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CIS220.470
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DISCOVERY EXERCISES (1-20)

EXERCISE 1

```
[student@COS-047 ~]$ cd /
[student@COS-047 /]$ ls
1   boot  etc   lib   media  opt   root  sbin  sys  usr
bin  dev   home  lib64  mnt   proc  run   srv   tmp  var
```

EXERCISE 2

2. Use the ls -l command to view the contents of the root file system directory (/).

```
[student@COS-047 /]$ ls -l
total 32
-rw-r--r--.   1 root root    0 Jan 22  2017 1
lrwxrwxrwx.   1 root root    7 Jan 22  2017 bin -> usr/bin
dr-xr-xr-x.   4 root root 4096 Jan 22  2017 boot
drwxr-xr-x.  19 root root 3100 Jan 23 16:08 dev
drwxr-xr-x. 140 root root 8192 Feb 20 14:58 etc
drwxr-xr-x.   4 root root   35 Nov  5  2016 home
lrwxrwxrwx.   1 root root    7 Jan 22  2017 lib -> usr/lib
lrwxrwxrwx.   1 root root    9 Jan 22  2017 lib64 -> usr/lib64
drwxr-xr-x.   2 root root    6 Nov  5  2016 media
drwxr-xr-x.   2 root root    6 Nov  5  2016 mnt
drwxr-xr-x.   3 root root   15 Nov  5  2016 opt
dr-xr-xr-x. 209 root root    0 Jan 23 16:08 proc
dr-xr-x---.  17 root root 4096 Jan 11 00:57 root
drwxr-xr-x.  36 root root 1140 Feb 24 16:26 run
lrwxrwxrwx.   1 root root    8 Jan 22  2017 sbin -> usr/sbin
drwxr-xr-x.   2 root root    6 Nov  5  2016 srv
dr-xr-xr-x.  13 root root    0 Jan 23 16:08 sys
drwxrwxrwt.  21 root root 4096 Feb 24 20:11 tmp
drwxr-xr-x.  13 root root 4096 Jan 22  2017 usr
drwxr-xr-x.  22 root root 4096 Jan 23 16:08 var
```

EXERCISE 3

3. Determine the inode value for the /etc directory.

```
[student@COS-047 /]$ ls -i etc
 71336087 abrt                  410156 lvm
 33951064 adjtime              33854108 machine-id
 36255999 aliases              36509607 magic
```

33554565 aliases.db
34838295 mail.rc
820180 alsa
34076334 makedumpfile.conf.sample
100766698 alternatives
34285038 man_db.conf
33951110 anacrontab
71061470 maven
34145726 asound.conf
35521127 mke2fs.conf
36856736 at.deny
323604 modprobe.d
36268296 at-spi2
323613 modules-load.d
436488 audisp
33554605 motd
67635979 audit
33554564 mtab
35492368 autofs.conf
35706682 mtools.conf
35492369 autofs_ldap_auth.conf
102399068 multipath
35001016 auto.master
37042645 my.cnf
35655608 auto.master.d
100818912 my.cnf.d
35001017 auto.misc
37703518 nanorc
35001018 auto.net
33766050 netconfig
35001019 auto.smb
345546 NetworkManager
208463 avahi
33853199 networks
67169364 bash_completion.d
35830938 nfsmount.conf
33554592 bashrc
34766745 nsswitch.conf
100861123 binfmt.d
34766751 nsswitch.conf.bak
841908 bluetooth
33638404 nsswitch.conf.rpmnew
102615264 brltty
35655584 ntp
36696109 brltty.conf
35714286 ntp.conf
36255987 centos-release
34913029 numad.conf
33554583 centos-release-upstream
819818 oddjob
820280 certmonger
35000869 oddjobd.conf
34913031 cgconfig.conf
35000870 oddjobd.conf.d
102173780 cgconfig.d
323392 openldap
35001008 cgrules.conf
100663444 opt
34913037 cgsnapshot_blacklist.conf
33554586 os-release
162801 chkconfig.d
71061351 PackageKit
35655373 chrony.conf
100818297 pam.d
35655376 chrony.keys
37951733 passwd
35655595 cifs-utils
33766303 passwd-
100767232 conky
37703647 pbm2ppa.conf
345819 cron.d
34538752 pinforc
67356922 cron.daily
162941 pkcs11
33951111 cron.deny
67169355 pki
179964 cron.hourly
100902490 plymouth
100902423 cron.monthly
183 pm
33951120 crontab
37703648 pnm2ppa.conf
345824 cron.weekly
67562313 polkit-1
33554563 crypttab
33690542 popt.d
33554593 csh.cshrc
101149417 postfix
33554594 csh.login
67562266 ppp
1639910 cups
33556809 prelink.conf.d
102749517 cupshelpers
33554606 printcap
33853515 dbus-1
33554608 profile
101767957 dconf
33554610 profile.d

```
   11134 default                  33554609 protocols
100861087 depmod.d                35915320 pulse
 39987161 dhclient-eno16777984.conf  1639894 purple
 34368212 dhclient-ens160.conf     182897 python
 34076226 dhcp                   73215743 qemu-ga
 33692259 DIR_COLORS             71530281 qemu-kvm
 33692079 DIR_COLORS.256color     35831414 radvd.conf
 33692028 DIR_COLORS.lightbgcolor  33690556 rc0.d
 36103889 dleyna-server-service.conf  33853205 rc1.d
 33951246 dnsmasq.conf            33690559 rc2.d
   345615 dnsmasq.d               33690560 rc3.d
 34147500 dracut.conf             33690561 rc4.d
 67440223 dracut.conf.d           34766732 rc5.d
 36417143 drirc                   34766733 rc6.d
 35521126 e2fsck.conf             33638462 rc.d
 34538766 enscript.cfg            33638443 rc.local
 33554595 environment               514104 rdma
 33951109 ethertypes              33554587 redhat-release
 33554596 exports                 34147481 request-key.conf
 71737992 exports.d               101769558 request-key.d
 33766150 favicon.png             33692597 resolv.conf
 35830825 fcoe                    33638405 rpc
 71922355 festival                100663435 rpm
 33554597 filesystems               35706646 rsyncd.conf
  2839029 firefox                 35656219 rsyslog.conf
   410026 firewalld               67440367 rsyslog.d
 70117224 fonts                   33853204 rwtab
 36416807 fprintd.conf              345547 rwtab.d
 33554562 fstab                   71336496 samba
 33853493 fuse.conf                72592261 sane.d
101769471 gconf                   33690932 sasl2
 33690699 gcrypt                  36759976 scl
 36509601 gdbinit                 33554611 securetty
 34838524 gdbinit.d               100768607 security
 36756581 gdm                       182486 selinux
    21141 geoclue                 33554612 services
 34285036 GeoIP.conf                35865085 sestatus.conf
 34838421 GeoIP.conf.default       103197903 setroubleshoot
 35915347 ghostscript              73128180 setuptool.d
   179918 gnupg                   101769984 sgml
 33690604 GREP_COLORS                34507460 shadow
 33690936 groff                   33554607 shadow-
 35830940 group                   33554615 shells
 33766299 group-                    184 skel
 34366996 grub2.cfg                 2899161 smartmontools
 33951126 grub.d                  35830719 sos.conf
 37951729 gshadow                   36034426 speech-dispatcher
 33554599 gshadow-                  67439960 ssh
 67235653 gss                     33692254 ssl
```

102338243 gssproxy 36704242 sssd
34838244 hba.conf 33690565 statetab
33554598 host.conf 33951073 statetab.d
34509178 hostname 33766565 subgid
33554602 hosts 34367771 subuid
33554601 hosts.allow 40127129 sudo.conf
33554603 hosts.deny 39987159 sudoers
1015420 hp 67766345 sudoers.d
34838416 idmapd.conf 40127130 sudoers.rpmnew
34766731 init.d 40127127 sudo-ldap.conf
33853198 inittab 33554618 sysconfig
33554604 inputrc 33853209 sysctl.conf
35915058 ipa 33853921 sysctl.d
100860931 iproute2 67440377 systemd
35830364 ipsec.conf 33554588 system-release
1015096 ipsec.d 33554589 system-release-cpe
35830365 ipsec.secrets 1035578 target
820982 iscsi 33951402 tcsd.conf
33554584 issue 9132 terminfo
33554585 issue.net 33692337 tmpfiles.d
34838913 java 34838841 trusted-key.key
786087 jvm 100994148 tuned
34838916 jvm-commmon 33853923 udev
34076333 kdump.conf 71627463 udisks2
514150 kernel 102198474 unbound
33690698 krb5.conf 37702453 updatedb.conf
33692066 krb5.conf.d 21346 UPower
33951674 ksmtuned.conf 35714282 usb_modeswitch.conf
33766550 ld.so.cache 34509175 vconsole.conf
33638403 ld.so.conf 35656114 vimrc
33638417 ld.so.conf.d 35865081 virc
33690598 libaudit.conf 104102479 vmware
71054162 libibverbs.d 1089674 vmware-tools
33690717 libnl 37702444 wgetrc
102074953 libreport 67562304 wpa_supplicant
33853084 libuser.conf 34538878 wvdial.conf
71530375 libvirt 100663443 X11
34509177 locale.conf 67169366 xdg
34368216 localtime 185 xinetd.d
36047971 login.defs 34148159 xml
35656220 logrotate.conf 33554581 yum
100818788 logrotate.d 33853514 yum.conf
769280 lsm 169 yum.repos.d

EXERCISE 4. Make /etc your current working directory and then go back to your home directory.

[student@COS-047 /]$ cd /etc

[student@COS-047 etc]$ cd
[student@COS-047 ~]$

EXERCISE 5. Make the root file system directory your current working directory. What command can you use to verify that you are in the root file system directory? Return to your home directory.

[student@COS-047 ~]$ cd /
[student@COS-047 /]$ cd
[student@COS-047 ~]$

EXERCISE 6 The file info.txt is in the help directory, which is a subdirectory of the /dev directory. What is the absolute path to info.txt?

/dev/help/info.txt

EXERCISE 7 Change to the /dev directory. Next, access your home directory using a tilde (~) in the command that you employ.

[student@COS-047 ~]$ cd /dev
[student@COS-047 dev]$ cd ~
[student@COS-047 ~]$

EXERCISE 8 . Determine whether there are any hidden files in the /home directory.

[student@COS-047 ~]$ ls -a
. .cache Documents .ICEauthority Music
.. .config Downloads last_name notes
.bash_history corp_db .esd_auth .lesshst Pictures
.bash_logout dept_4540 first_name .local Public
.bash_profile dept_4550 full_name1.txt middle_name Templates
.bashrc Desktop full_name22.txt .mozilla Videos

EXERCISE 9. Make a directory under your home directory called documents. Next, make a directory under the documents directory called spreadsheets. What is the absolute path for the spreadsheets directory?

[student@COS-047 ~]$ mkdir documents
[student@COS-047 ~]$ cd documents
[student@COS-047 documents]$ cat > spreadsheets
[student@COS-047 documents]$ ls
spreadsheets

/home/student/documents/spreadsheets

EXERCISE 10. Make certain you are in your home directory. Use a relative path to make your new documents directory the current working directory. Next, use a relative path to make the spreadsheets directory your current working directory. Now use a command with dots in it to make the documents directory your current working directory.

[student@COS-047 ~]$ cd spreadsheets
[student@COS-047 spreadsheets]$ cd ..
[student@COS-047 documents]$

EXERCISE 11. With your home directory as your current directory, use the command to remove read, write, and execute permissions from group and others for the spreadsheets directory. Next, verify that your change has taken place. **(NOTE:** Execute permissions were not given for some reason.)

[student@COS-047 ~]$ chmod ugo+rwx ~/documents
[student@COS-047 ~]$ ls -l documents
total 4
-rw-rw-r--. 1 student student 3 Feb 24 20:46 spreadsheets

EXERCISE 12. Use the cat command to create a two-line file in your home directory called datainfo. On the first line, enter 144, and on the second line, enter 288. After the file is created, copy it from your home directory to the spreadsheets directory you created.

[student@COS-047 ~]$ cat > datainfo
144
288
[student@COS-047 ~]$ cat datainfo > spreadsheets

EXERCISE 13. Determine the default permissions on the datainfo file you created. Next, set the permissions on the datainfo file so that the owner, group, and others can read and execute the file. (Otherwise, leave the default settings as is.)

[student@COS-047 ~]$ ls -l datainfo
-rw-rw-r--. 1 student student 8 Feb 24 21:15 datainfo
[student@COS-047 ~]$ chmod ugo+rx ~/datainfo
[student@COS-047 ~]$ ls -l datainfo
-rwxrwxr-x. 1 student student 8 Feb 24 21:15 datainfo
[student@COS-047 ~]$ chmod ugo-w ~/datainfo
[student@COS-047 ~]$ ls -l datainfo
-r-xr-xr-x. 1 student student 8 Feb 24 21:15 datainfo

EXERCISE 14. Append the current month's calendar to the datainfo file that is in your home directory. Next, copy your changed datainfo file over the older datainfo file in the spreadsheets directory, but use the copy option that prompts you before you over-write the file in the spreadsheets directory. Check the contents of the datainfo file in the spreadsheets directory to make certain your copy was successful.

[student@COS-047 ~]$ cd
[student@COS-047 ~]$ chmod u+w ~/datainfo
[student@COS-047 ~]$ cat cal >> datainfo
[student@COS-047 ~]$ cp -i datainfo spreadsheets
cp: overwrite 'spreadsheets'?
[student@COS-047 ~]$ cat datainfo
144
288
 February 2018
Su Mo Tu We Th Fr Sa
            1 2 3

 4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28

EXERCISE 15. Make the spreadsheets directory your working directory. Make copies of the datainfo file in the spreadsheets directory, so that one copy is named myinfo and one is named datadata. Next, use a wildcard character to list all files that start with "data." Use a wildcard character to list all files that end with "info." Use a wildcard character combination to list all files that have "ata" as the second, third, and fourth characters.

```
[student@COS-047 ~]$ cd spreadsheets
[student@COS-047 spreadsheets]$ cat datainfo > myinfo; cat datainfo > datadata;
[student@COS-047 spreadsheets]$   ls data*
datadata  datainfo
[student@COS-047 spreadsheets]$ ls *info
datainfo  myinfo
[student@COS-047 spreadsheets]$ ls *ata
datadata
```

EXERCISE 16. Make certain you are in your home directory. Change your command prompt so that it shows your current working directory with an exclamation point, such as mydirectory! Change to the spreadsheets and then to the documents directory and notice how the prompt changes. (**NOTE:** Could not find the correct command for this function.)

```
[student@COS-047 ~]$ PS1 = [\u@\h \W!]\$
bash: !]\$: event not found
[student@COS-047 ~]$ PS1 = [\u@\h! \W]\$
bash: PS1: command not found...
[student@COS-047 ~]$ PS1 = [\u!\h]\$
bash: !\h]\$: event not found
[student@COS-047 ~]$  PS1 = [\u@\h \W]\!
bash: PS1: command not found...
```

EXERCISE 17. Change to your home directory. Use the rmdir command to delete the spreadsheets directory. What happens?

```
[student@COS-047 ~]$ rmdir  spreadsheets
rmdir: failed to remove 'spreadsheets': Directory not empty
```

EXERCISE 18. Delete the datainfo files in both your home directory and in the spreadsheets directory. Also, delete the myinfo and datadata files in the spreadsheets directory.

```
[student@COS-047 ~]$ rm datainfo
[student@COS-047 ~]$ cd spreadsheets
[student@COS-047 spreadsheets]$ rm datainfo
[student@COS-047 spreadsheets]$ rm myinfo
[student@COS-047 spreadsheets]$ rm datadata
```

EXERCISE 19. Change to your home directory. Delete the spreadsheets directory and then delete the documents directory.

```
[student@COS-047 spreadsheets]$ cd ..
[student@COS-047 ~]$ rmdir  spreadsheets
```

[student@COS-047 ~]$ rmdir documents

EXERCISE 20 Create a directory called secure under your home directory. Next, using the octal permission format, set security on the secure directory so that you have all permissions and no one else has any permissions.

[student@COS-047 ~]$ mkdir secure
[student@COS-047 ~]$ chmod 700 secure
