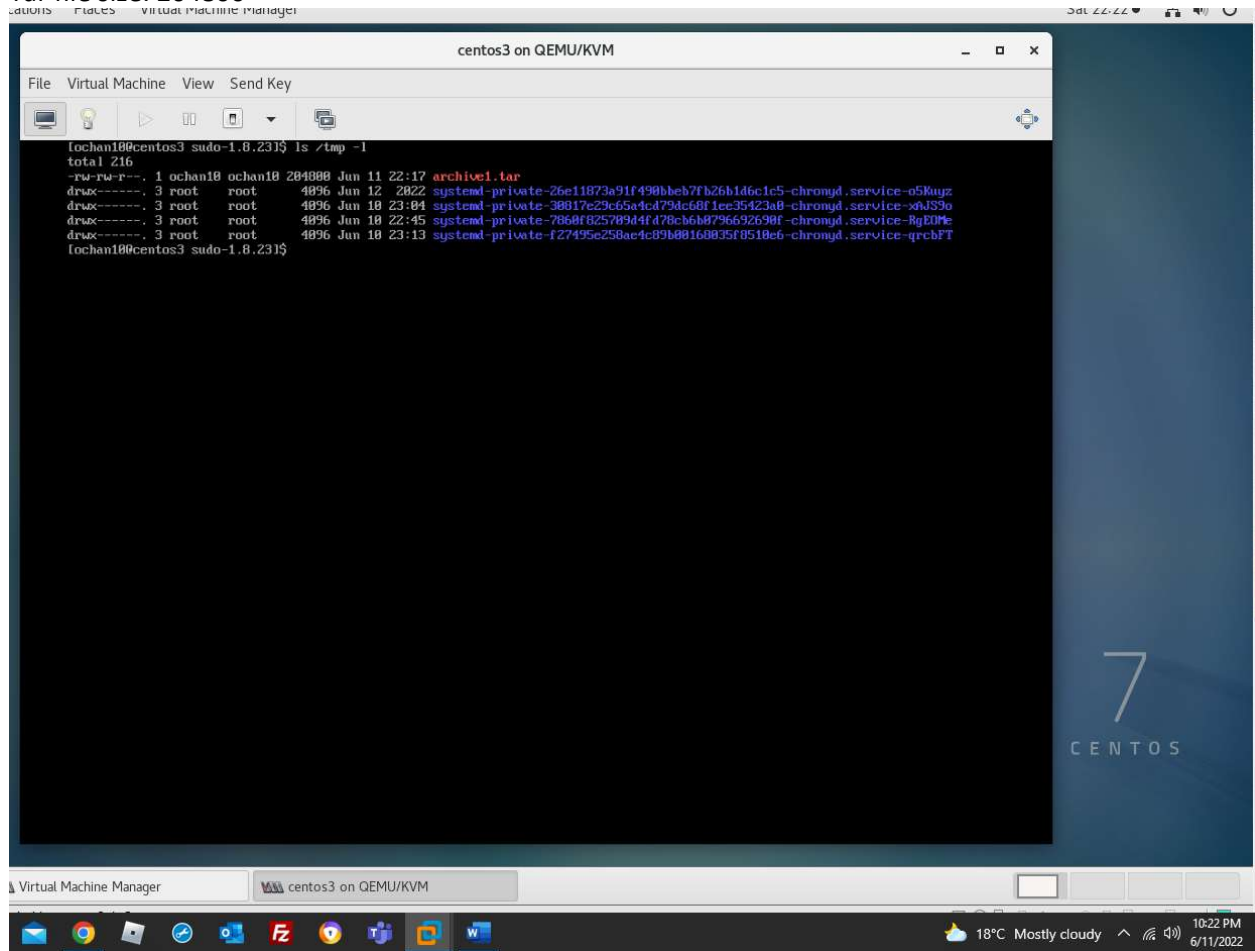
. What do the options c, v, and f mean?

C – create

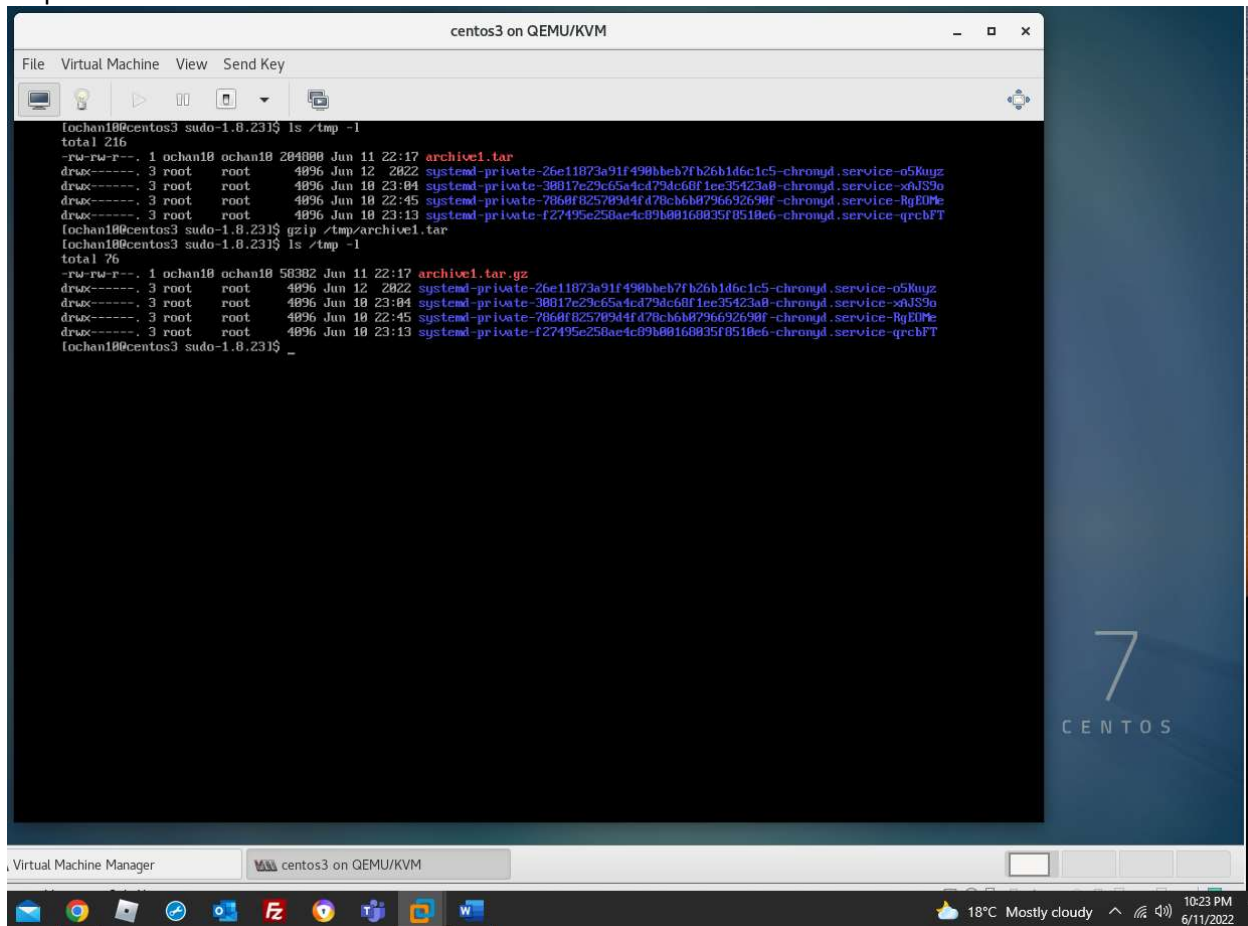
v - verbose

f – file=ARCHIVE

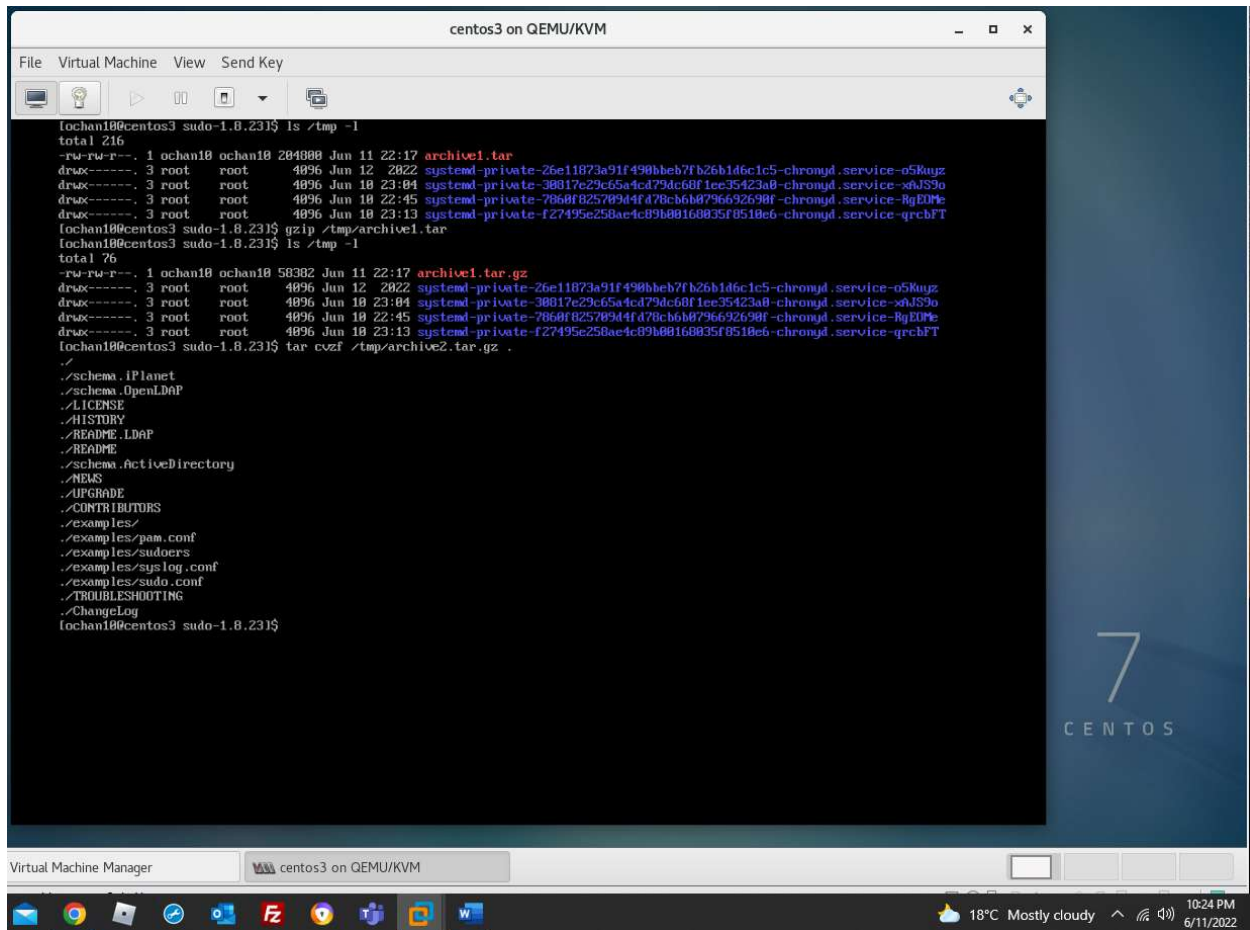
Tar file size: 204800



Gzip: filesize= 58382



Tar cvzf : archive2 filesize=58369



The screenshot shows a virtual machine window titled "centos3 on QEMU/KVM". The terminal displays the following commands and output:

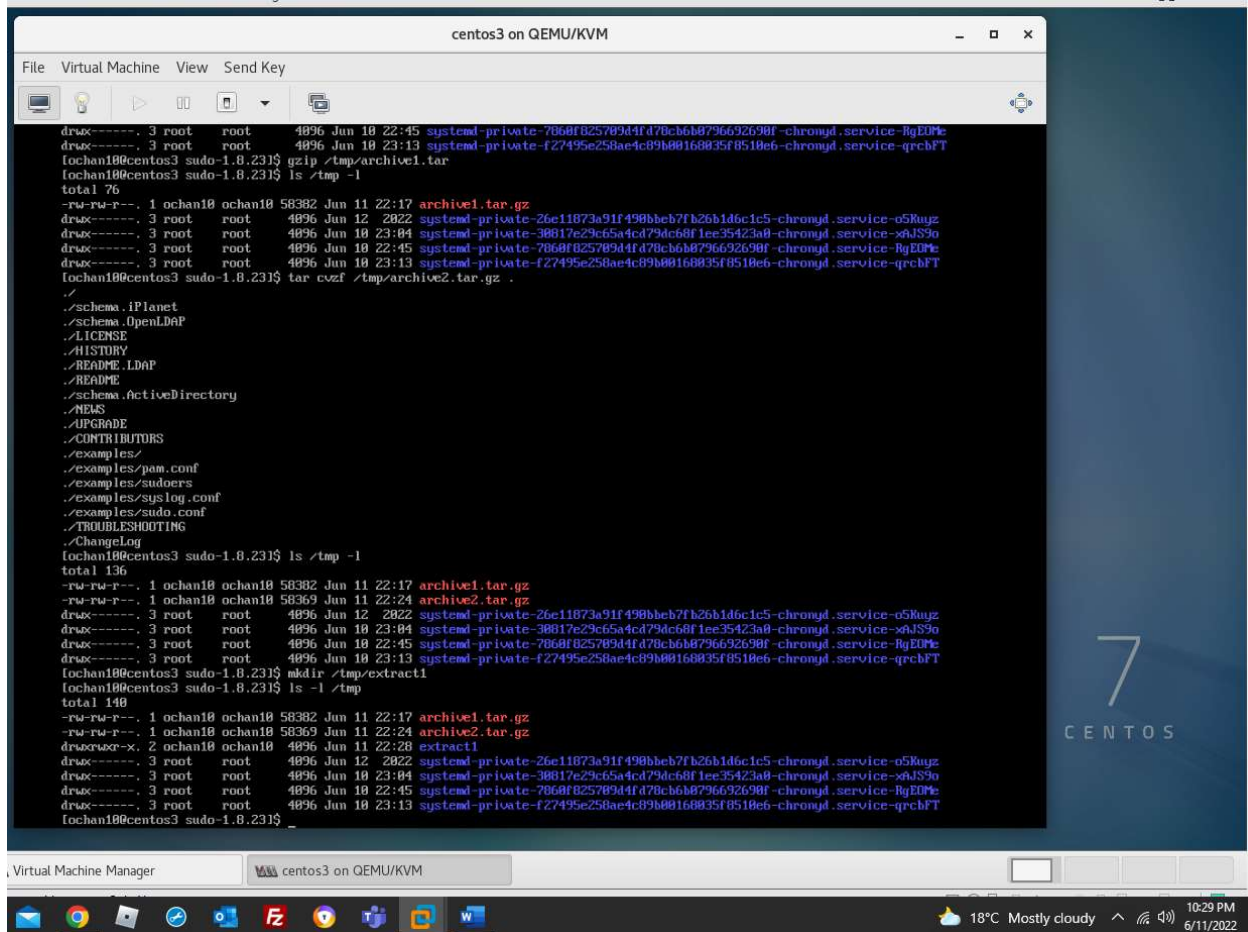
```
lochan10@centos3 sudo-1.8.231$ ls /tmp -l
total 216
-rw-rw-r--. 1 ochan10 ochan10 204888 Jun 11 22:17 archive1.tar
drwx-----. 3 root root 4096 Jun 12 2022 systemd-private-26e11873a91f490bbeb7fb26b1d6c1c5-chronyd.service-o5Kuyz
drwx-----. 3 root root 4096 Jun 18 23:04 systemd-private-38817e29c65a4cd79dc68f1ee35423a8-chronyd.service-xdJS9o
drwx-----. 3 root root 4096 Jun 18 22:45 systemd-private-7860f825709d4fd78cb6b0796692690f-chronyd.service-RgEDP6
drwx-----. 3 root root 4096 Jun 18 23:13 systemd-private-f27495e258ae4c89b08160835f0518e6-chronyd.service-grcbFT
lochan10@centos3 sudo-1.8.231$ gzip /tmp/archive1.tar
lochan10@centos3 sudo-1.8.231$ ls /tmp -l
total 76
-rw-rw-r--. 1 ochan10 ochan10 58369 Jun 11 22:17 archive1.tar.gz
drwx-----. 3 root root 4096 Jun 12 2022 systemd-private-26e11873a91f490bbeb7fb26b1d6c1c5-chronyd.service-o5Kuyz
drwx-----. 3 root root 4096 Jun 18 23:04 systemd-private-38817e29c65a4cd79dc68f1ee35423a8-chronyd.service-xdJS9o
drwx-----. 3 root root 4096 Jun 18 22:45 systemd-private-7860f825709d4fd78cb6b0796692690f-chronyd.service-RgEDP6
drwx-----. 3 root root 4096 Jun 18 23:13 systemd-private-f27495e258ae4c89b08160835f0518e6-chronyd.service-grcbFT
lochan10@centos3 sudo-1.8.231$ tar cvzf /tmp/archive2.tar.gz .
./
./schema.IPlanet
./schema.OpenLDAP
./LICENSE
./HISTORY
./README_LDAP
./README
./schema.ActiveDirectory
./NEWS
./UPGRADE
./CONTRIBUTORS
./examples/
./examples/pam.conf
./examples/sudoers
./examples/syslog.conf
./examples/sudo.conf
./TROUBLESHOOTING
./ChangeLog
lochan10@centos3 sudo-1.8.231$
```

The virtual machine window has a menu bar with "File", "Virtual Machine", "View", and "Send Key". The desktop background is the CentOS 7 logo. The taskbar at the bottom shows various application icons and the system status: "18°C Mostly cloudy", "10:24 PM", and "6/11/2022".



## Part 2: Restoring files from an Archive.

### Create extract1

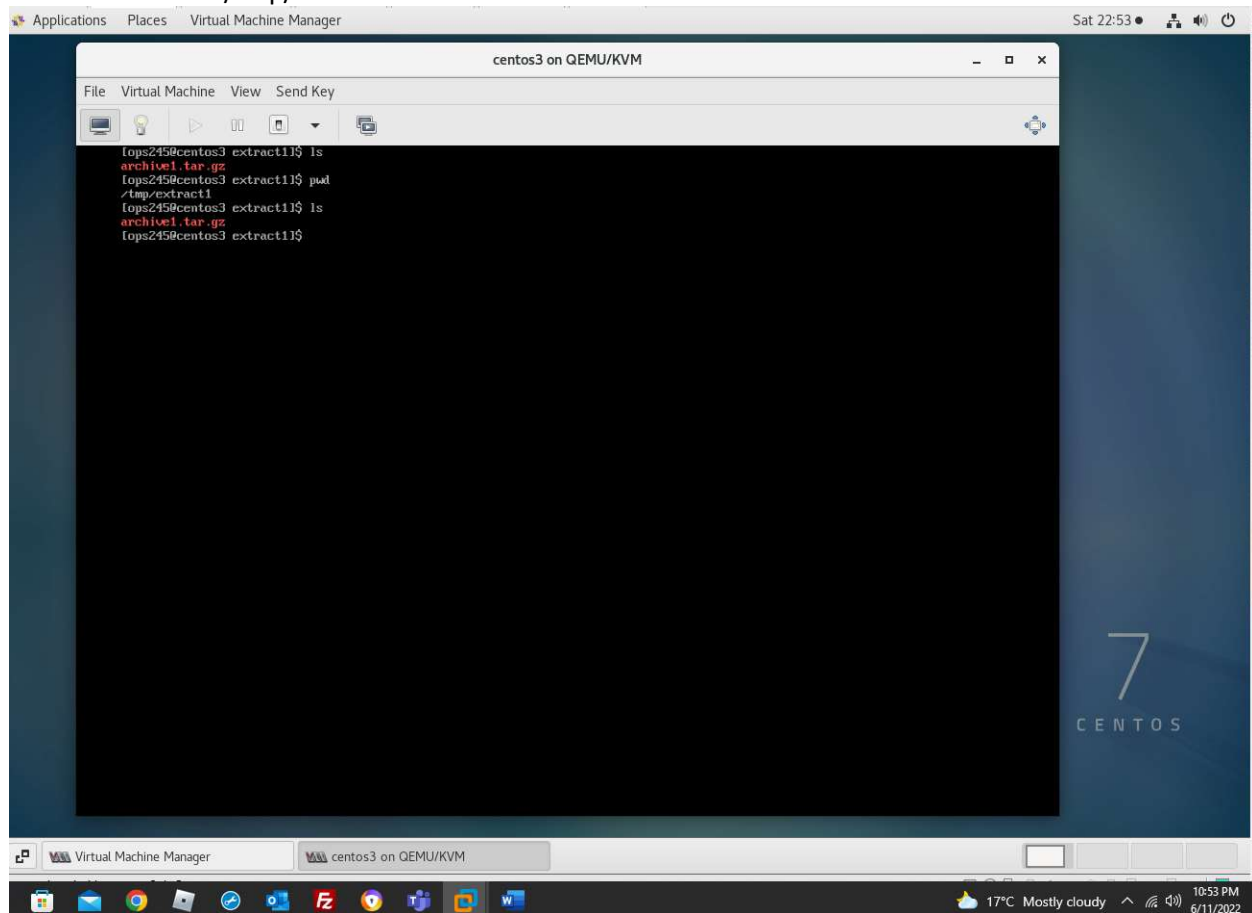


```
centos3 on QEMU/KVM
File Virtual Machine View Send Key
drwx----- 3 root root 4096 Jun 10 22:45 systemd-private-7060f825709d4f4d78cb6b68796692690f-chronyd.service-RgED0t
drwx----- 3 root root 4096 Jun 10 23:13 systemd-private-f27495e258ae4c89b00168035f8510e6-chronyd.service-qrcbFT
fochan10@centos3 sudo-1.8.231$ gzip /tmp/archive1.tar
fochan10@centos3 sudo-1.8.231$ ls /tmp -l
total 76
-rw-rw-r-- 1 ochan10 ochan10 58382 Jun 11 22:17 archive1.tar.gz
drwx----- 3 root root 4096 Jun 12 2022 systemd-private-26e11073a91f490bbeb7fb26b1d6c1c5-chronyd.service-o5Kuyz
drwx----- 3 root root 4096 Jun 10 23:04 systemd-private-30817e29c65a4cd79dc60f1ee35423a0-chronyd.service-xdJS9o
drwx----- 3 root root 4096 Jun 10 22:45 systemd-private-7060f825709d4f4d78cb6b68796692690f-chronyd.service-RgED0t
drwx----- 3 root root 4096 Jun 10 23:13 systemd-private-f27495e258ae4c89b00168035f8510e6-chronyd.service-qrcbFT
fochan10@centos3 sudo-1.8.231$ tar cvzf /tmp/archive2.tar.gz .
./
./schema.iPlanet
./schema.OpenLDAP
./LICENSE
./HISTORY
./README.LDAP
./README
./schema.ActiveDirectory
./ADCS
./UPGRADE
./CONTRIBUTORS
./examples/
./examples/pam.conf
./examples/sudoers
./examples/syslog.conf
./examples/sudo.conf
./TROUBLESHOOTING
./ChangeLog
fochan10@centos3 sudo-1.8.231$ ls /tmp -l
total 136
-rw-rw-r-- 1 ochan10 ochan10 58382 Jun 11 22:17 archive1.tar.gz
-rw-rw-r-- 1 ochan10 ochan10 58369 Jun 11 22:24 archive2.tar.gz
drwx----- 3 root root 4096 Jun 12 2022 systemd-private-26e11073a91f490bbeb7fb26b1d6c1c5-chronyd.service-o5Kuyz
drwx----- 3 root root 4096 Jun 10 23:04 systemd-private-30817e29c65a4cd79dc60f1ee35423a0-chronyd.service-xdJS9o
drwx----- 3 root root 4096 Jun 10 22:45 systemd-private-7060f825709d4f4d78cb6b68796692690f-chronyd.service-RgED0t
drwx----- 3 root root 4096 Jun 10 23:13 systemd-private-f27495e258ae4c89b00168035f8510e6-chronyd.service-qrcbFT
fochan10@centos3 sudo-1.8.231$ mkdir /tmp/extract1
fochan10@centos3 sudo-1.8.231$ ls -l /tmp
total 140
-rw-rw-r-- 1 ochan10 ochan10 58382 Jun 11 22:17 archive1.tar.gz
-rw-rw-r-- 1 ochan10 ochan10 58369 Jun 11 22:24 archive2.tar.gz
drwxr-xr-x 2 ochan10 ochan10 4096 Jun 11 22:20 extract1
drwx----- 3 root root 4096 Jun 12 2022 systemd-private-26e11073a91f490bbeb7fb26b1d6c1c5-chronyd.service-o5Kuyz
drwx----- 3 root root 4096 Jun 10 23:04 systemd-private-30817e29c65a4cd79dc60f1ee35423a0-chronyd.service-xdJS9o
drwx----- 3 root root 4096 Jun 10 22:45 systemd-private-7060f825709d4f4d78cb6b68796692690f-chronyd.service-RgED0t
drwx----- 3 root root 4096 Jun 10 23:13 systemd-private-f27495e258ae4c89b00168035f8510e6-chronyd.service-qrcbFT
fochan10@centos3 sudo-1.8.231$
```

Virtual Machine Manager | centos3 on QEMU/KVM

18°C Mostly cloudy 10:29 PM 6/11/2022

Move archive1 to /tmp/extract1



## Gunzip archive1.tar

Applications Places Virtual Machine Manager Sat 22:56

centos3 on QEMU/KVM

File Virtual Machine View Send Key

```
lopsz45@centos3 extract11$ ls
archive1.tar  CONTRIBUTORS  HISTORY  NEWS  README.LDAP  schema.iPlanet  TROUBLESHOOTING
ChangeLog    examples     LICENSE  README  schema.ActiveDirectory  schema.OpenLDAP  UPGRADE
lopsz45@centos3 extract11$ ls -l
total 488
-rw-r--r--. 1 ochan10 ochan10 284888 Jun 11 22:17 archive1.tar
-rw-r--r--. 1 root root 29 Oct 14 2021 ChangeLog
-rw-r--r--. 1 root root 4579 Oct 14 2021 CONTRIBUTORS
drwxr-xr-x. 2 root root 4096 May 28 16:58 examples
-rw-r--r--. 1 root root 2922 Oct 14 2021 HISTORY
-rw-r--r--. 1 root root 9071 Oct 14 2021 LICENSE
-rw-r--r--. 1 root root 99065 Oct 14 2021 NEWS
-rw-r--r--. 1 root root 3132 Oct 14 2021 README
-rw-r--r--. 1 root root 7418 Oct 14 2021 README.LDAP
-rw-r--r--. 1 root root 7062 Oct 14 2021 schema.ActiveDirectory
-rw-r--r--. 1 root root 2283 Oct 14 2021 schema.iPlanet
-rw-r--r--. 1 root root 2410 Oct 14 2021 schema.OpenLDAP
-rw-r--r--. 1 root root 14636 Oct 14 2021 TROUBLESHOOTING
-rw-r--r--. 1 root root 20615 Oct 14 2021 UPGRADE
lopsz45@centos3 extract11$ pwd
/tmp/extract11
lopsz45@centos3 extract11$
```

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CENTOS

Virtual Machine Manager centos3 on QEMU/KVM

17°C Mostly cloudy 10:56 PM 6/11/2022

## Comparison of README

Virtual Machine Manager

Sat 22:59

centos3 on QEMU/KVM

File Virtual Machine View Send Key

```
lops245@centos3 extract11$ ls -l /usr/share/doc/sudo-1.8.23/
total 288
-rw-r--r--. 1 root root 29 Oct 14 2021 ChangeLog
-rw-r--r--. 1 root root 4579 Oct 14 2021 CONTRIBUTORS
drwxr-xr-x. 2 root root 4096 May 28 16:58 examples
-rw-r--r--. 1 root root 2922 Oct 14 2021 HISTORY
-rw-r--r--. 1 root root 9071 Oct 14 2021 LICENSE
-rw-r--r--. 1 root root 99065 Oct 14 2021 NEWS
-rw-r--r--. 1 root root 3132 Oct 14 2021 README
-rw-r--r--. 1 root root 7418 Oct 14 2021 README.LDAP
-rw-r--r--. 1 root root 7062 Oct 14 2021 schema.ActiveDirectory
-rw-r--r--. 1 root root 2283 Oct 14 2021 schema.iPlanet
-rw-r--r--. 1 root root 2410 Oct 14 2021 schema.OpenLDAP
-rw-r--r--. 1 root root 14636 Oct 14 2021 TROUBLESHOOTING
-rw-r--r--. 1 root root 20615 Oct 14 2021 UPGRADE
lops245@centos3 extract11$ ls -l
total 480
-rw-r--r--. 1 ochan10 ochan10 204800 Jun 11 22:17 archive1.tar
-rw-r--r--. 1 root root 29 Oct 14 2021 ChangeLog
-rw-r--r--. 1 root root 4579 Oct 14 2021 CONTRIBUTORS
drwxr-xr-x. 2 root root 4096 May 28 16:58 examples
-rw-r--r--. 1 root root 2922 Oct 14 2021 HISTORY
-rw-r--r--. 1 root root 9071 Oct 14 2021 LICENSE
-rw-r--r--. 1 root root 99065 Oct 14 2021 NEWS
-rw-r--r--. 1 root root 3132 Oct 14 2021 README
-rw-r--r--. 1 root root 7418 Oct 14 2021 README.LDAP
-rw-r--r--. 1 root root 7062 Oct 14 2021 schema.ActiveDirectory
-rw-r--r--. 1 root root 2283 Oct 14 2021 schema.iPlanet
-rw-r--r--. 1 root root 2410 Oct 14 2021 schema.OpenLDAP
-rw-r--r--. 1 root root 14636 Oct 14 2021 TROUBLESHOOTING
-rw-r--r--. 1 root root 20615 Oct 14 2021 UPGRADE
lops245@centos3 extract11$ _
```

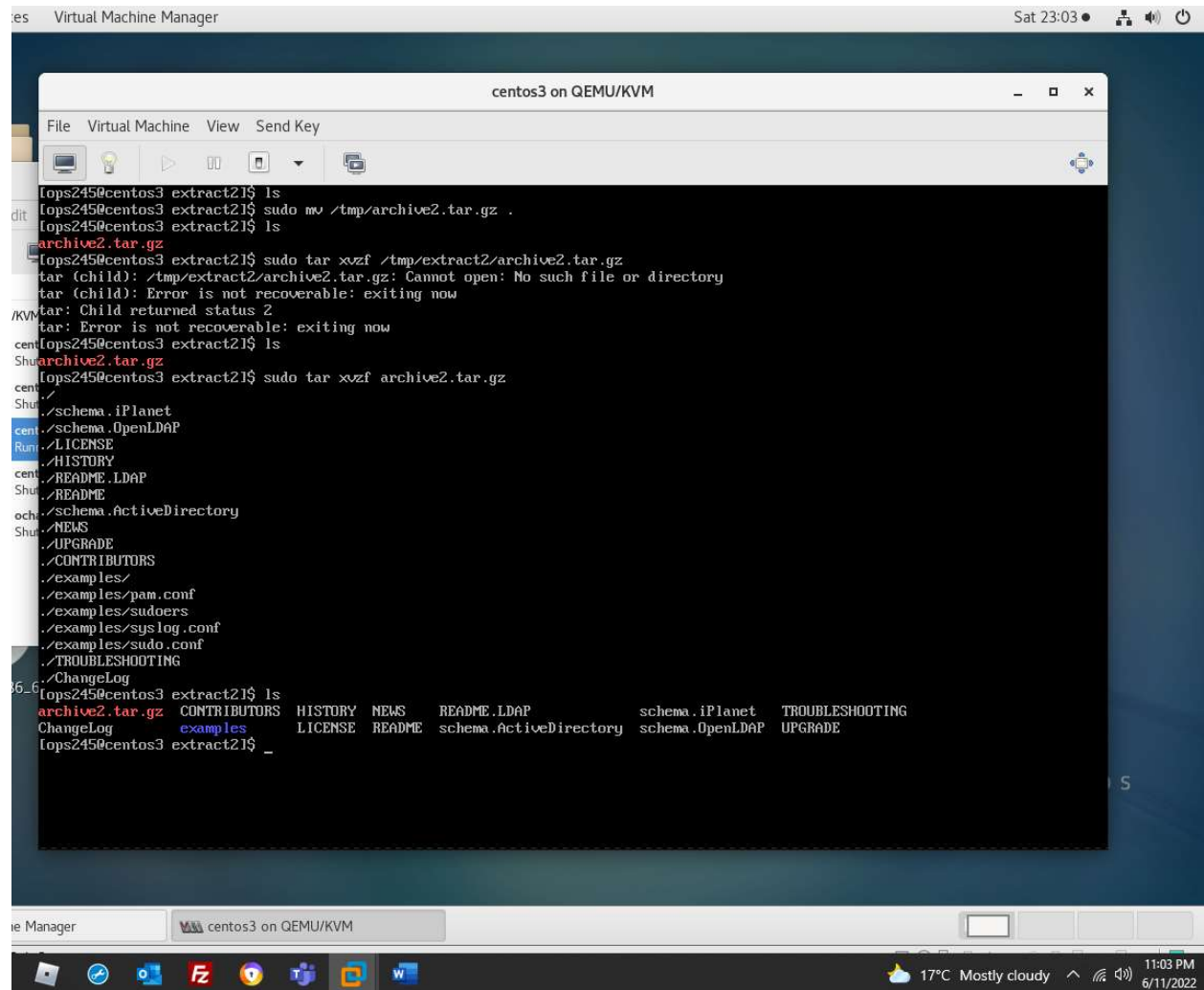
7  
CENTOS

Virtual Machine Manager

centos3 on QEMU/KVM

17°C Mostly cloudy 10:59 PM 6/11/2022


## Extract archive 2.



```
ops2450centos3 extract21$ ls
ops2450centos3 extract21$ sudo mv /tmp/archive2.tar.gz .
ops2450centos3 extract21$ ls
archive2.tar.gz
ops2450centos3 extract21$ sudo tar xvf /tmp/extract2/archive2.tar.gz
tar (child): /tmp/extract2/archive2.tar.gz: Cannot open: No such file or directory
tar (child): Error is not recoverable: exiting now
tar: Child returned status 2
tar: Error is not recoverable: exiting now
ops2450centos3 extract21$ ls
ops2450centos3 extract21$ sudo tar xvf archive2.tar.gz
ops2450centos3 extract21$ ls
CONTRIBUTORS  HISTORY  NEWS  README.LDAP  schema.iPlanet  TROUBLESHOOTING
ChangeLog     examples LICENSE  README      schema.ActiveDirectory  schema.OpenLDAP  UPGRADE
ops2450centos3 extract21$ _
```

centos3 on QEMU/KVM

File Virtual Machine View Send Key



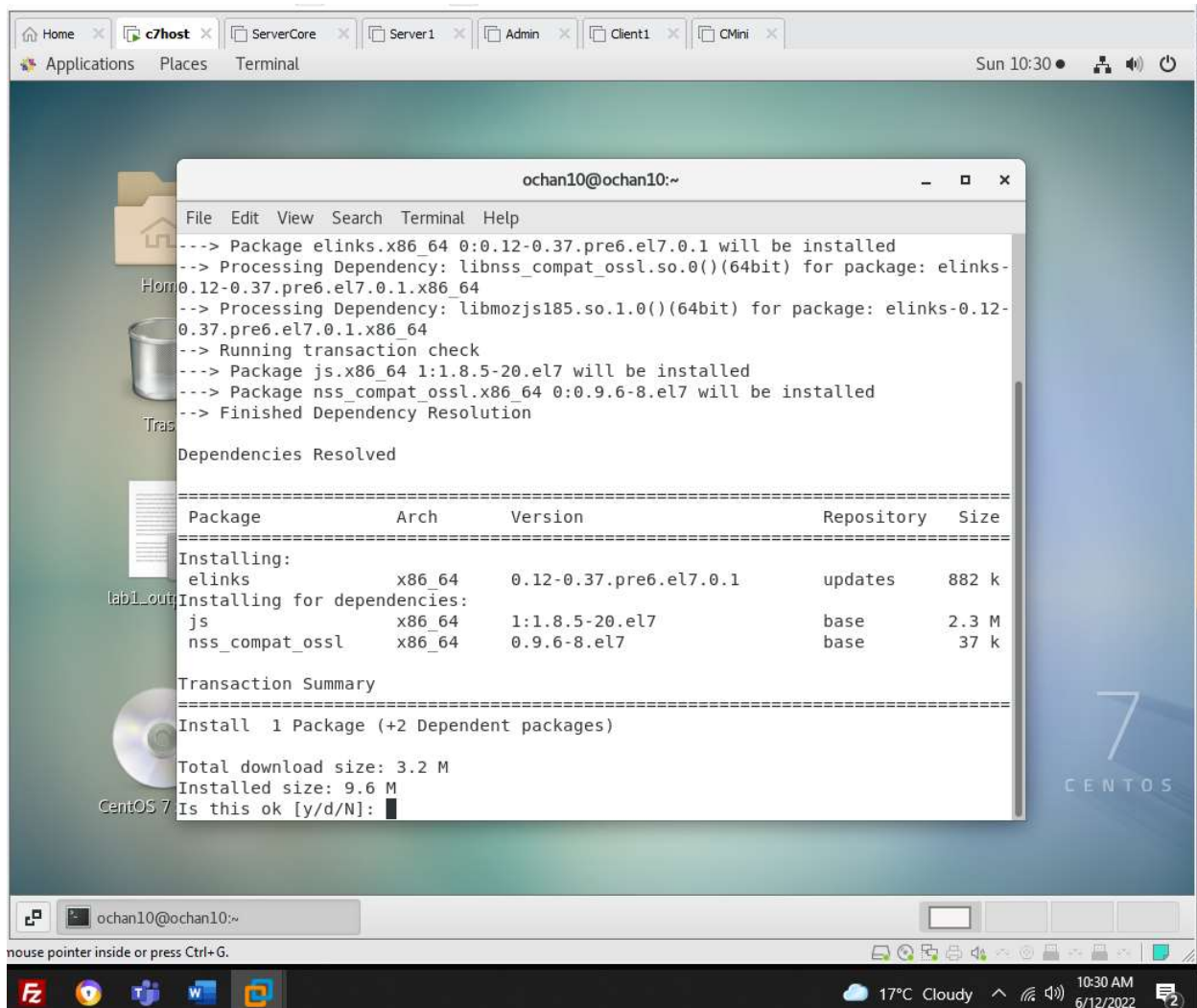
```
rm: failed to remove 'extract3': Permission denied
[ops245@centos3 extract21]$ sudo rmdir extract3
[ops245@centos3 extract21]$ ls
archive2.tar.gz  CONTRIBUTORS  HISTORY  NEWS  README.LDAP  schema.iPlanet  TROUBLESHOOTING
ChangeLog        examples     LICENSE  README  schema.ActiveDirectory  schema.OpenLDAP  UPGRADE
[ops245@centos3 extract21]$ ls
archive2.tar.gz  CONTRIBUTORS  HISTORY  NEWS  README.LDAP  schema.iPlanet  TROUBLESHOOTING
ChangeLog        examples     LICENSE  README  schema.ActiveDirectory  schema.OpenLDAP  UPGRADE
[ops245@centos3 extract21]$ ls -l
total 260
-rw-rw-r--. 1 ops245 ops245 58369 Jun 11 22:52 archive2.tar.gz
-rw-r--r--. 1 root root 29 Oct 14 2021 ChangeLog
-rw-r--r--. 1 root root 4579 Oct 14 2021 CONTRIBUTORS
drwxr-xr-x. 2 root root 4096 May 28 16:58 examples
-rw-r--r--. 1 root root 2922 Oct 14 2021 HISTORY
-rw-r--r--. 1 root root 9871 Oct 14 2021 LICENSE
-rw-r--r--. 1 root root 99865 Oct 14 2021 NEWS
-rw-r--r--. 1 root root 3132 Oct 14 2021 README
-rw-r--r--. 1 root root 7418 Oct 14 2021 README.LDAP
-rw-r--r--. 1 root root 7862 Oct 14 2021 schema.ActiveDirectory
-rw-r--r--. 1 root root 2283 Oct 14 2021 schema.iPlanet
-rw-r--r--. 1 root root 2418 Oct 14 2021 schema.OpenLDAP
-rw-r--r--. 1 root root 14636 Oct 14 2021 TROUBLESHOOTING
-rw-r--r--. 1 root root 20615 Oct 14 2021 UPGRADE
[ops245@centos3 extract21]$ ls -l /usr/share/doc/sudo-1.8.23/
total 280
-rw-r--r--. 1 root root 29 Oct 14 2021 ChangeLog
-rw-r--r--. 1 root root 4579 Oct 14 2021 CONTRIBUTORS
drwxr-xr-x. 2 root root 4096 May 28 16:58 examples
-rw-r--r--. 1 root root 2922 Oct 14 2021 HISTORY
-rw-r--r--. 1 root root 9871 Oct 14 2021 LICENSE
-rw-r--r--. 1 root root 99865 Oct 14 2021 NEWS
-rw-r--r--. 1 root root 3132 Oct 14 2021 README
-rw-r--r--. 1 root root 7418 Oct 14 2021 README.LDAP
-rw-r--r--. 1 root root 7862 Oct 14 2021 schema.ActiveDirectory
-rw-r--r--. 1 root root 2283 Oct 14 2021 schema.iPlanet
-rw-r--r--. 1 root root 2418 Oct 14 2021 schema.OpenLDAP
-rw-r--r--. 1 root root 14636 Oct 14 2021 TROUBLESHOOTING
-rw-r--r--. 1 root root 20615 Oct 14 2021 UPGRADE
[ops245@centos3 extract21]$
```

Virtual Machine Manager

centos3 on QEMU/KVM

📶 🔊 🔌 17°C Mostly cloudy 11:08 PM 6/11/2022

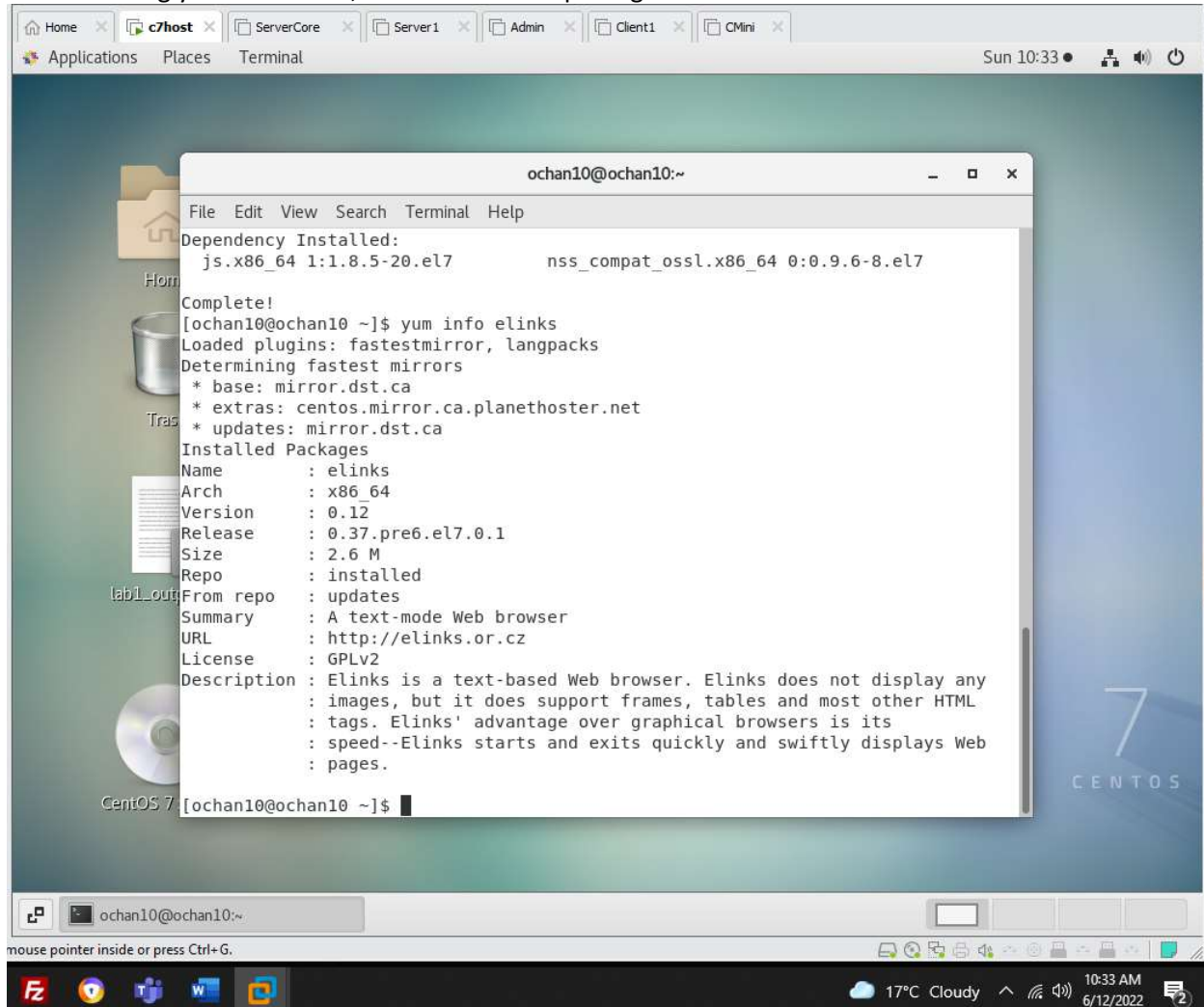
Install elinks:





Yum info elinks:

When running yum info elinks, it shows that the package is installed.



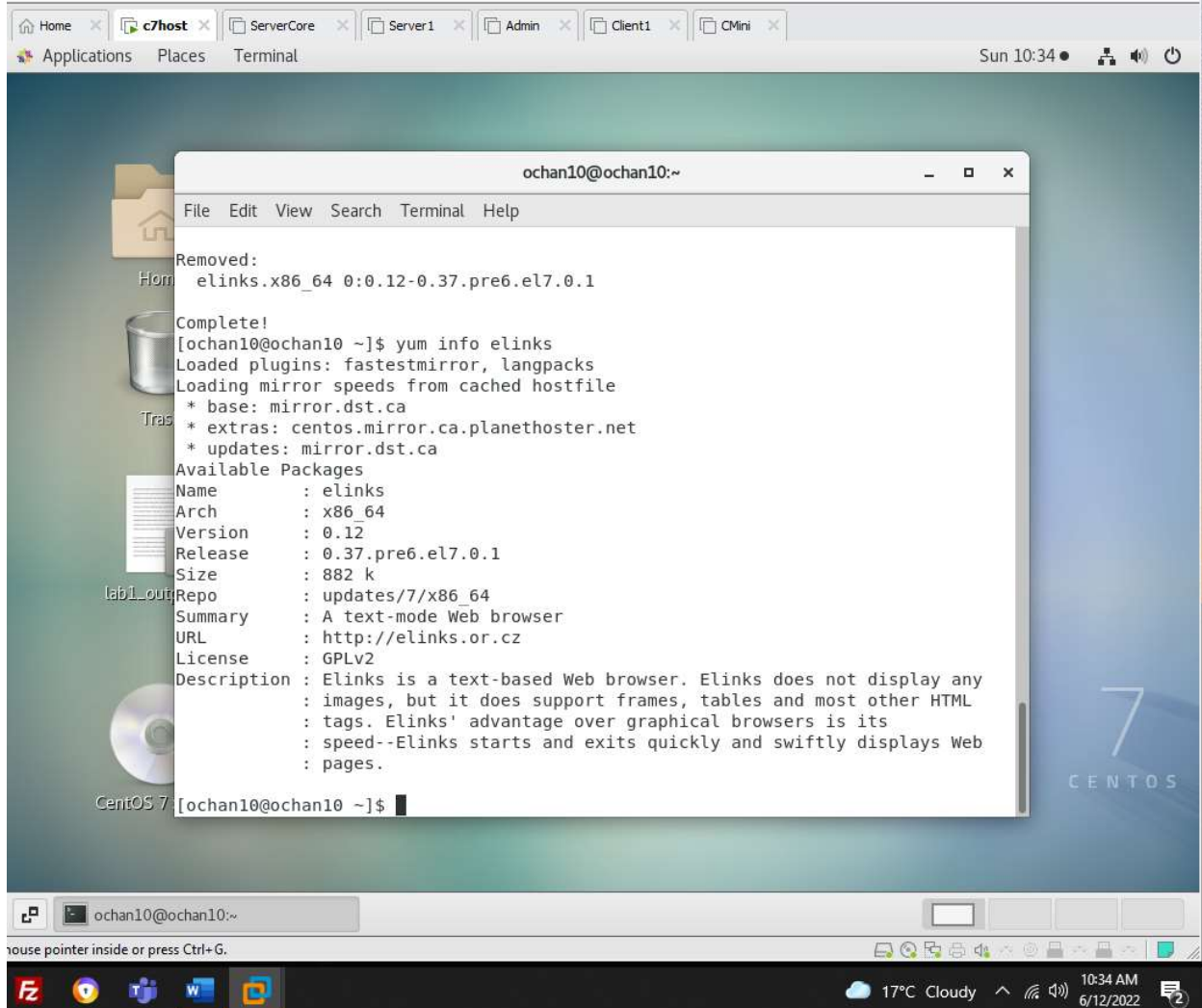
The screenshot shows a CentOS 7 desktop environment. A terminal window is open, displaying the output of the command `yum info elinks`. The output indicates that the package is installed. The desktop background is the standard CentOS 7 logo. The taskbar at the bottom shows various application icons and system status information.

```
ochoan10@ochoan10:~  
File Edit View Search Terminal Help  
Dependency Installed:  
js.x86_64 1:1.8.5-20.el7 nss_compat_oss1.x86_64 0:0.9.6-8.el7  
Complete!  
[ochoan10@ochoan10 ~]$ yum info elinks  
Loaded plugins: fastestmirror, langpacks  
Determining fastest mirrors  
* base: mirror.dst.ca  
* extras: centos.mirror.ca.planethoster.net  
* updates: mirror.dst.ca  
Installed Packages  
Name      : elinks  
Arch      : x86_64  
Version   : 0.12  
Release   : 0.37.pre6.el7.0.1  
Size      : 2.6 M  
Repo      : installed  
From repo : updates  
Summary   : A text-mode Web browser  
URL       : http://elinks.or.cz  
License   : GPLv2  
Description : Elinks is a text-based Web browser. Elinks does not display any  
: images, but it does support frames, tables and most other HTML  
: tags. Elinks' advantage over graphical browsers is its  
: speed--Elinks starts and exits quickly and swiftly displays Web  
: pages.  
CentOS 7 [ochoan10@ochoan10 ~]$
```

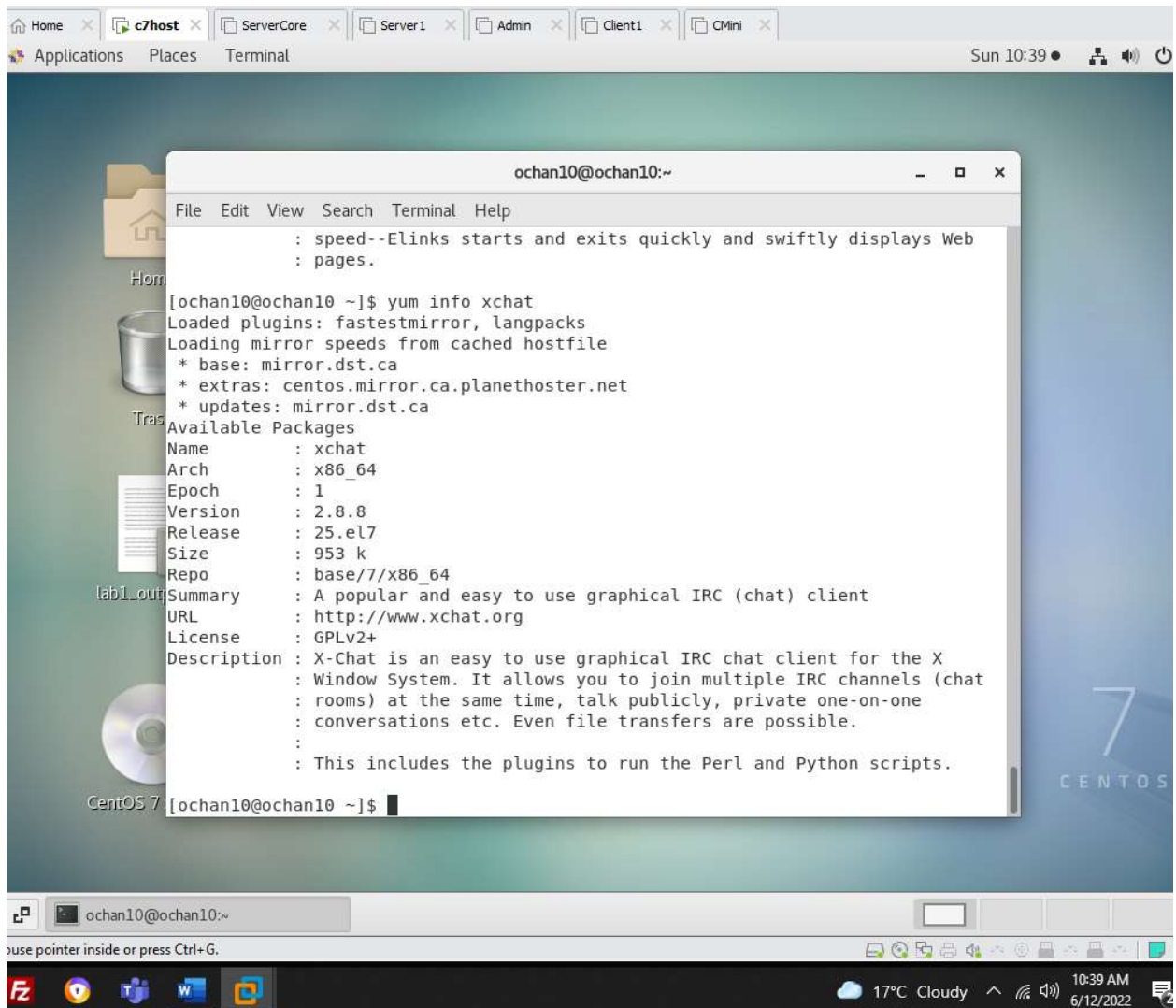


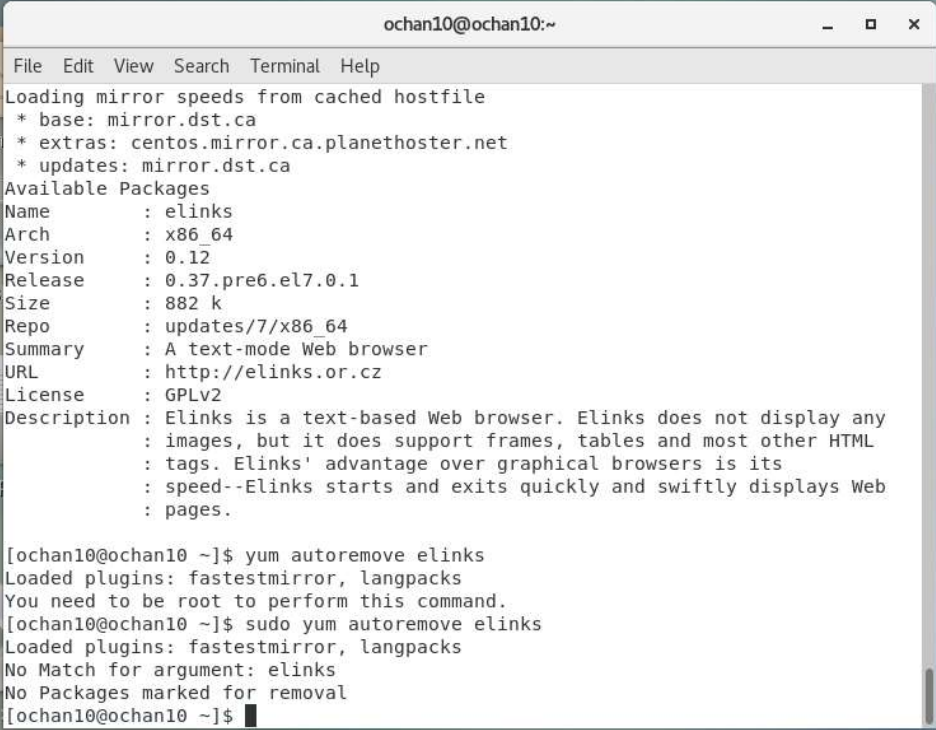
Remove elinks.

After removing elinks, when running yum info elinks, it says Available Packages.



## Yum info xchat:





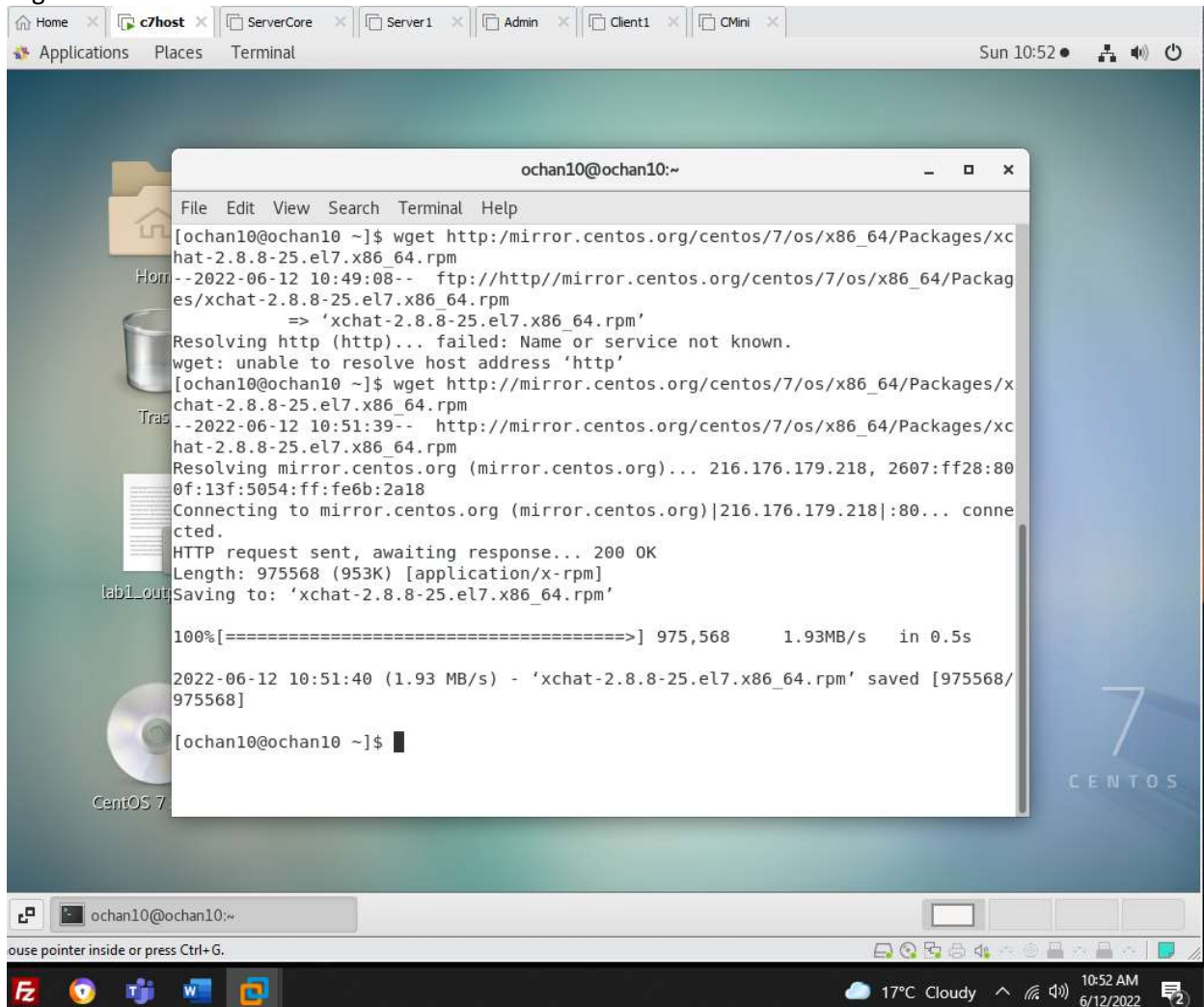
```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
Loading mirror speeds from cached hostfile  
* base: mirror.dst.ca  
* extras: centos.mirror.ca.planethoster.net  
* updates: mirror.dst.ca  
Available Packages  
Name      : elinks  
Arch      : x86_64  
Version   : 0.12  
Release   : 0.37.pre6.el7.0.1  
Size      : 882 k  
Repo      : updates/7/x86_64  
Summary   : A text-mode Web browser  
URL       : http://elinks.or.cz  
License   : GPLv2  
Description: Elinks is a text-based Web browser. Elinks does not display any  
            : images, but it does support frames, tables and most other HTML  
            : tags. Elinks' advantage over graphical browsers is its  
            : speed--Elinks starts and exits quickly and swiftly displays Web  
            : pages.  
  
[ochan10@ochan10 ~]$ yum autoremove elinks  
Loaded plugins: fastestmirror, langpacks  
You need to be root to perform this command.  
[ochan10@ochan10 ~]$ sudo yum autoremove elinks  
Loaded plugins: fastestmirror, langpacks  
No Match for argument: elinks  
No Packages marked for removal  
[ochan10@ochan10 ~]$
```

ochan10@ochan10:~

ointer inside or press Ctrl+G.

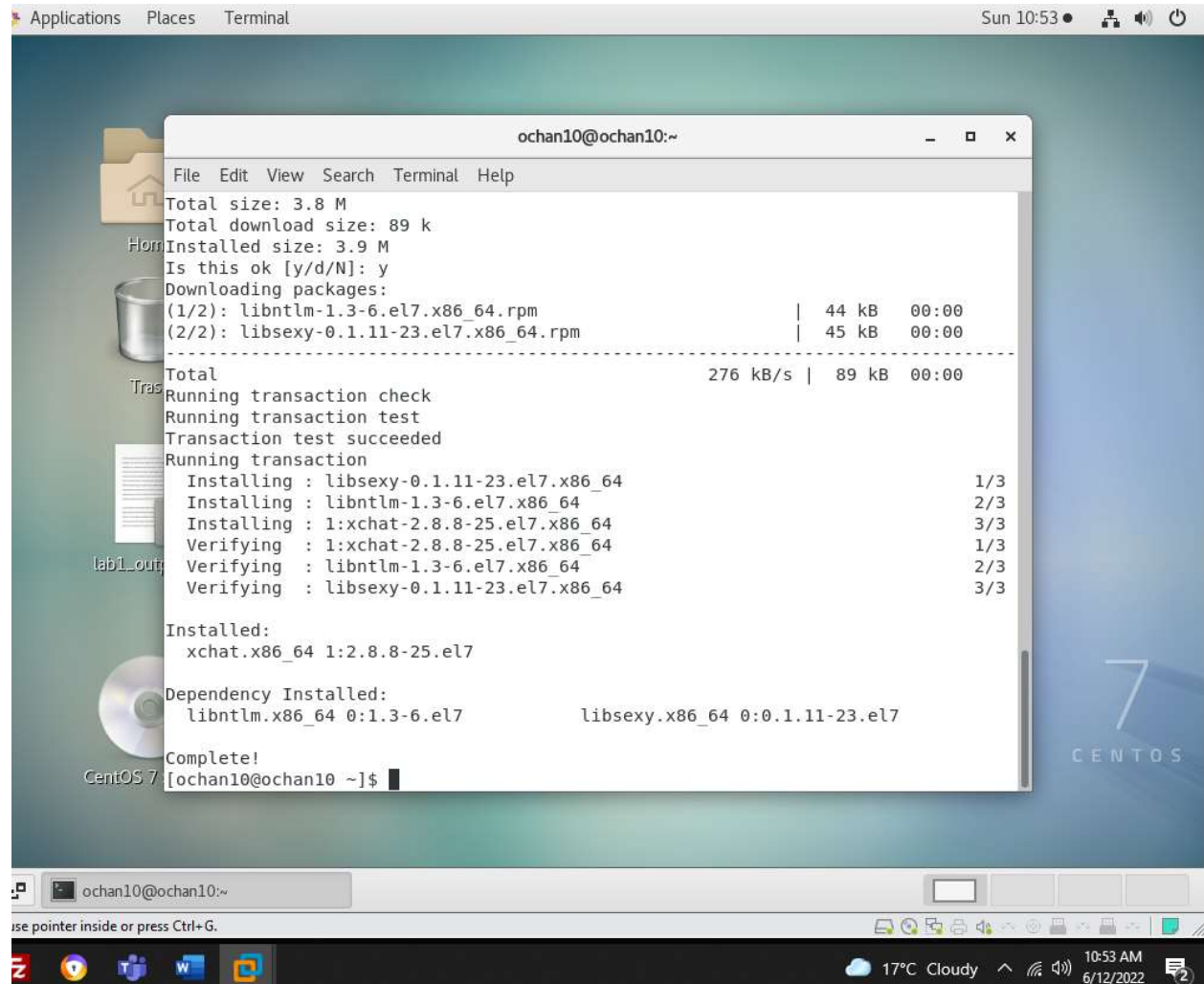
17°C Cloudy 10:47 AM 6/12/2022

## Wget xchat



```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
[ochan10@ochan10 ~]$ wget http://mirror.centos.org/centos/7/os/x86_64/Packages/xchat-2.8.8-25.el7.x86_64.rpm  
--2022-06-12 10:49:08-- ftp://http/mirror.centos.org/centos/7/os/x86_64/Packages/xchat-2.8.8-25.el7.x86_64.rpm  
=> 'xchat-2.8.8-25.el7.x86_64.rpm'  
Resolving http (http)... failed: Name or service not known.  
wget: unable to resolve host address 'http'  
[ochan10@ochan10 ~]$ wget http://mirror.centos.org/centos/7/os/x86_64/Packages/xchat-2.8.8-25.el7.x86_64.rpm  
--2022-06-12 10:51:39-- http://mirror.centos.org/centos/7/os/x86_64/Packages/xchat-2.8.8-25.el7.x86_64.rpm  
Resolving mirror.centos.org (mirror.centos.org)... 216.176.179.218, 2607:ff28:800f:13f:5054:ff:fe6b:2a18  
Connecting to mirror.centos.org (mirror.centos.org)|216.176.179.218|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 975568 (953K) [application/x-rpm]  
Saving to: 'xchat-2.8.8-25.el7.x86_64.rpm'  
  
100%[=====] 975,568 1.93MB/s in 0.5s  
  
2022-06-12 10:51:40 (1.93 MB/s) - 'xchat-2.8.8-25.el7.x86_64.rpm' saved [975568/975568]  
  
[ochan10@ochan10 ~]$
```

## Install xchat

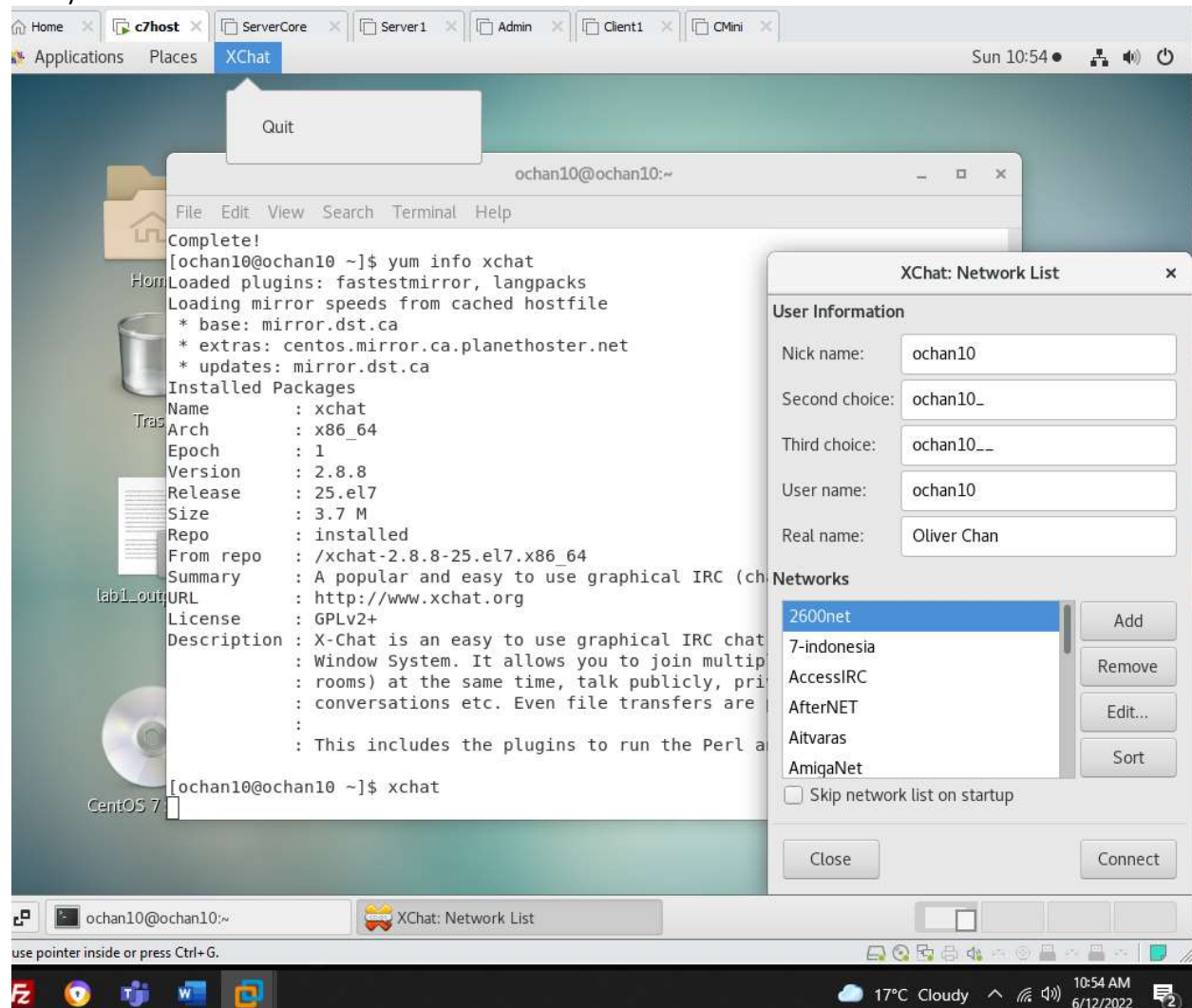


```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
Total size: 3.8 M  
Total download size: 89 k  
Installed size: 3.9 M  
Is this ok [y/d/N]: y  
Downloading packages:  
(1/2): libntlm-1.3-6.el7.x86_64.rpm | 44 kB 00:00  
(2/2): libsexy-0.1.11-23.el7.x86_64.rpm | 45 kB 00:00  
-----  
Total | 276 kB/s | 89 kB 00:00  
Running transaction check  
Running transaction test  
Transaction test succeeded  
Running transaction  
Installing : libsexy-0.1.11-23.el7.x86_64 1/3  
Installing : libntlm-1.3-6.el7.x86_64 2/3  
Installing : 1:xchat-2.8.8-25.el7.x86_64 3/3  
Verifying : 1:xchat-2.8.8-25.el7.x86_64 1/3  
Verifying : libntlm-1.3-6.el7.x86_64 2/3  
Verifying : libsexy-0.1.11-23.el7.x86_64 3/3  
  
Installed:  
xchat.x86_64 1:2.8.8-25.el7  
  
Dependency Installed:  
libntlm.x86_64 0:1.3-6.el7 libsexy.x86_64 0:0.1.11-23.el7  
  
Complete!  
[ochan10@ochan10 ~]$
```

CentOS 7

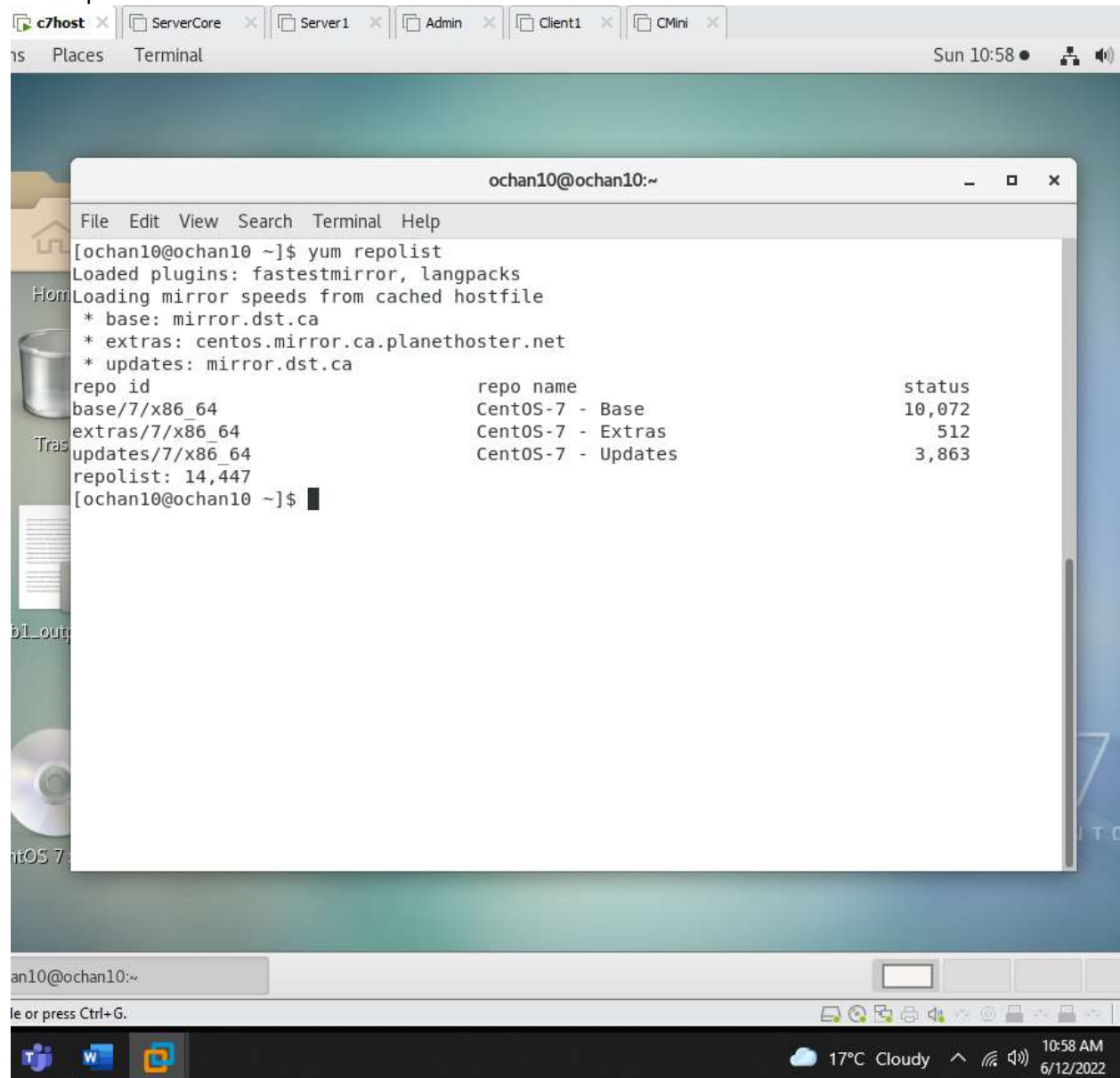
17°C Cloudy 10:53 AM 6/12/2022

Verify and run xchat:





## Yum repolist:

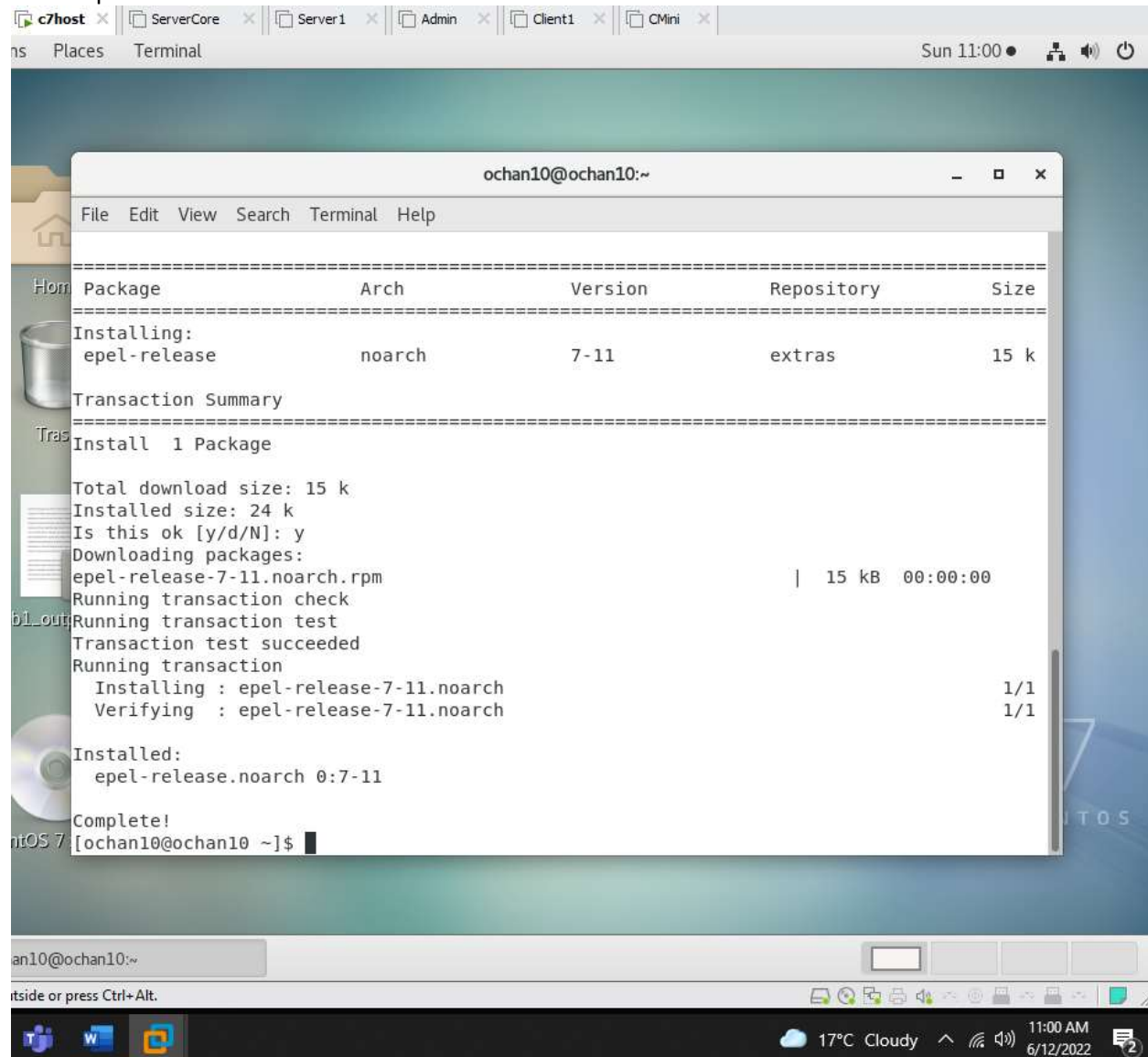


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window has a title bar that reads "ochan10@ochan10:~". The terminal output shows the command "yum repolist" being executed, which lists the loaded plugins, the mirror speeds, and the repository status. The repository status is displayed as a table with three columns: "repo id", "repo name", and "status".

```
[ochan10@ochan10 ~]$ yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: mirror.dst.ca
* extras: centos.mirror.ca.planethoster.net
* updates: mirror.dst.ca
repo id                                repo name                                status
base/7/x86_64                          CentOS-7 - Base                          10,072
extras/7/x86_64                         CentOS-7 - Extras                        512
updates/7/x86_64                       CentOS-7 - Updates                       3,863
repolist: 14,447
[ochan10@ochan10 ~]$
```

The desktop environment includes a taskbar at the bottom with icons for a terminal, a web browser, and a file manager. The system tray shows the date and time as "10:58 AM 6/12/2022" and the weather as "17°C Cloudy".

## Install epel-release:



```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
=====
```

Package	Arch	Version	Repository	Size
Installing: epel-release	noarch	7-11	extras	15 k

```
=====
```

Transaction Summary

```
=====
```

Install 1 Package

Total download size: 15 k  
Installed size: 24 k  
Is this ok [y/d/N]: y  
Downloading packages:  
epel-release-7-11.noarch.rpm | 15 kB 00:00:00  
Running transaction check  
Running transaction test  
Transaction test succeeded  
Running transaction  
Installing : epel-release-7-11.noarch 1/1  
Verifying : epel-release-7-11.noarch 1/1

Installed:  
epel-release.noarch 0:7-11

Complete!  
[ochan10@ochan10 ~]\$

an10@ochan10:~

tside or press Ctrl+Alt.

17°C Cloudy 11:00 AM 6/12/2022



## Verify epel-release:

```
ie x c7host x ServerCore x Server1 x Admin x Client1 x CMini x
plications Places Terminal Sun 11:01 ● [system tray icons]

ochan10@ochan10:~
File Edit View Search Terminal Help
Transaction test succeeded
Running transaction
  Installing : epel-release-7-11.noarch 1/1
  Verifying  : epel-release-7-11.noarch 1/1

Installed:
  epel-release.noarch 0:7-11

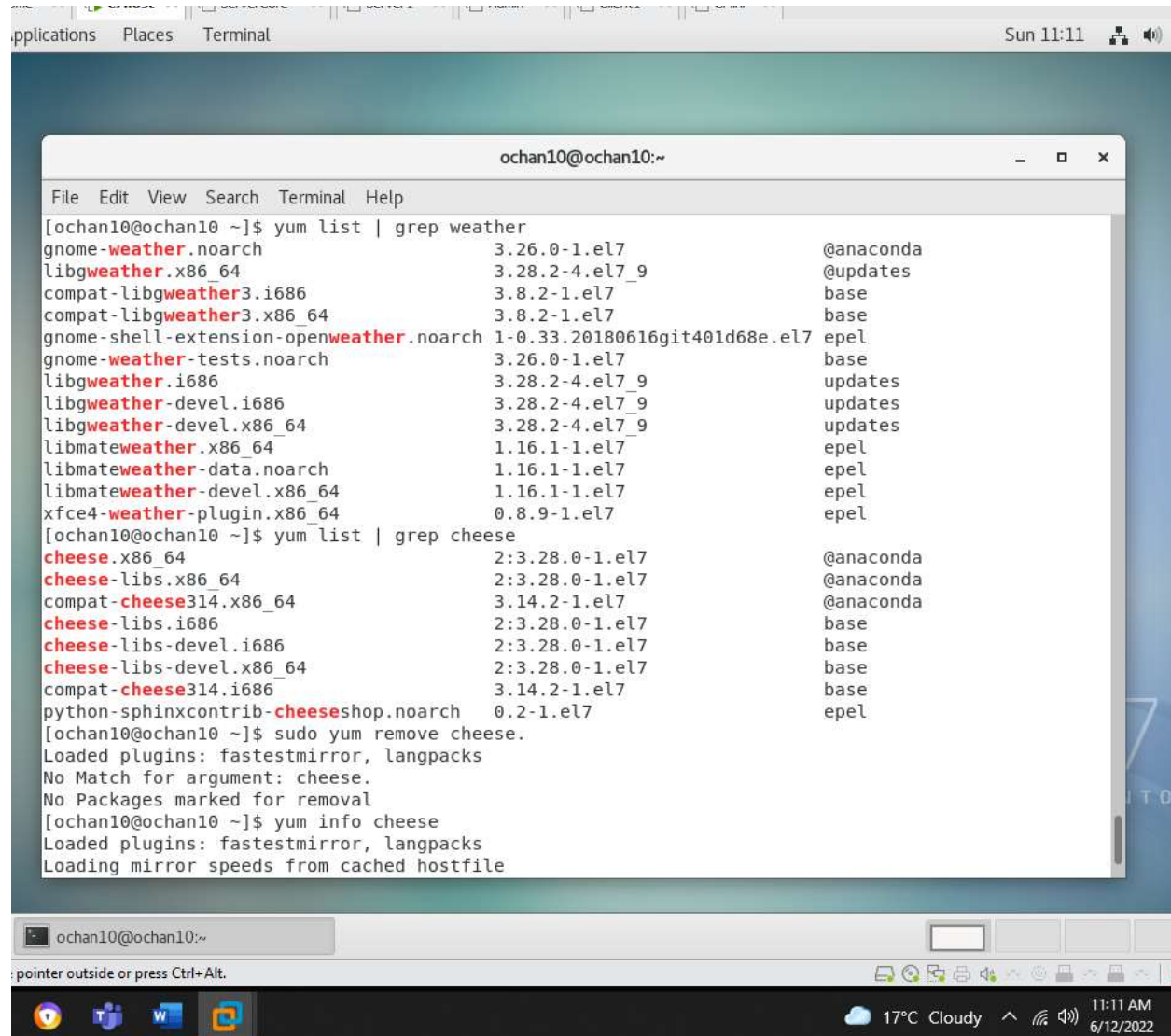
Complete!
[ochan10@ochan10 ~]$ yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
epel/x86_64/metalink | 18 kB 00:00:00
* base: mirror.dst.ca
* epel: mirror.dst.ca
* extras: centos.mirror.ca.planethoster.net
* updates: mirror.dst.ca
epel | 4.7 kB 00:00:00
(1/3): epel/x86_64/group_gz | 96 kB 00:00:00
(2/3): epel/x86_64/updateinfo | 1.0 MB 00:00:01
(3/3): epel/x86_64/primary_db | 7.0 MB 00:00:02
repo id repo name status
base/7/x86_64 CentOS-7 - Base 10,072
epel/x86_64 Extra Packages for Enterprise Linux 7 - x86_64 13,754
extras/7/x86_64 CentOS-7 - Extras 512
updates/7/x86_64 CentOS-7 - Updates 3,863
repolist: 28,201
[ochan10@ochan10 ~]$
```

ochan10@ochan10:~

Enter inside or press Ctrl+G.

17°C Cloudy 11:01 AM 6/12/2022

Search for installed software:



```
ochan10@ochan10:~$ yum list | grep weather
gnome-weather.noarch                3.26.0-1.el7                @anaconda
libgweather.x86_64                 3.28.2-4.el7_9              @updates
compat-libgweather3.i686           3.8.2-1.el7                 base
compat-libgweather3.x86_64         3.8.2-1.el7                 base
gnome-shell-extension-openweather.noarch 1-0.33.20180616git401d68e.el7 epel
gnome-weather-tests.noarch         3.26.0-1.el7                base
libgweather.i686                   3.28.2-4.el7_9              updates
libgweather-devel.i686             3.28.2-4.el7_9              updates
libgweather-devel.x86_64           3.28.2-4.el7_9              updates
libmateweather.x86_64              1.16.1-1.el7                epel
libmateweather-data.noarch         1.16.1-1.el7                epel
libmateweather-devel.x86_64        1.16.1-1.el7                epel
xfce4-weather-plugin.x86_64        0.8.9-1.el7                 epel

ochan10@ochan10:~$ yum list | grep cheese
cheese.x86_64                      2:3.28.0-1.el7              @anaconda
cheese-libs.x86_64                 2:3.28.0-1.el7              @anaconda
compat-cheese314.x86_64             3.14.2-1.el7                @anaconda
cheese-libs.i686                   2:3.28.0-1.el7              base
cheese-libs-devel.i686             2:3.28.0-1.el7              base
cheese-libs-devel.x86_64           2:3.28.0-1.el7              base
compat-cheese314.i686              3.14.2-1.el7                base
python-sphinxcontrib-cheeshop.noarch 0.2-1.el7                    epel

ochan10@ochan10:~$ sudo yum remove cheese.
Loaded plugins: fastestmirror, langpacks
No Match for argument: cheese.
No Packages marked for removal
ochan10@ochan10:~$ yum info cheese
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
```

Remove cheese software:

```
License      : GPLv2+
Description  : Cheese is a Photobooth-inspired GNOME application for taking pictures and
               : videos from a webcam. It can also apply fancy graphical effects.

[ochan10@ochan10 ~]$ sudo yum remove cheese
Loaded plugins: fastestmirror, langpacks
Resolving Dependencies
--> Running transaction check
--> Package cheese.x86_64 2:3.28.0-1.el7 will be erased
--> Finished Dependency Resolution

epel/x86_64/metalink | 18 kB | 00:00:00
epel/x86_64          | 4.7 kB | 00:00:00
epel/x86_64/group_gz | 96 kB | 00:00:00
epel/x86_64/updateinfo | 1.0 MB | 00:00:00
epel/x86_64/primary_db | 7.0 MB | 00:00:02

Dependencies Resolved

=====
Package                Arch             Version              Repository           Size
=====
Removing:
cheese                  x86_64           2:3.28.0-1.el7       @anaconda            415 k
=====

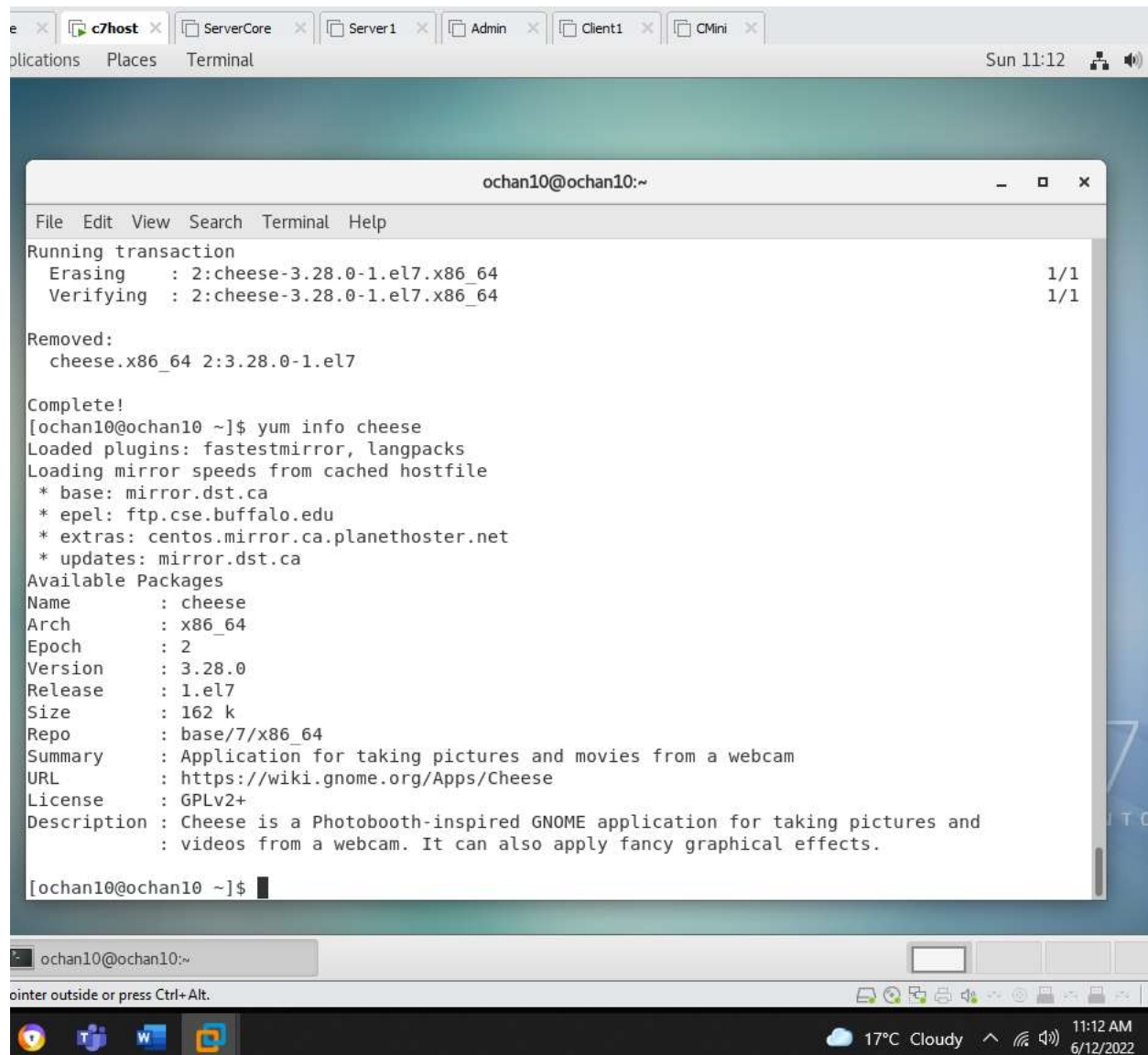
Transaction Summary
=====
Remove 1 Package

Installed size: 415 k
Is this ok [y/N]:
```

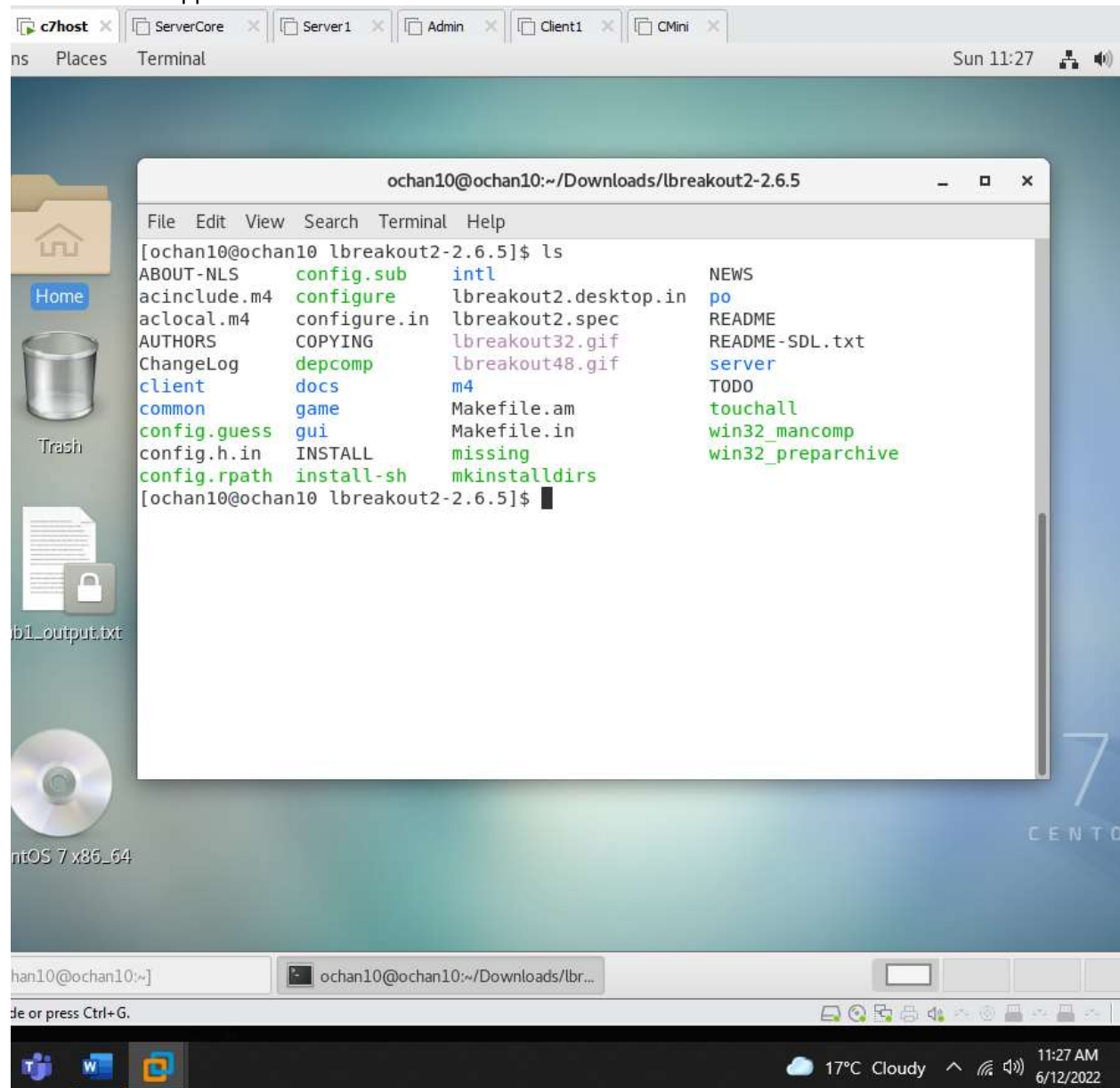
ochan10@ochan10:~

ointer outside or press Ctrl+Alt.

17°C Cloudy 11:11 AM 6/12/2022

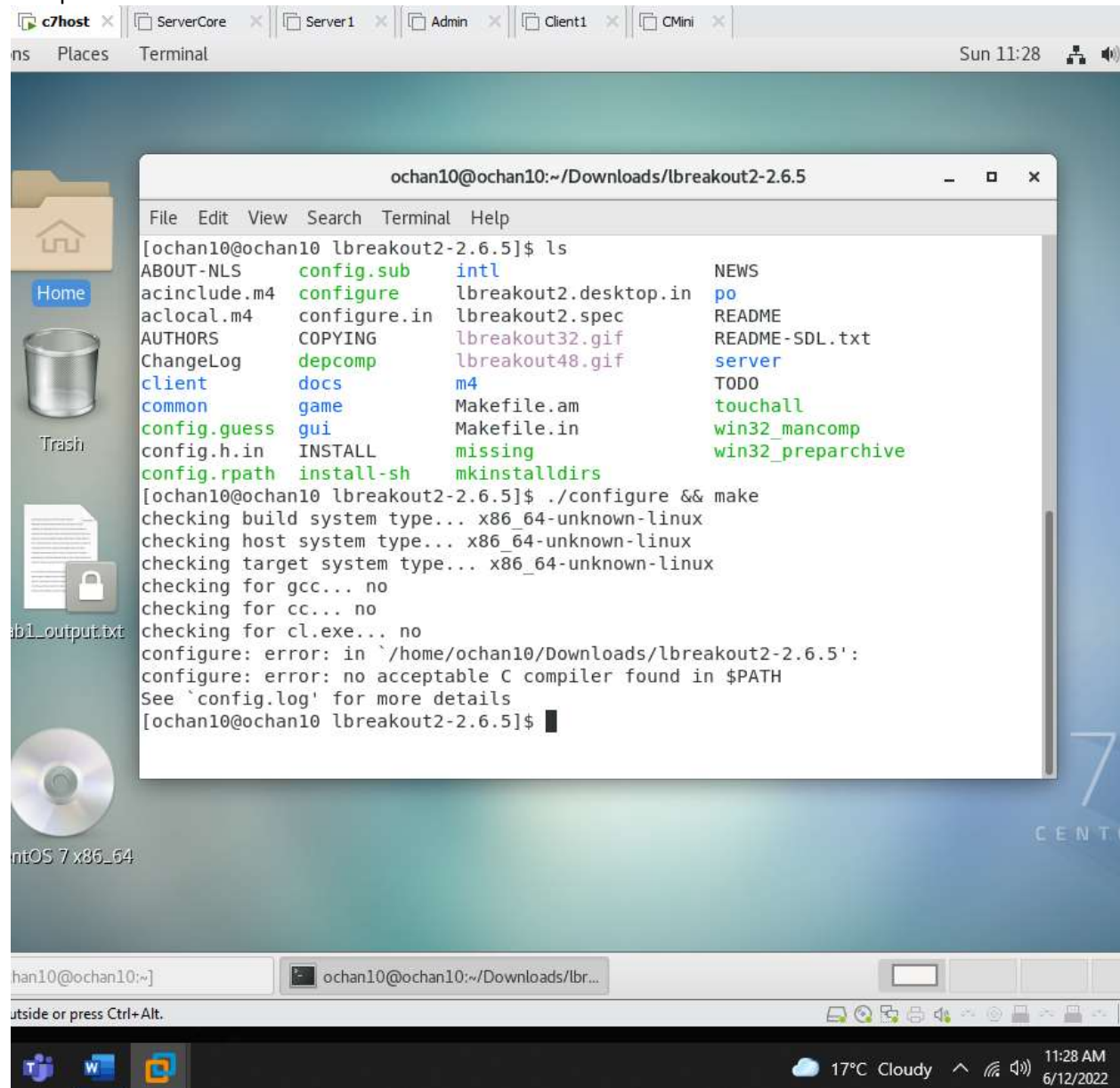


## Lbreakout2 unzipped files:





## Compiler error:



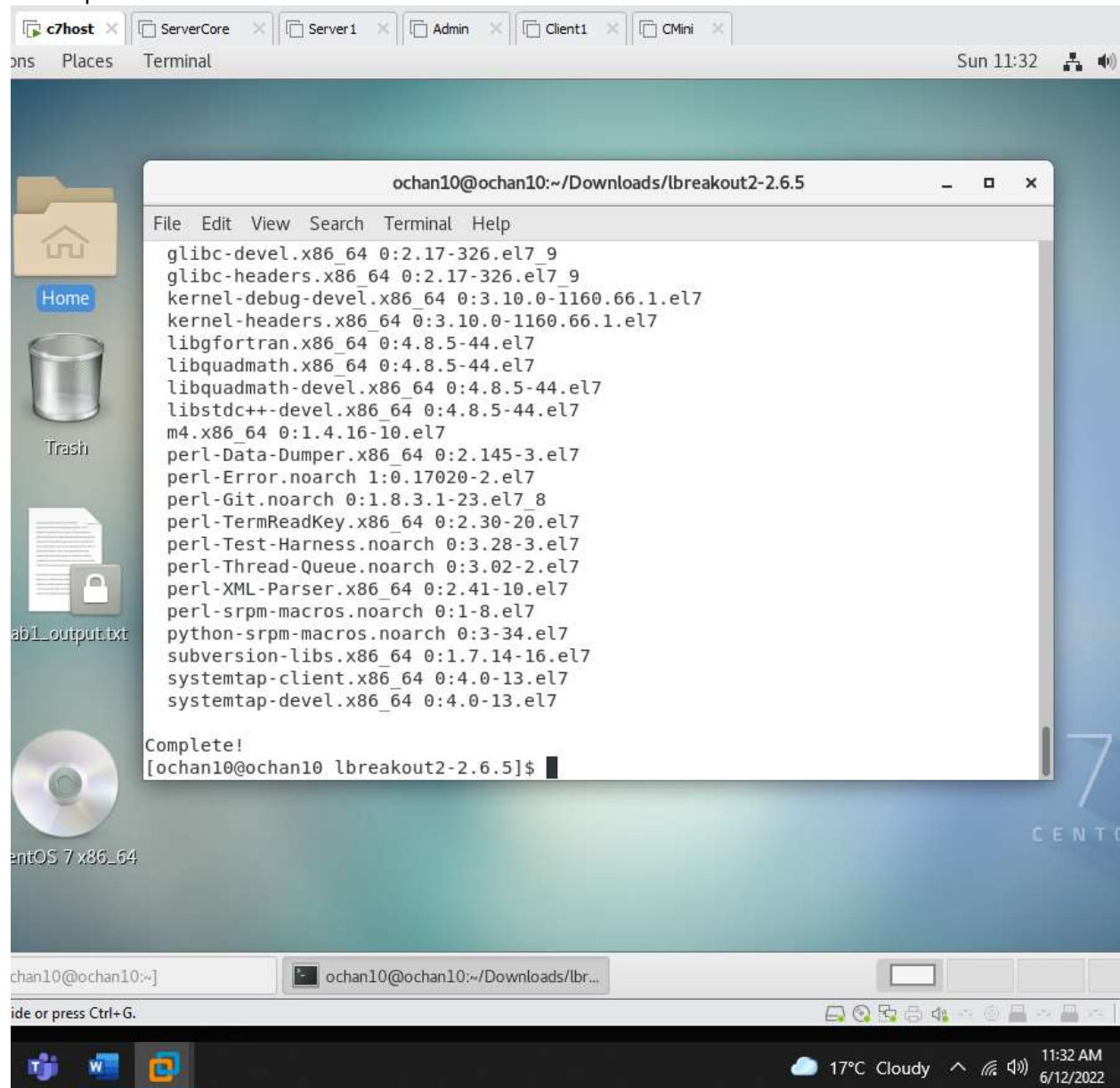
The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "ochan10@ochan10:~/Downloads/lbreakout2-2.6.5". The terminal output shows the following:

```
[ochan10@ochan10 lbreakout2-2.6.5]$ ls
ABOUT-NLS      config.sub      intl           NEWS
acinclude.m4    configure      lbreakout2.desktop.in  po
aclocal.m4      configure.in    lbreakout2.spec        README
AUTHORS         COPYING        lbreakout32.gif        README-SDL.txt
ChangeLog       depcomp        lbreakout48.gif        server
client          docs           m4                   TODO
common          game           Makefile.am           touchall
config.guess     gui            Makefile.in           win32_mancomp
config.h.in      INSTALL        missing              win32_prearchive
config.rpath     install-sh     mkinstalldirs

[ochan10@ochan10 lbreakout2-2.6.5]$ ./configure && make
checking build system type... x86_64-unknown-linux
checking host system type... x86_64-unknown-linux
checking target system type... x86_64-unknown-linux
checking for gcc... no
checking for cc... no
checking for cl.exe... no
configure: error: in `/home/ochan10/Downloads/lbreakout2-2.6.5':
configure: error: no acceptable C compiler found in $PATH
See `config.log' for more details
[ochan10@ochan10 lbreakout2-2.6.5]$
```

The desktop environment includes a sidebar with icons for Home, Trash, and a document icon labeled "lib1\_output.txt". The bottom of the screen shows a taskbar with icons for a terminal, a web browser, and a file manager, along with system status information: 17°C Cloudy, 11:28 AM, 6/12/2022.

## Development Tools:



## SDL, libpng and zlib

The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "ochan10@ochan10:~/Downloads/lbreakout2-2.6.5". The terminal displays a list of packages to be installed, their architectures, versions, and the base packages they depend on. Below the list is a "Transaction Summary" section showing the total download and installed sizes, and a prompt to confirm the installation.

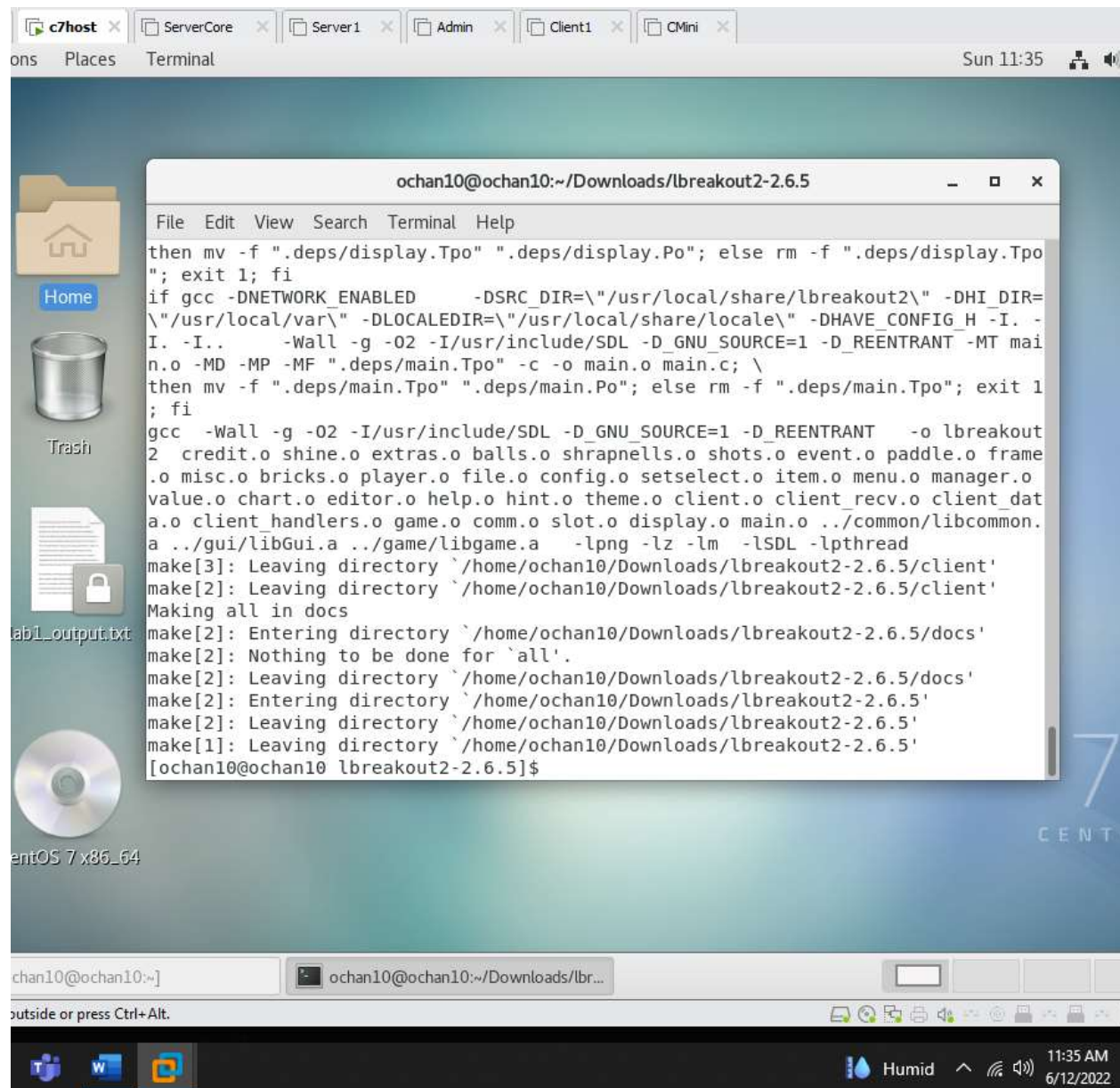
Package	Architecture	Version	Base Package	Size
alsa-lib-devel	x86_64	1.1.8-1.el7	base	963 k
gl-manpages	noarch	1.1-7.20130122.el7	base	994 k
libXdamage-devel	x86_64	1.1.4-4.1.el7	base	9.7 k
libXext-devel	x86_64	1.3.3-3.el7	base	75 k
libXfixes-devel	x86_64	5.0.3-1.el7	base	13 k
libXrandr-devel	x86_64	1.5.1-2.el7	base	21 k
libXrender-devel	x86_64	0.9.10-1.el7	base	17 k
libXxf86vm-devel	x86_64	1.1.4-1.el7	base	18 k
libdrm-devel	x86_64	2.4.97-2.el7	base	143 k
libglvnd-core-devel	x86_64	1:1.0.1-0.8.git5baale5.el7	base	20 k
libglvnd-devel	x86_64	1:1.0.1-0.8.git5baale5.el7	base	11 k
libglvnd-opengl	x86_64	1:1.0.1-0.8.git5baale5.el7	base	43 k
mesa-khr-devel	x86_64	18.3.4-12.el7_9	updates	20 k
mesa-libGL-devel	x86_64	18.3.4-12.el7_9	updates	164 k
mesa-libGLU	x86_64	9.0.0-4.el7	base	196 k
mesa-libGLU-devel	x86_64	9.0.0-4.el7	base	9.0 k

Transaction Summary

=====  
Install 3 Packages (+17 Dependent packages)  
=====  
Total download size: 3.4 M  
Installed size: 20 M  
Is this ok [y/d/N]:

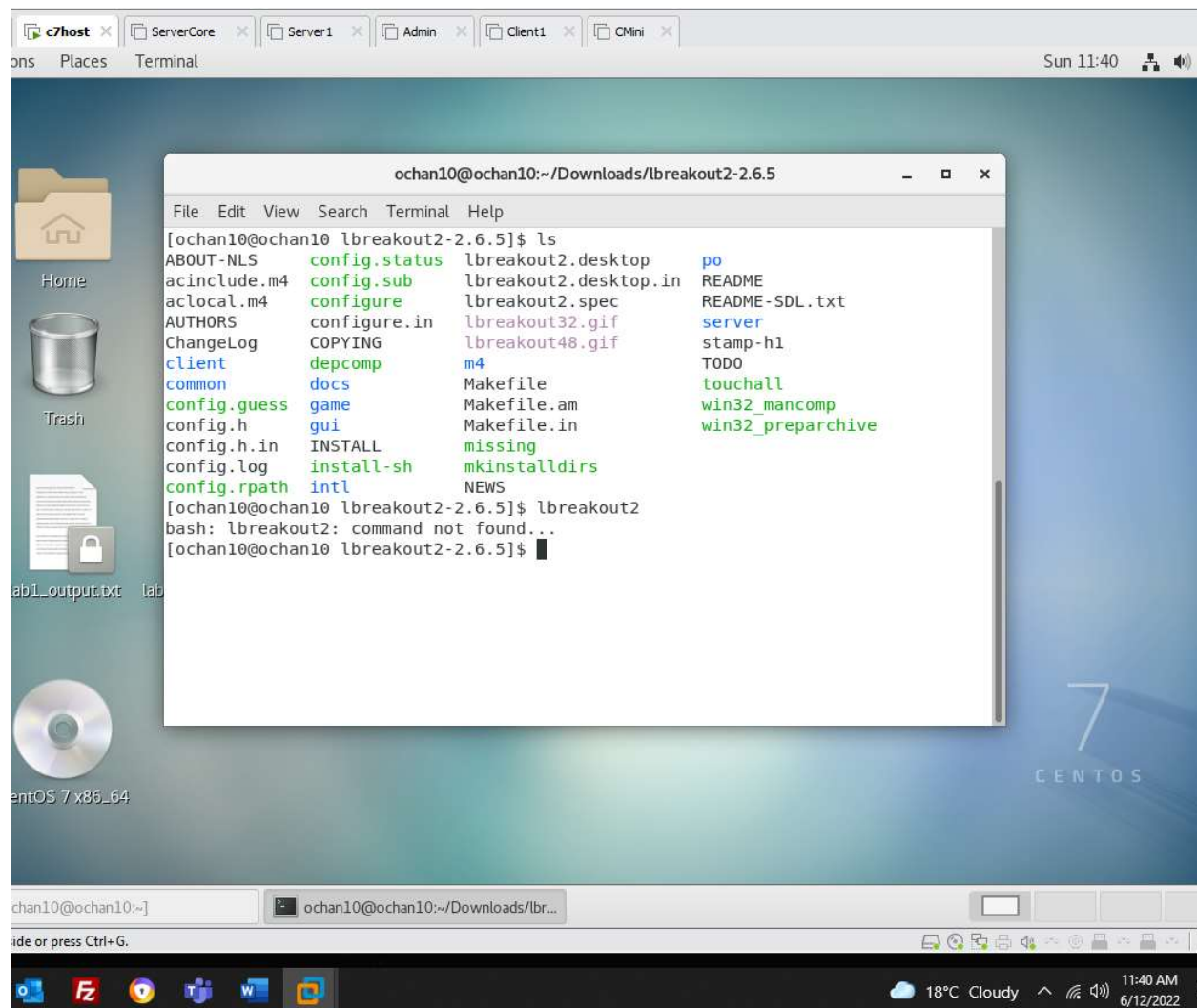


./configure && make

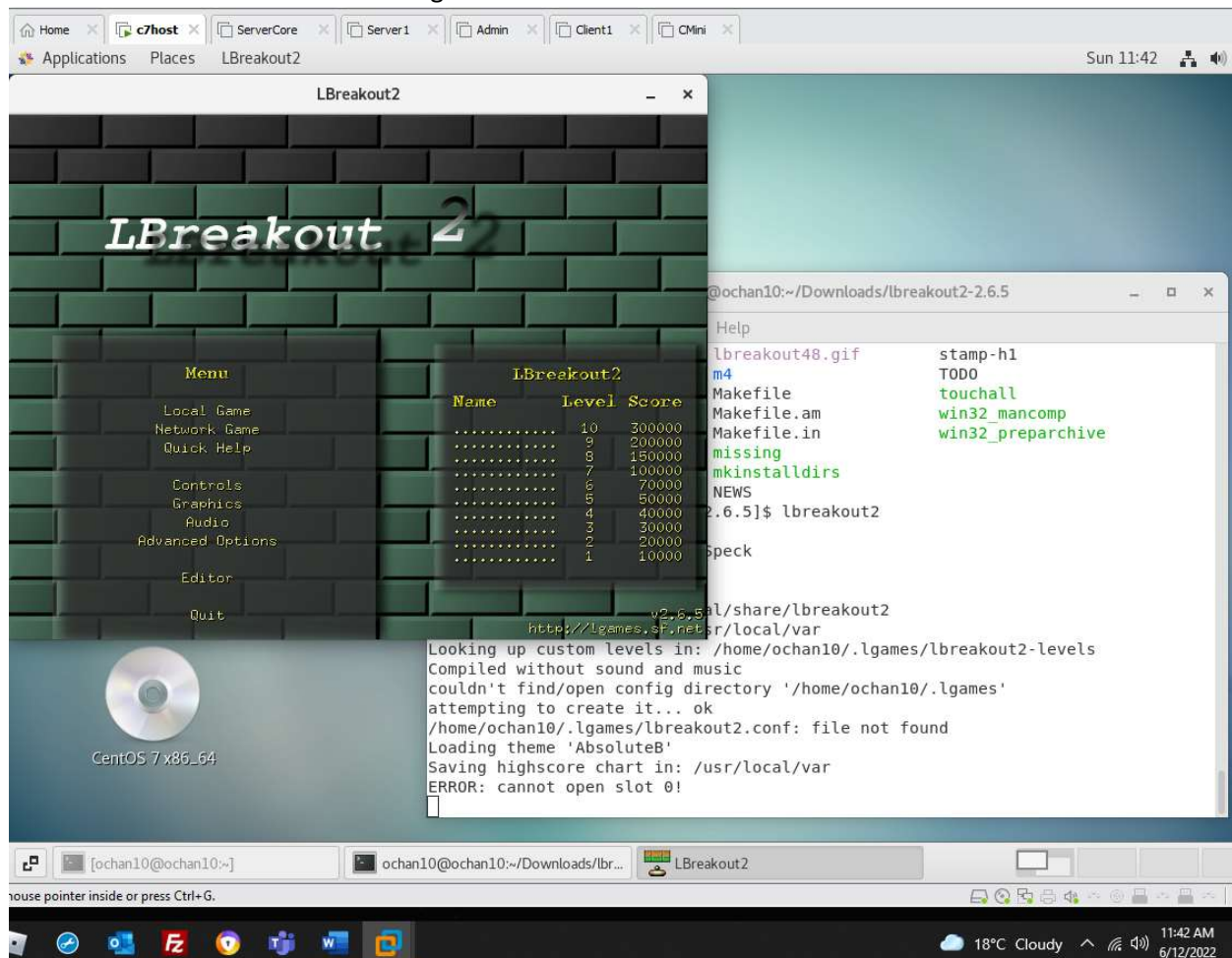




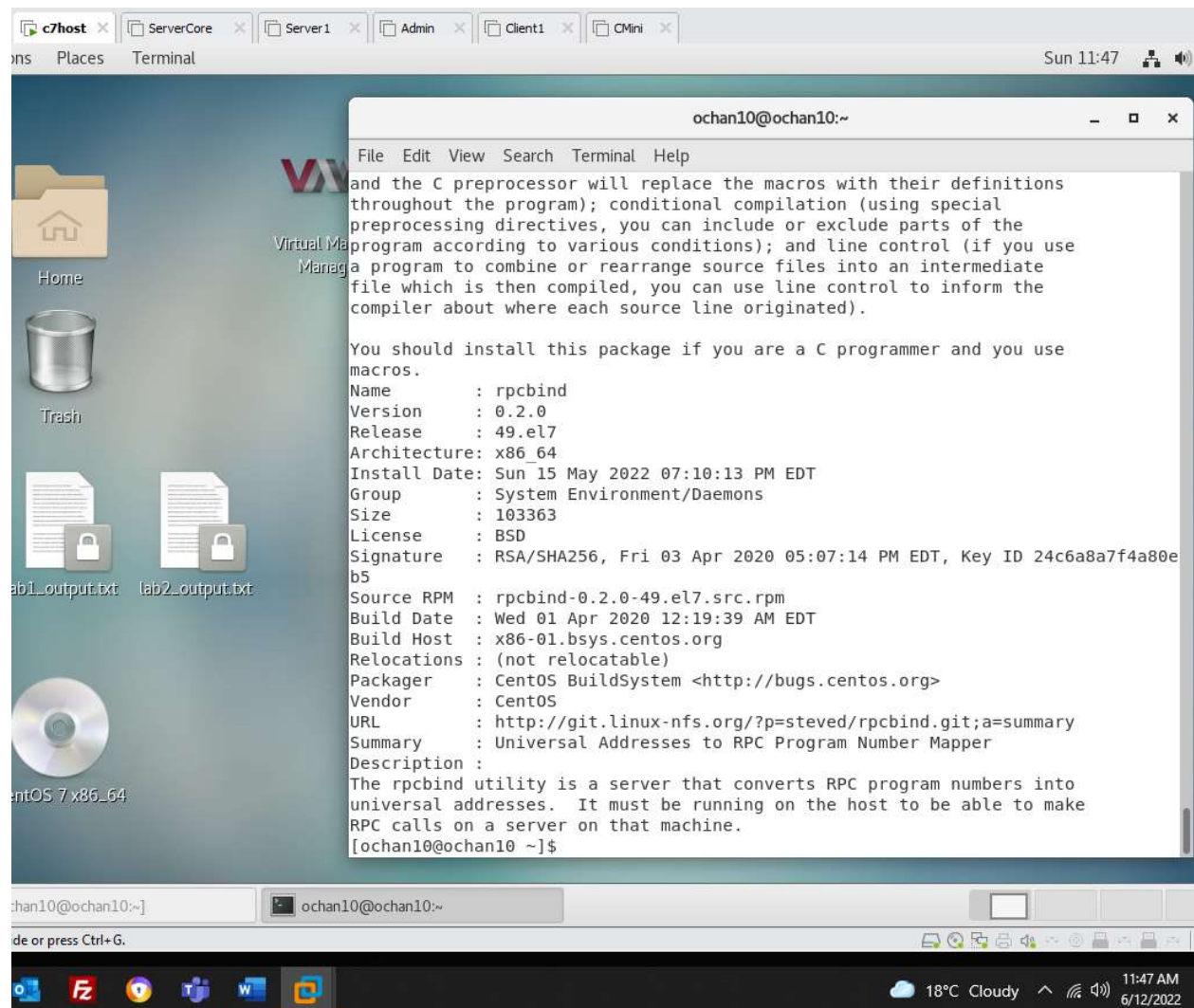
Run lbreakout2: did not work.



Run sudo make install and tried the game:



- rpm -qia



The screenshot shows a virtual machine desktop environment. At the top, there are tabs for 'c7host', 'ServerCore', 'Server1', 'Admin', 'Client1', and 'CMini'. The desktop background is a blue gradient with icons for 'Home', 'Trash', 'lab1\_output.txt', 'lab2\_output.txt', and a 'CentOS 7 x86\_64' ISO image. A terminal window titled 'ochan10@ochan10:~' is open, displaying the output of the 'rpm -qia' command for the 'rpcbind' package. The output includes details such as Name, Version, Release, Architecture, Install Date, Group, Size, License, Signature, Source RPM, Build Date, Build Host, Relocations, Packager, Vendor, URL, Summary, and Description. The terminal window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The bottom of the screen shows a taskbar with various application icons and a system tray indicating the time as 11:47 AM on 6/12/2022 and the weather as 18°C Cloudy.

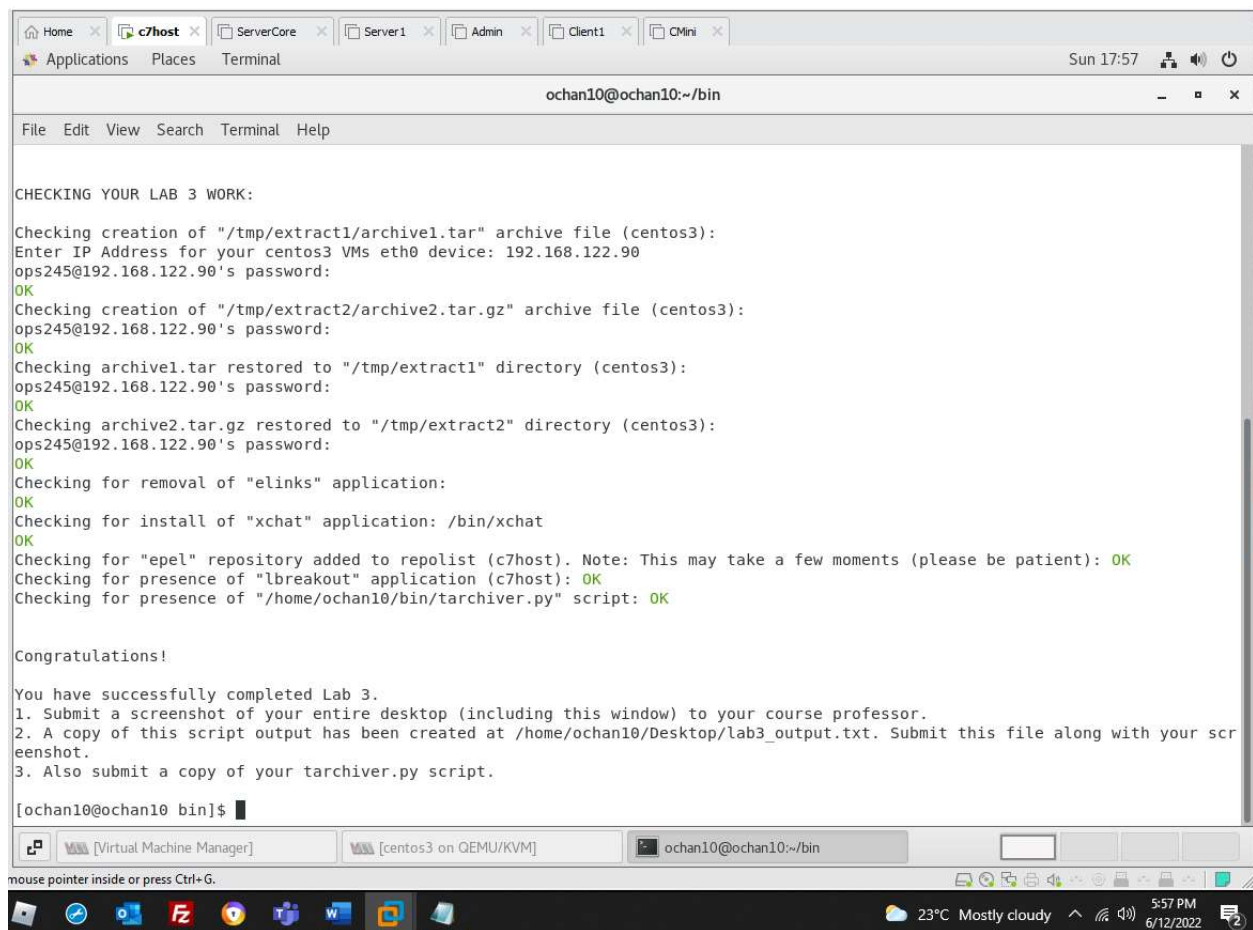
```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
and the C preprocessor will replace the macros with their definitions  
throughout the program); conditional compilation (using special  
preprocessing directives, you can include or exclude parts of the  
program according to various conditions); and line control (if you use  
a program to combine or rearrange source files into an intermediate  
file which is then compiled, you can use line control to inform the  
compiler about where each source line originated).  
  
You should install this package if you are a C programmer and you use  
macros.  
Name       : rpcbind  
Version    : 0.2.0  
Release    : 49.el7  
Architecture: x86_64  
Install Date: Sun 15 May 2022 07:10:13 PM EDT  
Group      : System Environment/Daemons  
Size       : 103363  
License    : BSD  
Signature   : RSA/SHA256, Fri 03 Apr 2020 05:07:14 PM EDT, Key ID 24c6a8a7f4a80e  
b5  
Source RPM  : rpcbind-0.2.0-49.el7.src.rpm  
Build Date  : Wed 01 Apr 2020 12:19:39 AM EDT  
Build Host  : x86-01.bsys.centos.org  
Relocations : (not relocatable)  
Packager    : CentOS BuildSystem <http://bugs.centos.org>  
Vendor      : CentOS  
URL         : http://git.linux-nfs.org/?p=steved/rpcbind.git;a=summary  
Summary     : Universal Addresses to RPC Program Number Mapper  
Description :  
The rpcbind utility is a server that converts RPC program numbers into  
universal addresses. It must be running on the host to be able to make  
RPC calls on a server on that machine.  
[ochan10@ochan10 ~]$
```

Rpm -qia | sed -nre

```
ochan10@ochan10:~  
File Edit View Search Terminal Help  
Name      : urw-base35-fonts  
Install Date: Sun 15 May 2022 07:09:23 PM EDT  
Name      : firefox  
Install Date: Fri 10 Jun 2022 06:32:51 PM EDT  
Name      : plymouth  
Install Date: Sun 15 May 2022 07:09:59 PM EDT  
Name      : wvdial  
Install Date: Sun 15 May 2022 07:11:52 PM EDT  
Name      : neon  
Install Date: Sun 15 May 2022 07:10:42 PM EDT  
Name      : copy-jdk-configs  
Install Date: Sun 15 May 2022 07:08:35 PM EDT  
Name      : curl  
Install Date: Thu 19 May 2022 09:36:42 PM EDT  
Name      : flite  
Install Date: Sun 15 May 2022 07:09:25 PM EDT  
Name      : patch  
Install Date: Sun 12 Jun 2022 11:31:37 AM EDT  
Name      : gtk2-immodule-xim  
Install Date: Sun 15 May 2022 07:11:54 PM EDT  
Name      : gstreamer1-plugins-good  
Install Date: Sun 15 May 2022 07:10:44 PM EDT  
Name      : libss  
Install Date: Sun 15 May 2022 07:08:36 PM EDT  
Name      : pulseaudio  
Install Date: Thu 19 May 2022 09:36:47 PM EDT  
Name      : python-di  
Install Date: Sun 15 May 2022 07:09:25 PM EDT  
Name      : cpp  
Install Date: Sun 12 Jun 2022 11:31:58 AM EDT  
Name      : rpcbind  
Install Date: Sun 15 May 2022 07:10:13 PM EDT  
[ochan10@ochan10 ~]$
```



## Checking lab 3 work:



```
ochoan10@ochoan10:~/bin

CHECKING YOUR LAB 3 WORK:

Checking creation of "/tmp/extract1/archive1.tar" archive file (centos3):
Enter IP Address for your centos3 VMs eth0 device: 192.168.122.90
ops245@192.168.122.90's password:
OK
Checking creation of "/tmp/extract2/archive2.tar.gz" archive file (centos3):
ops245@192.168.122.90's password:
OK
Checking archive1.tar restored to "/tmp/extract1" directory (centos3):
ops245@192.168.122.90's password:
OK
Checking archive2.tar.gz restored to "/tmp/extract2" directory (centos3):
ops245@192.168.122.90's password:
OK
Checking for removal of "elinks" application:
OK
Checking for install of "xchat" application: /bin/xchat
OK
Checking for "epel" repository added to repolist (c7host). Note: This may take a few moments (please be patient): OK
Checking for presence of "lbreakout" application (c7host): OK
Checking for presence of "/home/ochoan10/bin/tarchiver.py" script: OK

Congratulations!

You have successfully completed Lab 3.
1. Submit a screenshot of your entire desktop (including this window) to your course professor.
2. A copy of this script output has been created at /home/ochoan10/Desktop/lab3_output.txt. Submit this file along with your screenshot.
3. Also submit a copy of your tarchiver.py script.

[ochoan10@ochoan10 bin]$
```

mouse pointer inside or press Ctrl+G.

23°C Mostly cloudy 5:57 PM 6/12/2022

