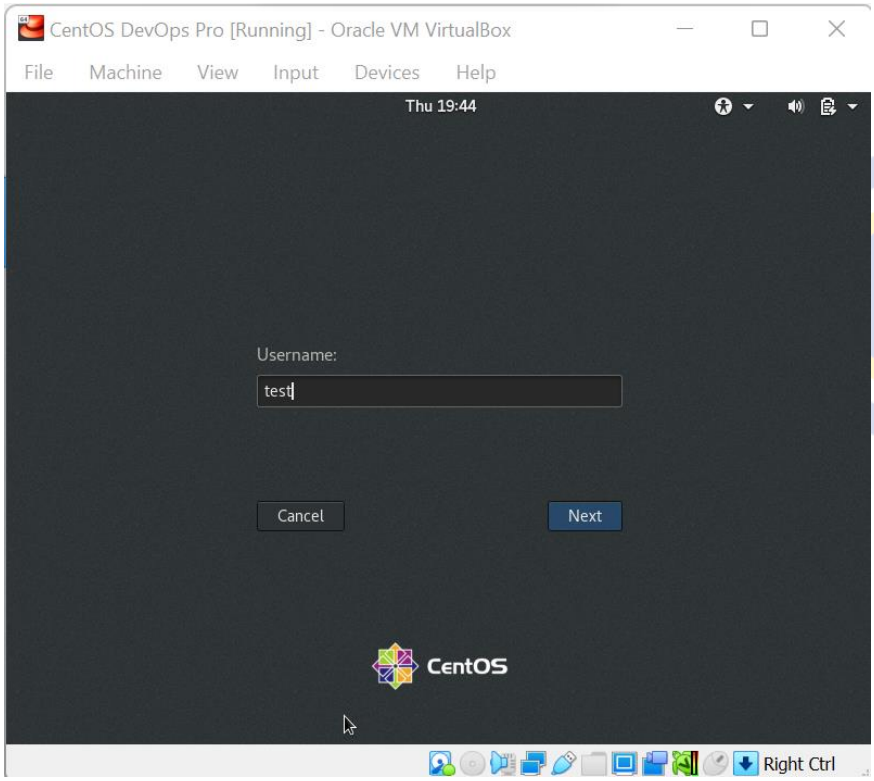
Basic Linux Commands Assignments

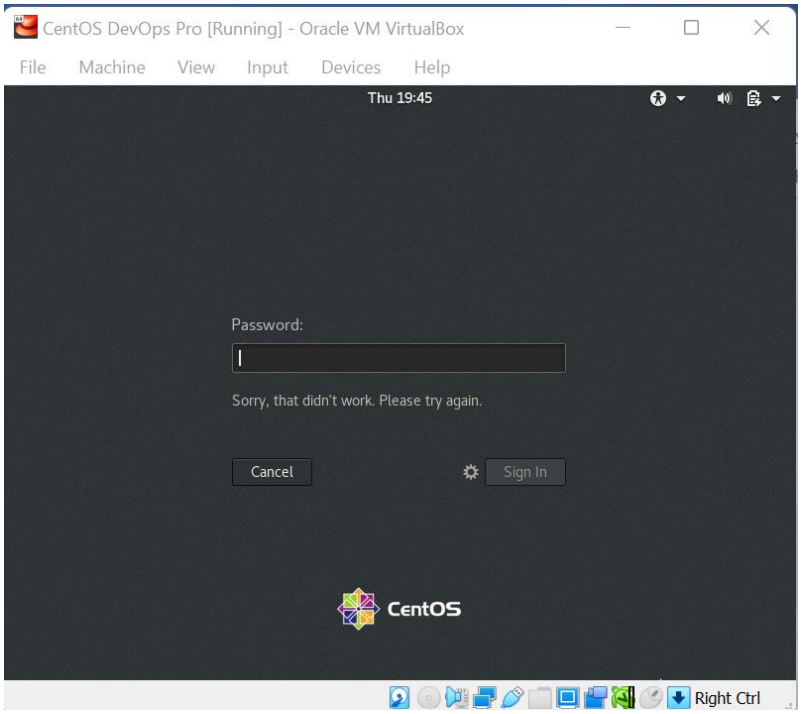
Assignment-1

Connect and disconnect with login Access

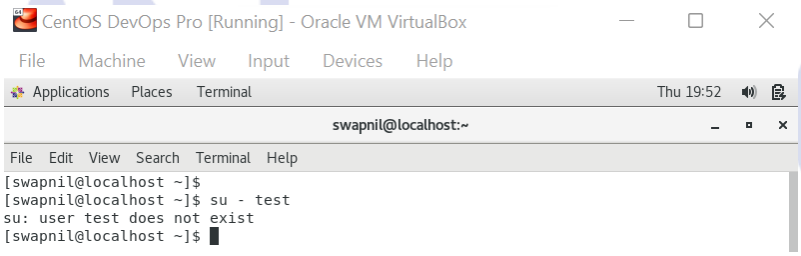
- What happens when you login a non-existent users or username?
    - Provide Screenshot and What you understand, explain in short brief?

➔ **Ans:** When we login with non-existent user to system it verifies internally within system configured users and password and if does not find it gives invalid credentials error/user does not exist error. PFB screenshots.





If we try to switch to non-existing user in terminal command line, it gives an error of user does not exist.



Assignment-2

Password changing

- Login into your account and then change password?
  - Change your password into ***IneuR0n#42*** and hit the **Enter** key
    - Explain what happen and give screenshot?

➔ **Ans:** With the help of "passwd" command we can change the password for your account. PFB screenshot.

```
[swapnil@localhost etc]$ ls -ltr passwd;date
-rw-r--r--. 1 root root 2268 Oct 12 21:30 passwd
Thu Oct 13 20:00:11 IST 2022
[swapnil@localhost etc]$ passwd
Changing password for user swapnil.
Changing password for swapnil.
(current) UNIX password:
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[swapnil@localhost etc]$ ls -ltr passwd;date
-rw-r--r--. 1 root root 2268 Oct 12 21:30 passwd
Thu Oct 13 20:01:27 IST 2022
```

- Try again to change password but use like password ***1234*** or ***abcd***
  - Explain what happen and give screenshot?

➔ **Ans:** Setting up the password to 1234 or abcd give BAD/Weak password error which does not comply with 8-character password policy. PFB screenshot.

```
[swapnil@localhost ~]$ passwd
Changing password for user swapnil.
Changing password for swapnil.
(current) UNIX password:
New password:
BAD PASSWORD: The password is shorter than 8 characters
New password:
BAD PASSWORD: The password is shorter than 8 characters
New password:
BAD PASSWORD: The password is shorter than 8 characters
passwd: Have exhausted maximum number of retries for service
```

- Try again to change password but now don't use any password just hit **Enter** key
  - Explain what happen and give screenshot?

➔ **Ans:** When we try to change the password with blank text, it gives error of "No password supplied". PFB screenshot.

```
[swapnil@localhost ~]$ passwd
Changing password for user swapnil.
Changing password for swapnil.
(current) UNIX password:
New password:
BAD PASSWORD: No password supplied
New password:
BAD PASSWORD: No password supplied
New password:
BAD PASSWORD: No password supplied

passwd: Have exhausted maximum number of retries for service
[swapnil@localhost ~]$
```

Assignment-3

Working with Directories

- Enter the command **cd /** and then **ls** and then hit **Enter** key
  - Take screenshot and explain what output we got?

➔ **Ans:** "cd /" command helps to change the current working directory to root directory which is the topmost/outermost parent directory in Linux under which all the files/directory architecture lies . "ls" command helps to list down the directories and files under "/". PFB screenshot.

```
[swapnil@localhost /]$ cd /
[swapnil@localhost /]$ ls
bin   dev  home  lib64  mnt  proc  run   srv  tmp  var
boot  etc  lib   media  opt  root  sbin  sys  usr
[swapnil@localhost /]$ date;pwd
Thu Oct 13 20:32:37 IST 2022
/
[swapnil@localhost /]$
```

- Enter the command now **cd /home** and then hit **Enter** key
  - Do **ls,** provide screenshot and explain what is **/home** directory used for?

➔ **Ans:** "cd /home" command helps to enter the default Linux home directory path under which we can find the all available individual user's home directory with the help of "ls" command. PFB screenshot.

```
[swapnil@localhost /]$ cd /home/
[swapnil@localhost home]$ ls
swapnil
[swapnil@localhost home]$
[swapnil@localhost home]$ date;pwd
Thu Oct 13 20:34:25 IST 2022
/home
[swapnil@localhost home]$
```

- Enter **cd ..** and hit **Enter** key [*Note: here we have space after cd then use double dot*]
    - Check what happen and give screenshot?

➔ **Ans:** "cd .." help to return to one upper level directory/one directory back, PFB screenshot.

```
[swapnil@localhost home]$ cd ..
[swapnil@localhost /]$ date;pwd
Thu Oct 13 20:44:17 IST 2022
/
[swapnil@localhost /]$
```

- Now enter **cd /var/www/html** and then type **cd** and hit **Enter** key
    - Explain what happen and give screenshot?

➔ **Ans:** "cd /var/www/html" give an error of no such file or directory present on host.

```
[swapnil@localhost ~]$ cd /var/www/html
bash: cd: /var/www/html: No such file or directory
[swapnil@localhost ~]$ cd
[swapnil@localhost ~]$ date;pwd
Fri Oct 14 11:26:42 IST 2022
/home/swapnil
```

So, either way these directory structure can be created for testing purpose or other way we can install webserver by "yum install httpd -y". In this case for demo, I've created the folder structure manually and created demo file index.html under it. Once we type cd from path /var/www/html we will return to /root home. PFB screenshot.

```
[root@localhost ~]# mkdir /var/www
[root@localhost ~]# mkdir /var/www/html
[root@localhost ~]# cd /var/www/html
[root@localhost html]# ls
[root@localhost html]# touch index.html
[root@localhost html]# ls
index.html
[root@localhost html]# date; pwd
Mon Oct 17 19:49:29 IST 2022
/var/www/html
[root@localhost html]# cd
[root@localhost ~]# pwd
/root
[root@localhost ~]#
```

- Now type **cd /root** and then hit **Enter** key
    - Do **ls,** check any output we have on screen if yes then take screenshot?

➔ **Ans:** "cd /root" helps to enter the home directory of root user and "ls" command helps to list down the directories and files under root home directory. PFB screenshot.

Assignment-4

Working with File Listing

- Go to **cd /etc** and type **ls**

- Take screenshot and explain what files you have seeing?
- Take screenshot and explain what different output you found compare to previous command you used?

➔ **Ans:** "cd /etc" and "ls" after that, list down all the files and directories under /etc dir. /etc is a directory in Linux that contains configuration files for the system. These files are used to store settings for the kernel, services, and applications. PFB snapshot.

```
[swapnil@localhost ~]$ cd /etc/
[swapnil@localhost etc]$ ls
abrt                        hosts.deny              protocols
adjtime                     hp                      pulse
aliases                     idmapd.conf             purple
aliases.db                  init.d                  python
alsa                        inittab                 qemu-ga
alternatives                inputrc                 qemu-kvm
anacrontab                  iproute2                radvd.conf
asound.conf                 ipsec.conf              ras
at.deny                     ipsec.d                 rc0.d
audisp                      ipsec.secrets           rc1.d
audit                       iscsi                   rc2.d
avahi                       issue                   rc3.d
bash_completion.d           issue.net               rc4.d
bashrc                      java                    rc5.d
binfmt.d                    jvm                     rc6.d
bluetooth                   jvm-commmon             rc.d
brltty                      kdump.conf              rc.local
brltty.conf                 kernel                  rdma
centos-release              krb5.conf               redhat-release
centos-release-upstream     krb5.conf.d             request-key.conf
chkconfig.d                 ksmtuned.conf           request-key.d
chrony.conf                 ld.so.cache             resolv.conf
chrony.keys                 ld.so.conf              resolv.conf.save
cifs-utils                  ld.so.conf.d            rpc
```

- Then type **ls -al** and hit **Enter** key
  - Take screenshot and explain what new file or directory you found?

➔ **Ans:** This "ls -al" command list down all the folders and file detailed listing format with ownership, user, group, size, date, timestamp details along with hidden files/folders.PFB snapshot.

```
[swapnil@localhost etc]$ ls -al
total 1372
drwxr-xr-x. 139 root root     8192 Oct 14 11:23 .
dr-xr-xr-x.  17 root root      224 Oct 12 21:30 ..
drwxr-xr-x.   3 root root      101 Oct 12 21:19 abrt
-rw-r--r--.   1 root root       16 Oct 12 21:30 adjtime
-rw-r--r--.   1 root root     1529 Apr  1  2020 aliases
-rw-r--r--.   1 root root    12288 Oct 12 21:32 aliases.db
drwxr-xr-x.   3 root root       65 Oct 12 21:23 alsa
drwxr-xr-x.   2 root root     4096 Oct 14 11:23 alternatives
-rw-------.   1 root root      541 Jan 13  2022 anacrontab
-rw-r--r--.   1 root root       55 Aug  8  2019 asound.conf
-rw-r--r--.   1 root root        1 May 18 21:24 at.deny
drwxr-x---.   3 root root       43 Oct 12 21:20 audisp
drwxr-x---.   3 root root       83 Oct 12 21:32 audit
drwxr-xr-x.   4 root root       71 Oct 12 21:23 avahi
drwxr-xr-x.   2 root root     4096 Oct 14 11:22 bash_completion.d
-rw-r--r--.   1 root root     2853 Apr  1  2020 bashrc
drwxr-xr-x.   2 root root        6 Sep  1 20:27 binfmt.d
drwxr-xr-x.   2 root root       23 Oct 12 21:19 bluetooth
drwxr-xr-x.   2 root root    12288 Oct 12 21:21 brltty
-rw-r--r--.   1 root root    21929 Apr 11  2018 brltty.conf
-rw-r--r--.   1 root root       37 Nov 23  2020 centos-release
-rw-r--r--.   1 root root       51 Nov 23  2020 centos-release-upstream
drwxr-xr-x.   2 root root        6 Oct 13  2020 chkconfig.d
-rw-r--r--.   1 root root     1108 Aug  8  2019 chrony.conf
```

- Then use **ls -i** and hit **Enter** key

- Now see what different output its shows and take screenshot?

➔ **Ans:** "ls -I" list down files with their inode/index numbers. PFB snapshot.

```
[swapnil@localhost etc]$ ls -i
34530232 abrt                        2831110 mcelog
17400582 adjtime                    17215913 mke2fs.conf
16777834 aliases                    17310801 modprobe.d
18152570 aliases.db                  1213512 modules-load.d
 1756178 alsa                       16777848 motd
33892658 alternatives               16777284 mtab
17455210 anacrontab                 17031609 mtools.conf
17168911 asound.conf                17664689 multipath
17511724 at.deny                    17330384 my.cnf
51145142 audisp                     17330385 my.cnf.d
17494549 audit                      18200992 nanorc
35264027 avahi                      34529476 ndctl
   74276 bash_completion.d          17215934 netconfig
16777835 bashrc                     34451634 NetworkManager
50951210 binfmt.d                   17542122 networks
51049313 bluetooth                  17400591 nfs.conf
17662141 brltty                     17400593 nfsmount.conf
17662142 brltty.conf                17361980 nsswitch.conf
16777833 centos-release             16875023 nsswitch.conf.bak
16777320 centos-release-upstream    51850269 ntp
50407895 chkconfig.d                17455194 numad.conf
17510774 chrony.conf                51145130 oddjob
17510776 chrony.keys                17494529 oddjobd.conf
51850301 cifs-utils                  1705312 oddjobd.conf.d
34451628 cron.d                     17329950 openldap
```

- Then use **ls –help** and see other options about **ls** command
  - Explore it and try with other attribute we can use with **ls** command

➔ **Ans:** "ls -help" prints out all the possible option along with ls can be used with description. PFB snapshot.

```
[swapnil@localhost etc]$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.
  -a, --all                  do not ignore entries starting with .
  -A, --almost-all           do not list implied . and ..
      --author               with -l, print the author of each file
  -b, --escape               print C-style escapes for nongraphic characters
      --block-size=SIZE      scale sizes by SIZE before printing them; e.g.,
                               '--block-size=M' prints sizes in units of
                               1,048,576 bytes; see SIZE format below
  -B, --ignore-backups       do not list implied entries ending with ~
  -c                         with -lt: sort by, and show, ctime (time of last
                               modification of file status information);
                               with -l: show ctime and sort by name;
                               otherwise: sort by ctime, newest first
  -C                         list entries by columns
      --color[=WHEN]         colorize the output; WHEN can be 'never', 'auto',
                               or 'always' (the default); more info below
  -d, --directory            list directories themselves, not their contents
  -D, --dired                generate output designed for Emacs' dired mode
  -f                         do not sort, enable -aU, disable -ls --color
  -F, --classify             append indicator (one of */=>@|) to entries
      --file-type            likewise, except do not append '*'
```

Assignment-5

Know where you are and where you working

*Here we use **pwd, cd and ls** as combine task to understand where you working on terminal and how you can switch from one directory to another one.*

- Open terminal after restart the linux
    - Check which location you working, type **pwd** and take screenshot

➔ **Ans:** "pwd" prints out present working directory.PFB snapshot.

```
[swapnil@localhost ~]$ pwd
/home/swapnil
[swapnil@localhost ~]$ date
Fri Oct 14 11:48:07 IST 2022
[swapnil@localhost ~]$
```

- Now use **cd /var** and hit **Enter** key
    - Do **ls,** and see what output comes, give screenshot?

➔ **Ans:** "cd /var" followed by "ls" prints out all the files and folders under var directory.PFB snapshot.

```
[swapnil@localhost var]$ ls
account  cache  db     games   kerberos  local  log   nis  preserve  spool  yp
adm      crash  empty  gopher  lib       lock   mail  opt  run       tmp
[swapnil@localhost var]$ date;pwd
Fri Oct 14 11:49:59 IST 2022
/var
[swapnil@localhost var]$
```

- Do explore other help options of each command to learn more other things we can do with these commands

➔ **Ans:** With the help of "help cd", "help pwd", "ls --help" we can find out all the possible usable attributes with description. PFB snapshot.

Additional Assignments from Day 2:

Extra Assignment 1: - Install all the dependencies for making CentOS full screen

➔ Ans: Using below command we need to install certain packages with root user and then restart the machine.

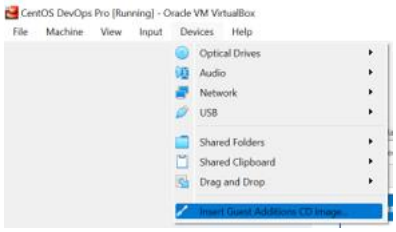
yum install dkms gcc make kernel-devel bzip2 binutils patch libgomp glibc-headers glibc-devel kernel-headers perl

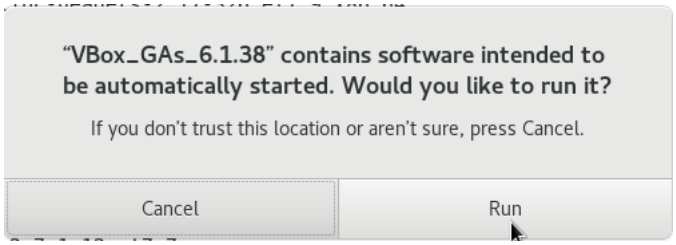
```
[root@localhost ~]# yum install dkms gcc make kernel-devel bzip2 binutils patch libgomp
 glibc-headers glibc-devel kernel-headers perl
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: repo.extreme-ix.org
 * extras: repo.extreme-ix.org
 * updates: repo.extreme-ix.org
No package dkms available.
Package 1:make-3.82-24.el7.x86_64 already installed and latest version
Package bzip2-1.0.6-13.el7.x86_64 already installed and latest version
Package binutils-2.27-44.base.el7_9.1.x86_64 already installed and latest version
Package libgomp-4.8.5-44.el7.x86_64 already installed and latest version
Package 4:perl-5.16.3-299.el7_9.x86_64 already installed and latest version
Resolving Dependencies
--> Running transaction check
---> Package gcc.x86_64 0:4.8.5-44.el7 will be installed
--> Processing Dependency: cpp = 4.8.5-44.el7 for package: gcc-4.8.5-44.el7.x86_64
---> Package glibc-devel.x86_64 0:2.17-326.el7_9 will be installed
---> Package glibc-headers.x86_64 0:2.17-326.el7_9 will be installed
---> Package kernel-devel.x86_64 0:3.10.0-1160.76.1.el7 will be installed
---> Package kernel-headers.x86_64 0:3.10.0-1160.76.1.el7 will be installed
---> Package patch.x86_64 0:2.7.1-12.el7_7 will be installed
--> Running transaction check
---> Package cpp.x86_64 0:4.8.5-44.el7 will be installed
--> Finished Dependency Resolution
```

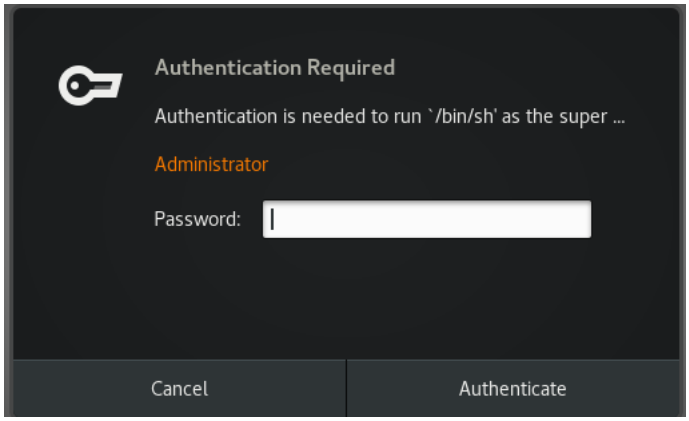
```
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package               Arch          Version                     Repository      Size
================================================================================
Installing:
 gcc                   x86_64        4.8.5-44.el7                base            16 M
 glibc-devel           x86_64        2.17-326.el7_9              updates        1.1 M
 glibc-headers         x86_64        2.17-326.el7_9              updates        691 k
 kernel-devel          x86_64        3.10.0-1160.76.1.el7        updates         18 M
 kernel-headers        x86_64        3.10.0-1160.76.1.el7        updates        9.1 M
 patch                 x86_64        2.7.1-12.el7_7              base           111 k
Installing for dependencies:
 cpp                   x86_64        4.8.5-44.el7                base           5.9 M

Transaction Summary
================================================================================
Install  6 Packages (+1 Dependent package)

Total download size: 51 M
Installed size: 98 M
Is this ok [y/d/N]: y
```

```
Downloading packages:
No Presto metadata available for updates
(1/7): glibc-devel-2.17-326.el7_9.x86_64.rpm                | 1.1 MB  00:00:09
(2/7): glibc-headers-2.17-326.el7_9.x86_64.rpm              | 691 kB  00:00:10
(3/7): patch-2.7.1-12.el7_7.x86_64.rpm                      | 111 kB  00:00:08
(4/7): cpp-4.8.5-44.el7.x86_64.rpm                          | 5.9 MB  00:00:36
(5/7): kernel-headers-3.10.0-1160.76.1.el7.x86_64.rpm       | 9.1 MB  00:00:44
(6/7): gcc-4.8.5-44.el7.x86_64.rpm                          |  16 MB  00:01:11
(7/7): kernel-devel-3.10.0-1160.76.1.el7.x86_64.rpm         |  18 MB  00:01:12
--------------------------------------------------------------------------------
Total                                              719 kB/s |  51 MB  01:12
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : cpp-4.8.5-44.el7.x86_64                                     1/7
  Installing : kernel-headers-3.10.0-1160.76.1.el7.x86_64                  2/7
  Installing : glibc-headers-2.17-326.el7_9.x86_64                         3/7
  Installing : glibc-devel-2.17-326.el7_9.x86_64                           4/7
  Installing : gcc-4.8.5-44.el7.x86_64                                     5/7
  Installing : kernel-devel-3.10.0-1160.76.1.el7.x86_64                    6/7
  Installing : patch-2.7.1-12.el7_7.x86_64                                 7/7
  Verifying  : patch-2.7.1-12.el7_7.x86_64                                 1/7
  Verifying  : kernel-headers-3.10.0-1160.76.1.el7.x86_64                  2/7
  Verifying  : glibc-devel-2.17-326.el7_9.x86_64                           3/7
  Verifying  : cpp-4.8.5-44.el7.x86_64                                     4/7
  Verifying  : cpp-4.8.5-44.el7.x86_64                                     4/7
  Verifying  : glibc-headers-2.17-326.el7_9.x86_64                         5/7
  Verifying  : gcc-4.8.5-44.el7.x86_64                                     6/7
  Verifying  : kernel-devel-3.10.0-1160.76.1.el7.x86_64                    7/7

Installed:
  gcc.x86_64 0:4.8.5-44.el7
  glibc-devel.x86_64 0:2.17-326.el7_9
  glibc-headers.x86_64 0:2.17-326.el7_9
  kernel-devel.x86_64 0:3.10.0-1160.76.1.el7
  kernel-headers.x86_64 0:3.10.0-1160.76.1.el7
  patch.x86_64 0:2.7.1-12.el7_7

Dependency Installed:
  cpp.x86_64 0:4.8.5-44.el7

Complete!
[root@localhost ~]# date
Fri Oct 14 12:37:54 IST 2022
[root@localhost ~]#
```

Now select Devices → Insert Guest Additions CD images.. and run as root user.

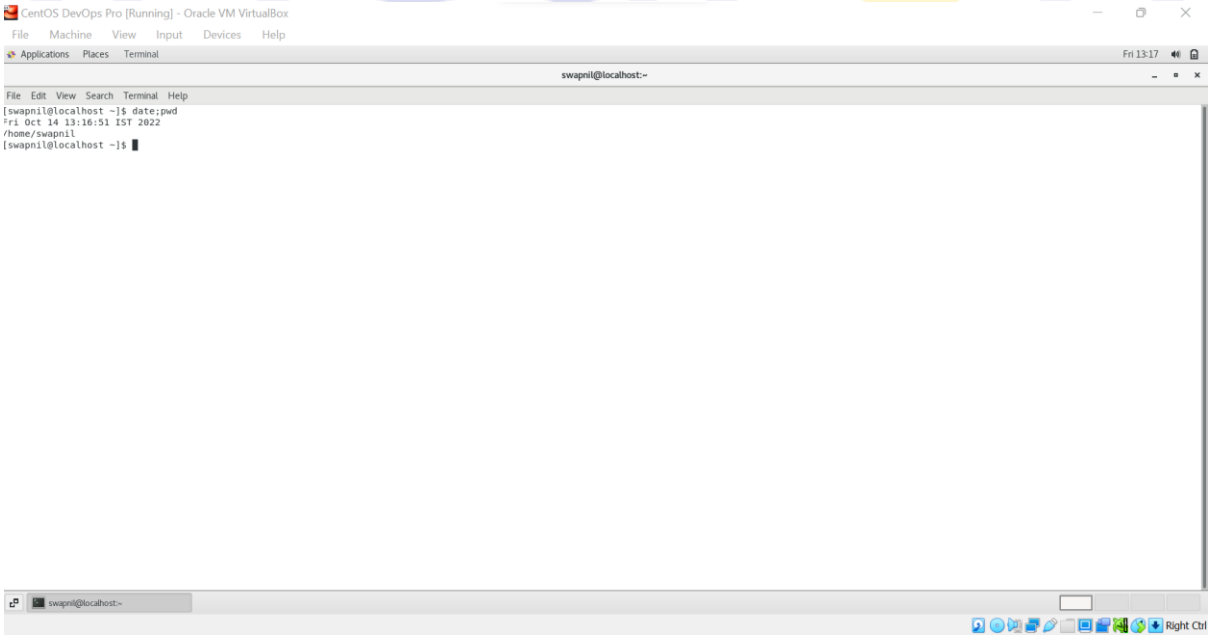







```
Verifying archive integrity... All good.
Uncompressing VirtualBox 6.1.38 Guest Additions for Linux........
VirtualBox Guest Additions installer
Copying additional installer modules ...
Installing additional modules ...
VirtualBox Guest Additions: Starting.
VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel
modules.  This may take a while.
VirtualBox Guest Additions: To build modules for other installed kernels, run
VirtualBox Guest Additions:   /sbin/rcvboxadd quicksetup <version>
VirtualBox Guest Additions: or
VirtualBox Guest Additions:   /sbin/rcvboxadd quicksetup all
VirtualBox Guest Additions: Kernel headers not found for target kernel
3.10.0-1160.el7.x86_64. Please install them and execute
  /sbin/rcvboxadd setup
modprobe vboxguest failed
The log file /var/log/vboxadd-setup.log may contain further information.
Press Return to close this window...
```

Now we can full screen our CentOS screen in Virtual box. We can use shortcut as well Right ctrl + A. PFB screenshot.



Extra Assignment 2: - Please update you CentOS machine

➔ **Ans:** PFB snapshot in which “yum update” command is used by root user to update the CentOS packages.

```
[root@localhost ~]# yum update
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirrors.nxtgen.com
 * extras: mirrors.nxtgen.com
 * updates: mirrors.nxtgen.com
No packages marked for update
[root@localhost ~]#
```