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# Linux Tutorial

# prepared for BIFX-550 --Dr. S. Ravichandran, 09/06/2018
# comments lines are shown in green font and start with # (pound) sign

# let us find out where are we in the system?

# Make sure you are in the tcsh by typing

tcsh

# Let us check where we are now (what directory?)

pwd

# What is my username?

whoami

# find out who else have logged in at the moment

who

# let us find out what shell our administrator has assigned us

echo $SHELL

# let us go into tcsh (C-SHELL) using tcsh

tcsh

# Let us find out what shells are available for the users

cat /etc/shells

# What is today's date/time?

date

# calendar

cal 10 1775

# What processes are running?

ps

# Help on one of the command we learned, ls
# Let us also learn how to read man pages. Type "q" (without quotes)
# to quit man pages

man ls

man pwd

# clear the screen

clear
```

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# based on the help pages, let us add some flags to ls command. Let us
# start with a ls command

ls /usr/local

# use "man ls" (type this without quotes) to identify what flags we
# can use with ls

ls -fla /usr/local

ls -fl

cd /tmp
# find out where you are

pwd
# Let us go home; We can also do this with
# the following alternative, cd ~ or cd $HOME or just cd

cd ~

cd $HOME

# let us create a directory called foo

mkdir foo

# Let us check the permission of the directory using "ls -l" command
ls -l

# let us change the permission of the directory using chmod command
chmod 777 foo

# let us check again to see that the permission of the directory
#has changed

ls -ltr

# And let us go back to our newly created directory, foo

cd foo

# let us check where we are now
pwd

# we can echo a string
echo hello!

# we can save this message in a file called bar
echo hello! > bar
```

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# check with pwd and ls
pwd

ls -l

# Make sure you are in the foo directory
# let us create a subdirectory called foo2

mkdir foo2

#to go into the foo2, use cd
cd foo2

# check where you are using pwd

pwd

# to go one level up use

cd ../

# make sure you are in foo directory
pwd

# to see the contents of a file, use cat
cat bar

# man is the command for manual pages
# Check to see what the command less does?

#####

# we can remove directories (folders) and files ;
# I am not going to teach you that
# there is no way to get the removed file back.
# let us again make sure you are in foo directory

wget http://files.rcsb.org/download/4hhb.pdb
# let us view the file using nano file editor
nano 4hhb.pdb

cat 4hhb.pdb

# type "q" (without quotes) to quit; press spacebar to move forward
more 4hhb.pdb

head 4hhb.pdb
```

```

# let us copy the file into 4hhbcopy.pdb
cp 4hhb.pdb 4hhbcopy.pdb

# use ls to see that you have two files
ls

# let us remove the file, 4hhbcopy.pdb.
rm -i 4hhbcopy.pdb

# let us clear the screen with "clear"
clear

# let us get one more pdb file
wget http://files.rcsb.org/download/1omp.pdb

# cat command
cat 1omp.pdb

# let us count the lines/words in the 4hhb.pdb
wc -l 4hhb.pdb
wc -w 4hhb.pdb

# let us explore the pipe command
cat 1omp.pdb | grep -i seqres

# let us merge two files
cat 4hhb.pdb 1omp.pdb > 4hhb-1omp.pdb

grep -i Fe 4hhb.pdb

# what commands we have typed so far
history

# which program; finding an executable file with which
# has to be in your path
which ls

# Find out the difference between which and whereis
whereis pwd

# Go the following link,
# https://www.ncbi.nlm.nih.gov/protein/NP\_000509.1?report=fasta, and
# cut-and-paste the following sequence into a file called
# np_000509.fasta. For this step you can use the nano editor.

```

- a) first open a nano editor with the following command
- b) nano np_000509.fasta
- c) paste the sequence file
- d) Use control-x to save and quit

```
>NP_000509.1
MVHLTPEEKSAVTALWGKVNDEVGGEALGRLLVVYPWTQRFFESFGDLSTPDVAVMGNPKVKAHGKKVLG
AFSDGLAHLNLDNLKGTATLSELHCDKLHVDPENFRLLGNVLCVLAHHFGKEFTPPVQAAYQKVVAGVAN
ALAHKYH
```

Let us explore the sequence file using Linux commands

```
od -b np_000509.fasta # first col is the byte offset
```

```
od -c np_000509.fasta
```

let us create a file

```
nano list.txt
```

and type the following each in one line

```
rat chicken monkey chimp cow ecoli human dog
```

save the file and exit

when you come out of nano editor.

Let us check whether the file, list.txt exists

Your TURN

let us view the file,

Your TURN

let us sort the file and save it in sortedlist.txt

```
sort < list.txt > sortedlist.txt
```

```
ls *list
```

#Explore the following commands on your own

```
chmod
```

```
ps
```

```
sleep
```

```
df
```

```
du
```

```
quota
```

```
gzip
```

```
zcat
```

```
zcat
```

file

diff

find

logging into other computers

ssh username@pronto.abc.com

creating links

ln -s perl5.005_03 perl

#filename conventions fortran: f90, C: c; C++: cc

test.f90

test.c

test.cc

test.CC

SHELL Tutorial

In this tutorial, I am going to explain some basic TCSH commands.

What is a SHELL?

How it can be useful?

Why I should learn at least one SHELL ?

#In the following tutorial, we are going to download 4 PDB structure
#files from www.rcsb.org . This process can be done for any number of
#files, for now, we are going to explain this using just 4 files.

make sure we are in tcsh by typing before this exercise

tcsh

foreach f (1stp 7lyz 2src 3v3k 4IGK 4JLU)

wget [http://files.rcsb.org/download/\\$f.pdb](http://files.rcsb.org/download/$f.pdb)

echo \$f

end

```
#Can we use shell programming to count the number of lines of the  
# files (Think if you can do this for millions of files?!)
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```
foreach f (*.pdb)  
    sed -e 's/REMARK/Remark/g' < $f > M$f  
    echo "Done"
```