



Universidad de los Andes
BCOM4102-Ecología Microbiana
Programa de Maestría en Biología Computacional
Taller 1: Introducción a Unix
Enero 28 de 2021

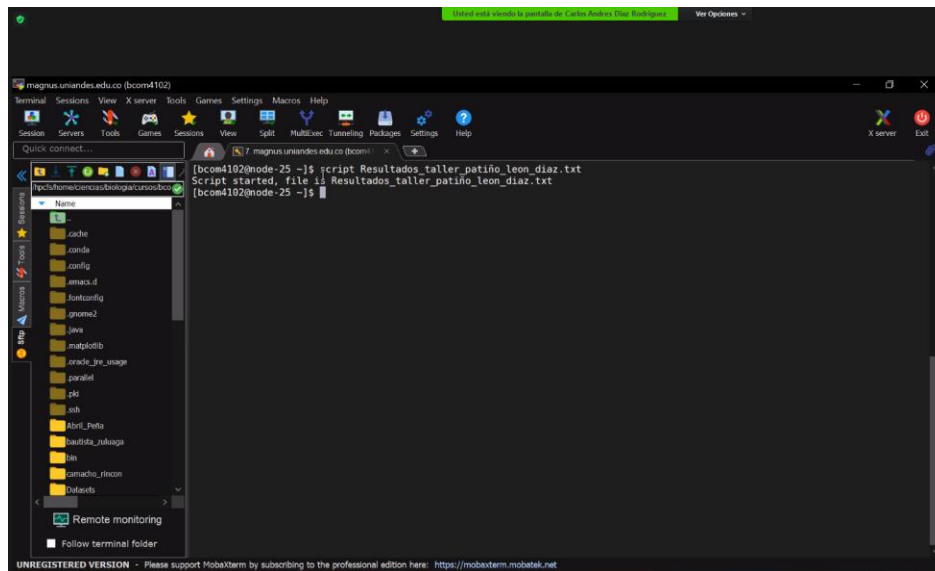
Taller 1_Entrega_equipo

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David León – 201615216
César Patiño 201924259

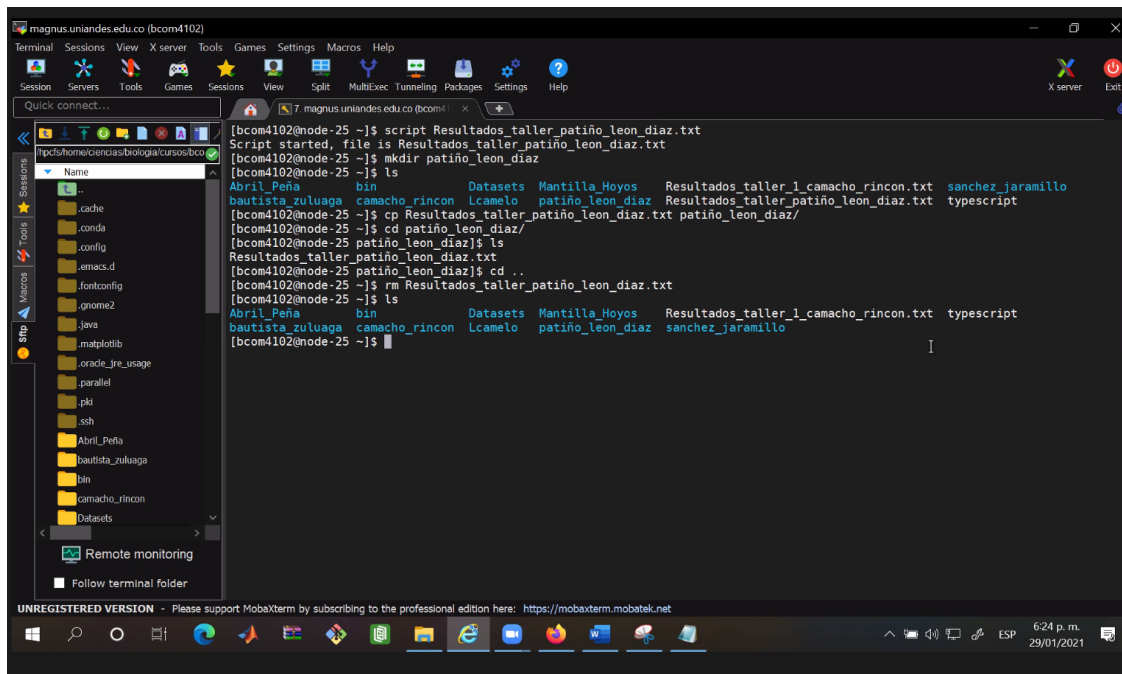
Inicie una sesión en el cluster (magnus.uniandes.edu.co), recuerde hacerlo vía ssh (desde Terminal o MobaXterm), su login es bcom4102 y el password es 202110bcom4102.

A lo largo de la guía los comandos específicos se mostrarán en *itálicas*.

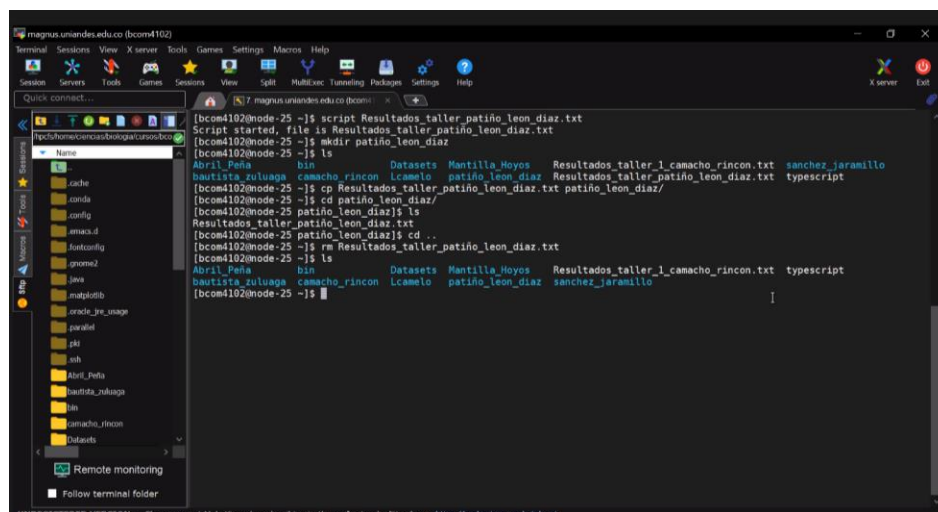
1. Para guardar tanto los comandos que ejecuta como los resultados use el comando *script* (e.j. *script Resultados_taller_nombre.txt*).



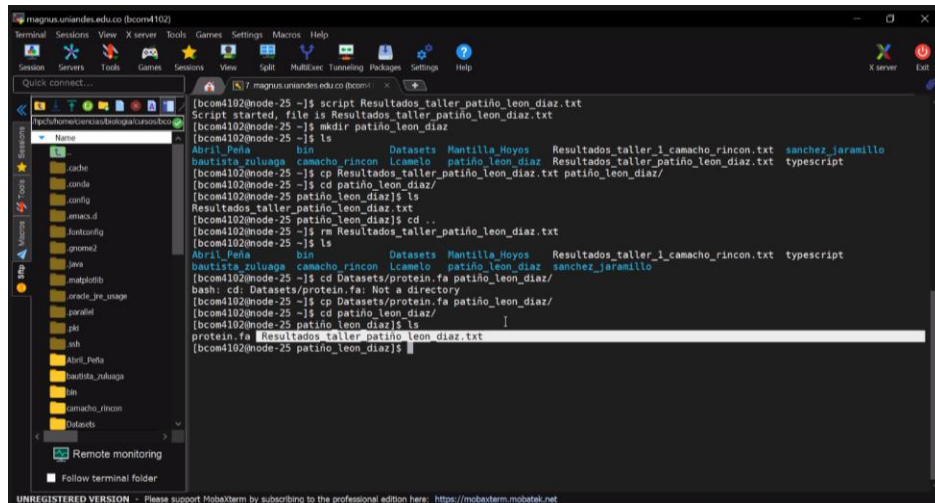
2. Cree un folder con la primera inicial de su nombre seguido por su apellido, en el caso del monitor del curso sería **Lchica**.



3. De la carpeta Datasets copie el archivo protein.fa a la nueva carpeta que creó.

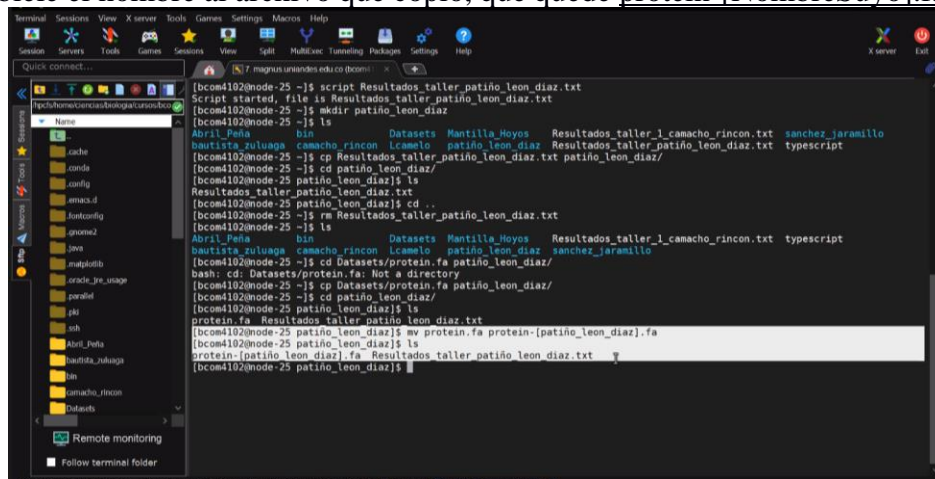


4. Díjase a su carpeta.



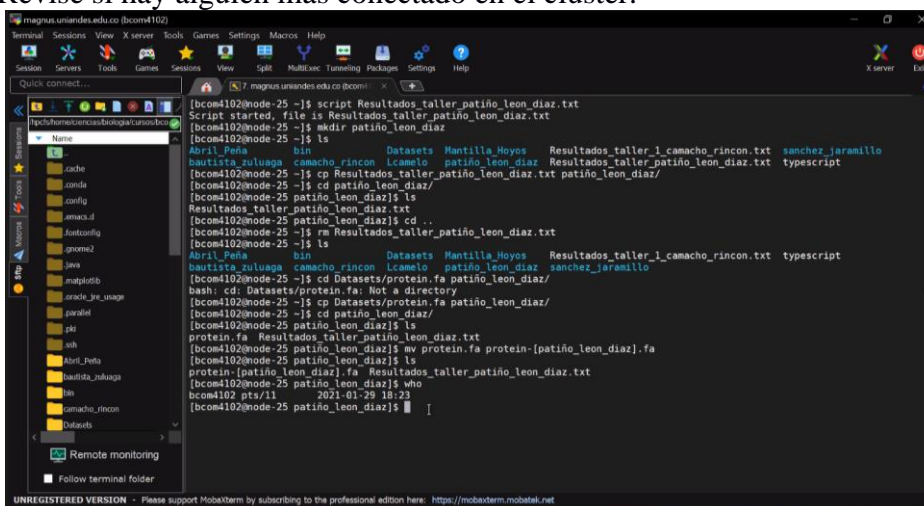
```
[bcom4102@node-25 ~]$ script Resultados_taller_patiño_leon_diaz.txt
Script started, file is Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ mkdir patiño_leon_diaz
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  sanchez_jaramillo
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cp Resultados_taller_patiño_leon_diaz.txt patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ cd ..
[bcom4102@node-25 ~]$ rm Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  typescript
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cd Datasets/protein.fa patiño_leon_diaz/
bash: cd: Datasets/protein.fa: Not a directory
[bcom4102@node-25 ~]$ cp Datasets/protein.fa patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
protein.fa  Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$
```

5. Cambie el nombre al archivo que copió, que quede protein-[NombreSuyo].fa



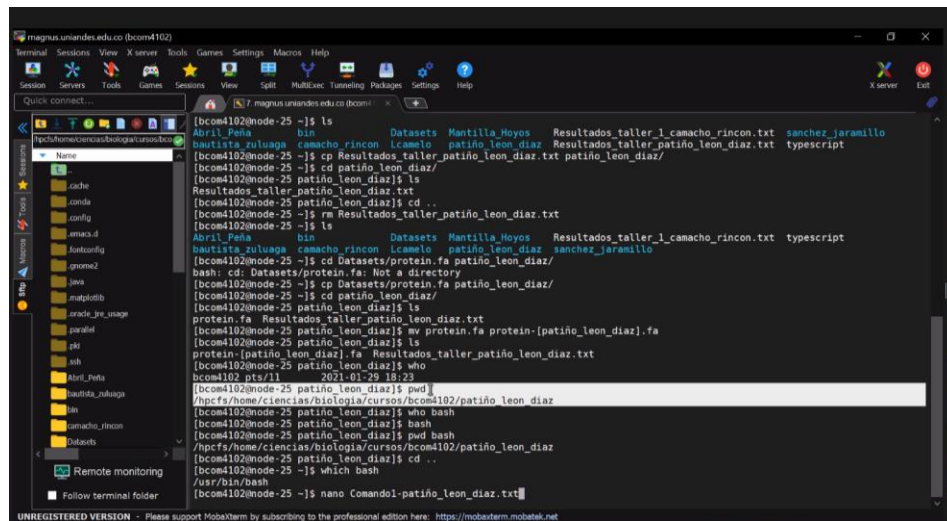
```
[bcom4102@node-25 ~]$ script Resultados_taller_patiño_leon_diaz.txt
Script started, file is Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ mkdir patiño_leon_diaz
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  sanchez_jaramillo
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cp Resultados_taller_patiño_leon_diaz.txt patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ cd ..
[bcom4102@node-25 ~]$ rm Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  typescript
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cd Datasets/protein.fa patiño_leon_diaz/
bash: cd: Datasets/protein.fa: Not a directory
[bcom4102@node-25 ~]$ cp Datasets/protein.fa patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
protein.fa  Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ mv protein.fa protein-patiño_leon_diaz.fa
[bcom4102@node-25 patiño_leon_diaz]$ ls
protein-patiño_leon_diaz.fa  Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$
```

6. Revise si hay alguien más conectado en el cluster.



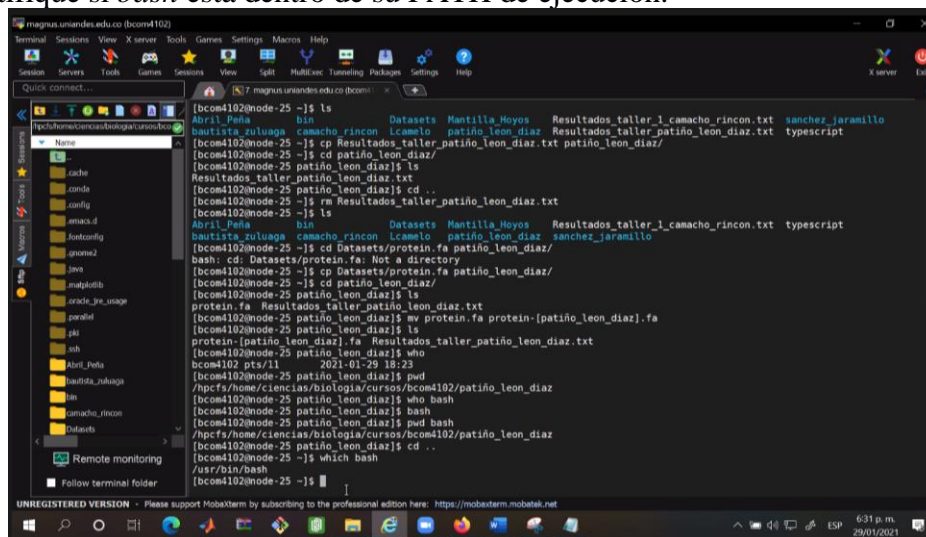
```
[bcom4102@node-25 ~]$ script Resultados_taller_patiño_leon_diaz.txt
Script started, file is Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ mkdir patiño_leon_diaz
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  sanchez_jaramillo
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cp Resultados_taller_patiño_leon_diaz.txt patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ cd ..
[bcom4102@node-25 ~]$ rm Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 ~]$ ls
Abril_Paño  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  typescript
bautista_zuluaga  camacho_rincon  lcamelo  patiño_leon_diaz  Resultados_taller_patiño_leon_diaz.txt  typescript
[bcom4102@node-25 ~]$ cd Datasets/protein.fa patiño_leon_diaz/
bash: cd: Datasets/protein.fa: Not a directory
[bcom4102@node-25 ~]$ cp Datasets/protein.fa patiño_leon_diaz/
[bcom4102@node-25 ~]$ cd patiño_leon_diaz/
[bcom4102@node-25 patiño_leon_diaz]$ ls
protein.fa  Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ mv protein.fa protein-patiño_leon_diaz.fa
[bcom4102@node-25 patiño_leon_diaz]$ ls
protein-patiño_leon_diaz.fa  Resultados_taller_patiño_leon_diaz.txt
[bcom4102@node-25 patiño_leon_diaz]$ who
bcom4102 pts/11 2021-01-29 18:23
[bcom4102@node-25 patiño_leon_diaz]$
```

7. Pida al sistema que le indique en que carpeta y cuál es el path completo de donde se encuentra en este momento.



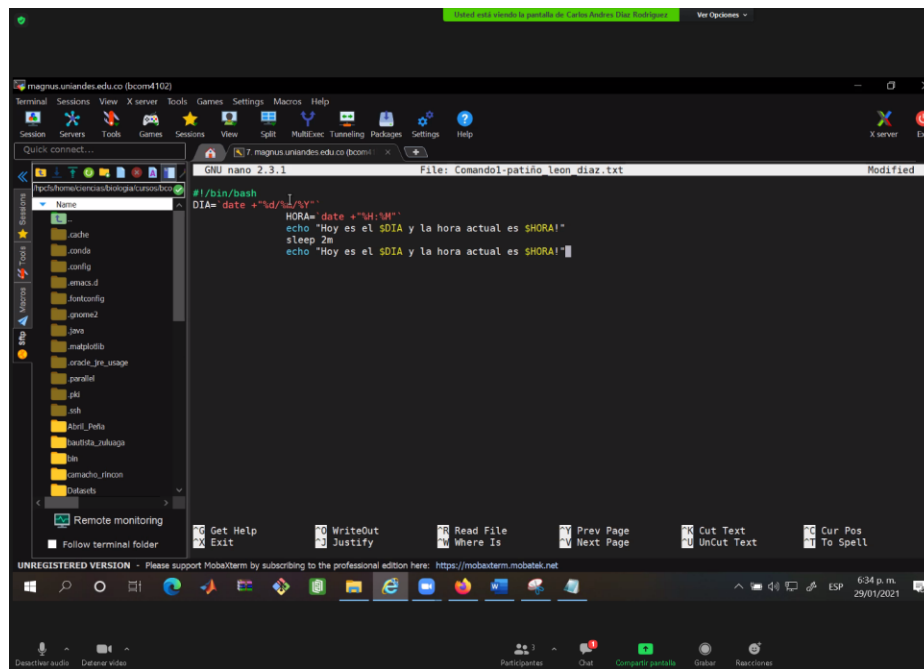
```
[bcm4102@node-25 ~]$ ls
Abril_Peña  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  sanchez_jaramillo
Bautista_zuluaga  camacho_rincon  Lcammel  patino_leon_diaz  Resultados_taller_patino_leon_diaz.txt  typescript
[bcm4102@node-25 ~]$ cd patino_leon_diaz/
[bcm4102@node-25 patino_leon_diaz]$ ls
Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ cd ..
[bcm4102@node-25 ~]$ rm Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 ~]$ ls
Abril_Peña  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  typescript
Bautista_zuluaga  camacho_rincon  Lcammel  patino_leon_diaz  sanchez_jaramillo
[bcm4102@node-25 ~]$ cd Datasets/protein.fa patino_leon_diaz/
bash: cd: Datasets/protein.fa: Not a directory
[bcm4102@node-25 ~]$ cd Datasets/protein.fa patino_leon_diaz/
[bcm4102@node-25 ~]$ cd patino_leon_diaz/
[bcm4102@node-25 patino_leon_diaz]$ ls
protein.fa  Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ mv protein.fa protein-[patino_leon_diaz].fa
[bcm4102@node-25 patino_leon_diaz]$ ls
protein-[patino_leon_diaz].fa  Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ who
bcm4102 pts/11  2021-01-29 18:23
[bcm4102@node-25 patino_leon_diaz]$ pwd
/hpcfs/home/ciencias/biologia/cursos/bcm4102/patino_leon_diaz
[bcm4102@node-25 patino_leon_diaz]$ who bash
[bcm4102@node-25 patino_leon_diaz]$ bash
[bcm4102@node-25 patino_leon_diaz]$ pwd bash
/hpcfs/home/ciencias/biologia/cursos/bcm4102/patino_leon_diaz
[bcm4102@node-25 patino_leon_diaz]$ cd ..
[bcm4102@node-25 ~]$ which bash
/usr/bin/bash
[bcm4102@node-25 ~]$ nano Comandol-patino_leon_diaz.txt
```

8. Vamos ahora a crear un pequeño script para correrlo, este se ejecutará con *bash*, primero identifique si *bash* está dentro de su PATH de ejecución.



```
[bcm4102@node-25 ~]$ ls
Abril_Peña  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  sanchez_jaramillo
Bautista_zuluaga  camacho_rincon  Lcammel  patino_leon_diaz  Resultados_taller_patino_leon_diaz.txt  typescript
[bcm4102@node-25 ~]$ cd patino_leon_diaz/
[bcm4102@node-25 patino_leon_diaz]$ ls
Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ cd ..
[bcm4102@node-25 ~]$ rm Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 ~]$ ls
Abril_Peña  bin  Datasets  Mantilla_Hoyos  Resultados_taller_1_camacho_rincon.txt  typescript
Bautista_zuluaga  camacho_rincon  Lcammel  patino_leon_diaz  sanchez_jaramillo
[bcm4102@node-25 ~]$ cd Datasets/protein.fa patino_leon_diaz/
bash: cd: Datasets/protein.fa: Not a directory
[bcm4102@node-25 ~]$ cd Datasets/protein.fa patino_leon_diaz/
[bcm4102@node-25 ~]$ cd patino_leon_diaz/
[bcm4102@node-25 patino_leon_diaz]$ ls
protein.fa  Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ mv protein.fa protein-[patino_leon_diaz].fa
[bcm4102@node-25 patino_leon_diaz]$ ls
protein-[patino_leon_diaz].fa  Resultados_taller_patino_leon_diaz.txt
[bcm4102@node-25 patino_leon_diaz]$ who
bcm4102 pts/11  2021-01-29 18:23
[bcm4102@node-25 patino_leon_diaz]$ pwd
/hpcfs/home/ciencias/biologia/cursos/bcm4102/patino_leon_diaz
[bcm4102@node-25 patino_leon_diaz]$ who bash
[bcm4102@node-25 patino_leon_diaz]$ bash
[bcm4102@node-25 patino_leon_diaz]$ pwd bash
/hpcfs/home/ciencias/biologia/cursos/bcm4102/patino_leon_diaz
[bcm4102@node-25 patino_leon_diaz]$ cd ..
[bcm4102@node-25 ~]$ which bash
/usr/bin/bash
[bcm4102@node-25 ~]$
```

9. Verifique la dirección donde se encuentra *bash* con el comando *which*.

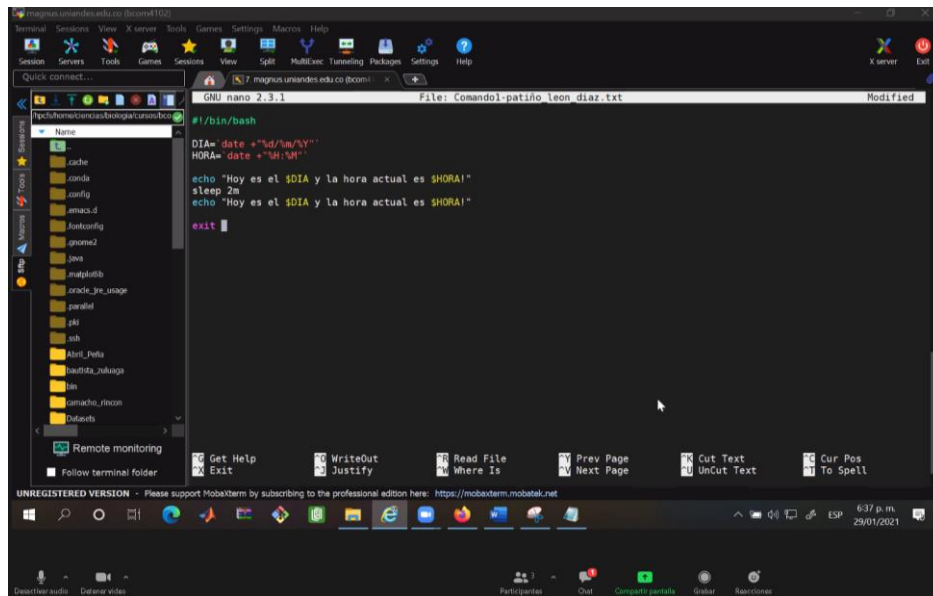


```
GNU nano 2.3.1 File: Comando1-patino leon diaz.txt Modified
#!/bin/bash
DIA=$(date +%d/%m/%Y)
HORA=$(date +%H:%M)
echo "Hoy es el $DIA y la hora actual es $HORA!"
sleep 2m
echo "Hoy es el $DIA y la hora actual es $HORA!"
```

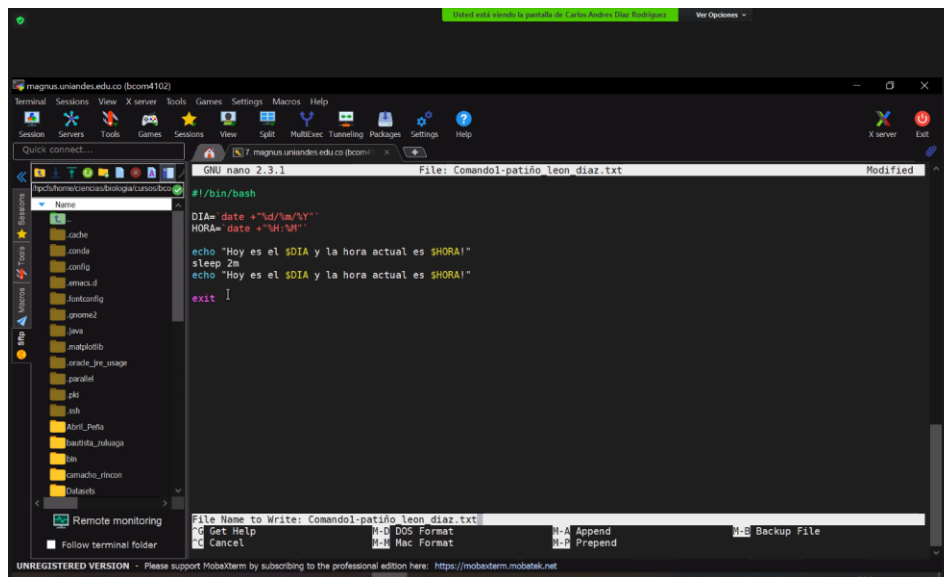
10. Ahora que ya sabe donde se encuentra *bash*, cree un archivo de texto usando su editor de texto favorito y guárdelo como Comando1-[NombreSuyo].txt

10.1. En la primera línea del archivo indique al sistema el interprete (*bash*) a usar del script.

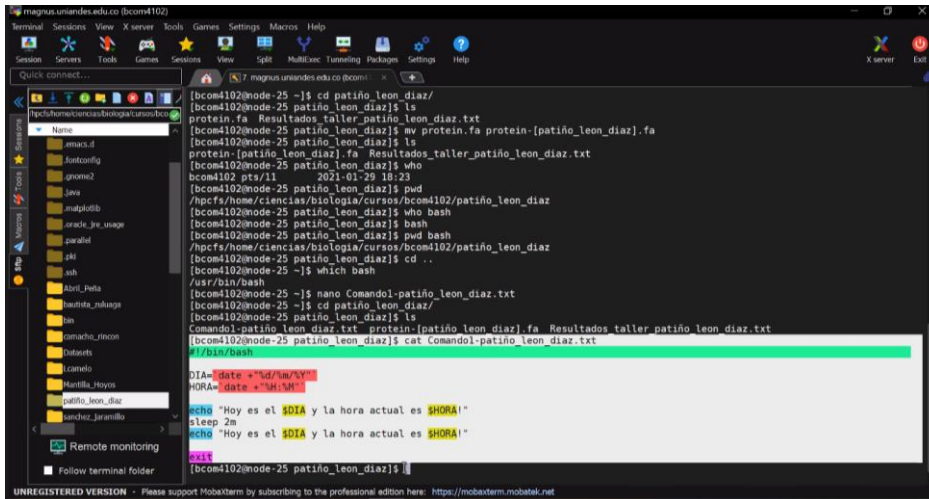
10.2. Ahora el contenido del archivo son 3 comandos en líneas separadas. El primero que imprima la fecha, el segundo que se duerma por 2 minutos, el tercero que imprima la fecha.



10.3. Sálvelo y salga.



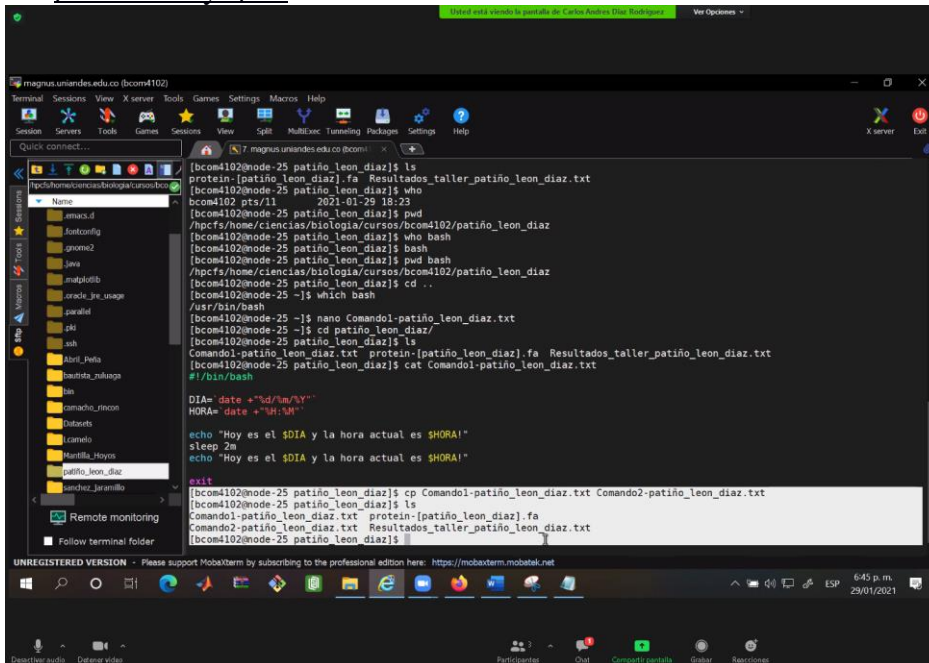
11. Usando su comando `cat` haga que el archivo nuevo aparezca en pantalla.



The screenshot shows a terminal window with a file explorer on the left. The terminal output includes the following commands and results:

```
[bcom4102@node-25 ~]$ cd patino_leon_diaz/
[bcom4102@node-25 patino_leon_diaz]$ ls
protein.fa  Resultados taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ mv protein.fa protein-[patino_leon_diaz].fa
[bcom4102@node-25 patino_leon_diaz]$ ls
protein-[patino_leon_diaz].fa  Resultados taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ who
bcom4102 pts/11      2021-01-29 18:23
[bcom4102@node-25 patino_leon_diaz]$ pwd
/hpccfs/home/ciencias/biologia/cursos/bcom4102/patino_leon_diaz
[bcom4102@node-25 patino_leon_diaz]$ who bash
[bcom4102@node-25 patino_leon_diaz]$ bash
[bcom4102@node-25 patino_leon_diaz]$ pwd bash
/hpccfs/home/ciencias/biologia/cursos/bcom4102/patino_leon_diaz
[bcom4102@node-25 patino_leon_diaz]$ cd ..
[bcom4102@node-25 ~]$ which bash
/usr/bin/bash
[bcom4102@node-25 ~]$ nano Comandol-patino_leon_diaz.txt
[bcom4102@node-25 ~]$ cd patino_leon_diaz/
[bcom4102@node-25 patino_leon_diaz]$ ls
Comandol-patino_leon_diaz.txt  protein-[patino_leon_diaz].fa  Resultados taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ cat Comandol-patino_leon_diaz.txt
#!/bin/bash
DIA=$(date +%d/%m/%Y)
HORA=$(date +%H:%M)
echo "Hoy es el $DIA y la hora actual es $HORA!"
sleep 2m
echo "Hoy es el $DIA y la hora actual es $HORA!"
exit
[bcom4102@node-25 patino_leon_diaz]$
```

12. Copie el archivo Commando1-[NombreSuyo].txt a uno nuevo de nombre Commando2-[NombreSuyo].txt

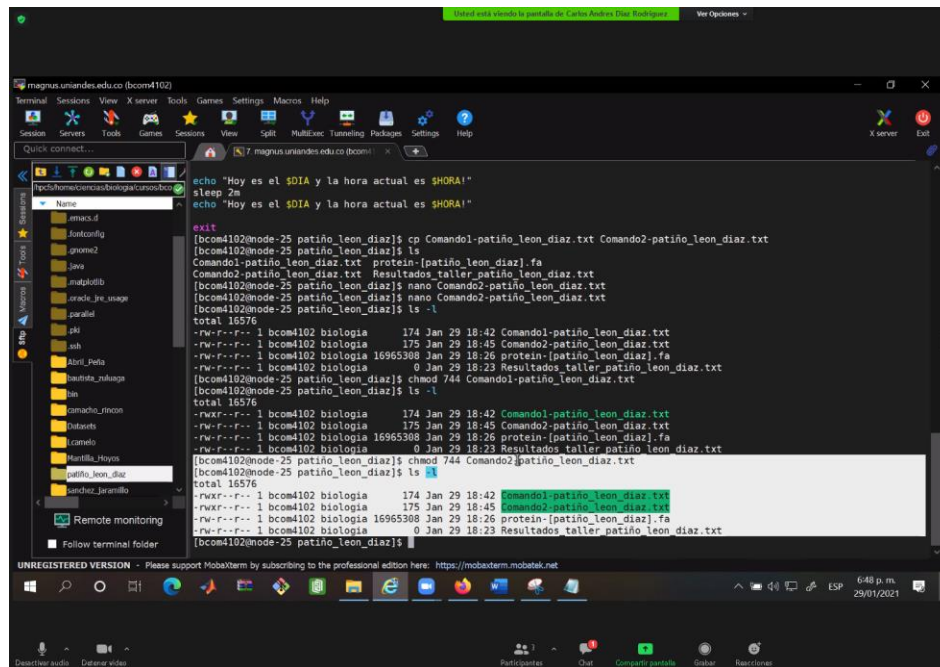


The screenshot shows a terminal window with a file explorer on the left. The terminal output includes the following commands and results:

```
[bcom4102@node-25 patino_leon_diaz]$ ls
protein-[patino_leon_diaz].fa  Resultados taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ who
bcom4102 pts/11      2021-01-29 18:23
[bcom4102@node-25 patino_leon_diaz]$ pwd
/hpccfs/home/ciencias/biologia/cursos/bcom4102/patino_leon_diaz
[bcom4102@node-25 patino_leon_diaz]$ who bash
[bcom4102@node-25 patino_leon_diaz]$ bash
[hpcfs/home/ciencias/biologia/cursos/bcom4102/patino_leon_diaz
[bcom4102@node-25 patino_leon_diaz]$ cd ..
[bcom4102@node-25 ~]$ which bash
/usr/bin/bash
[bcom4102@node-25 ~]$ nano Comandol-patino_leon_diaz.txt
[bcom4102@node-25 ~]$ cd patino_leon_diaz/
[bcom4102@node-25 patino_leon_diaz]$ ls
Comandol-patino_leon_diaz.txt  protein-[patino_leon_diaz].fa  Resultados taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ cat Comandol-patino_leon_diaz.txt
#!/bin/bash
DIA=$(date +%d/%m/%Y)
HORA=$(date +%H:%M)
echo "Hoy es el $DIA y la hora actual es $HORA!"
sleep 2m
echo "Hoy es el $DIA y la hora actual es $HORA!"
exit
[bcom4102@node-25 patino_leon_diaz]$ cp Comandol-patino_leon_diaz.txt Comand2-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ ls
Comandol-patino_leon_diaz.txt  protein-[patino_leon_diaz].fa  Resultados taller_patino_leon_diaz.txt
Comand2-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$
```

13. Modifique el nuevo archivo para que el comando de dormir sea por 15 min.

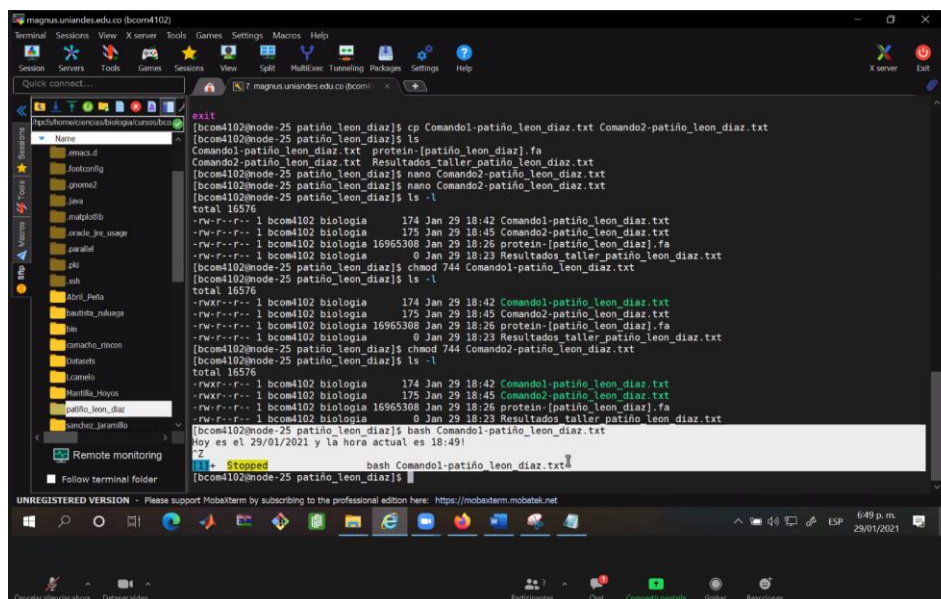
15. Cambie los permisos de ambos archivos para que sean ejecutables por el dueño del archivo pero no por el grupo.



```
magnus.uniaendes.edu.co (bcom4102)
Terminal Sessions View X server Tools Games Settings Macros Help
Quick connect...
Name
amass.d
fontconfig
gnome2
java
maildir
oracle_jre_usage
parallel
pki
ssh
Abstr_Patio
baudista_zuhaga
bin
camacho_rincon
datsets
camelo
Marilla_Hoyos
patino_leon_diaz
sanchez_jaramillo
Remote monitoring
Follow terminal folder

[bc4102@node-25 patino_leon_diaz]$ echo "Hoy es el $DIA y la hora actual es $HORA!"
Hoy es el 29/01/2021 y la hora actual es 18:49:12
[bc4102@node-25 patino_leon_diaz]$ sleep 2m
[bc4102@node-25 patino_leon_diaz]$ echo "Hoy es el $DIA y la hora actual es $HORA!"
Hoy es el 29/01/2021 y la hora actual es 19:01:12
[bc4102@node-25 patino_leon_diaz]$ exit
[bc4102@node-25 patino_leon_diaz]$ cp Comandol-patino_leon_diaz.txt Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls
Comandol-patino_leon_diaz.txt  protein-[patino_leon_diaz].fa
Comand2-patino_leon_diaz.txt  Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ nano Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ chmod 744 Comandol-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls -l
total 16576
-rwxr-xr-x 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comand2-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rw-r--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls -l
total 16576
-rwxr-xr-x 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comand2-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rw-r--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ chmod 744 Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls -l
total 16576
-rwxr-xr-x 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comand2-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rw-r--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$
```

16. Comience a ejecutar el comando 1. Una vez le imprima la fecha suspenda el trabajo.



```
magnus.uniaendes.edu.co (bcom4102)
Terminal Sessions View X server Tools Games Settings Macros Help
Quick connect...
Name
amass.d
fontconfig
gnome2
java
maildir
oracle_jre_usage
parallel
pki
ssh
Abstr_Patio
baudista_zuhaga
bin
camacho_rincon
datsets
camelo
Marilla_Hoyos
patino_leon_diaz
sanchez_jaramillo
Remote monitoring
Follow terminal folder

[bc4102@node-25 patino_leon_diaz]$ cp Comandol-patino_leon_diaz.txt Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls
Comandol-patino_leon_diaz.txt  protein-[patino_leon_diaz].fa
Comand2-patino_leon_diaz.txt  Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ nano Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ chmod 744 Comandol-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls -l
total 16576
-rwxr-xr-x 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comand2-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rw-r--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ chmod 744 Comand2-patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ ls -l
total 16576
-rwxr-xr-x 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comand2-patino_leon_diaz.txt
-rw-r--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rw-r--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ bash Comandol-patino_leon_diaz.txt
Hoy es el 29/01/2021 y la hora actual es 18:49:12
[bc4102@node-25 patino_leon_diaz]$
```

17. Revise la lista de procesos en ejecución.

The terminal window shows a series of commands and their outputs. The user is in a directory named 'patino_leon_diaz'. They copy a file 'Comando1-patino_leon_diaz.txt' to 'Comando2-patino_leon_diaz.txt'. Then they list the contents of the directory, showing files like 'Comando1-patino_leon_diaz.txt', 'Comando2-patino_leon_diaz.txt', 'Results_taller_patino_leon_diaz.txt', and 'Results_taller_patino_leon_diaz.txt'. They then run 'ls -l' and get a long listing of files with permissions, owners, sizes, and dates. The output shows files like 'biologia', 'protein', 'Results_taller_patino_leon_diaz.txt', and 'Results_taller_patino_leon_diaz.txt'.

18. Resuma el trabajo en suspensión y espere a que este termine.

The terminal window shows a series of commands and their outputs. The user is in a directory named 'patino_leon_diaz'. They copy a file 'Comando1-patino_leon_diaz.txt' to 'Comando2-patino_leon_diaz.txt'. Then they list the contents of the directory, showing files like 'Comando1-patino_leon_diaz.txt', 'Comando2-patino_leon_diaz.txt', 'Results_taller_patino_leon_diaz.txt', and 'Results_taller_patino_leon_diaz.txt'. They then run 'ls -l' and get a long listing of files with permissions, owners, sizes, and dates. The output shows files like 'biologia', 'protein', 'Results_taller_patino_leon_diaz.txt', and 'Results_taller_patino_leon_diaz.txt'.

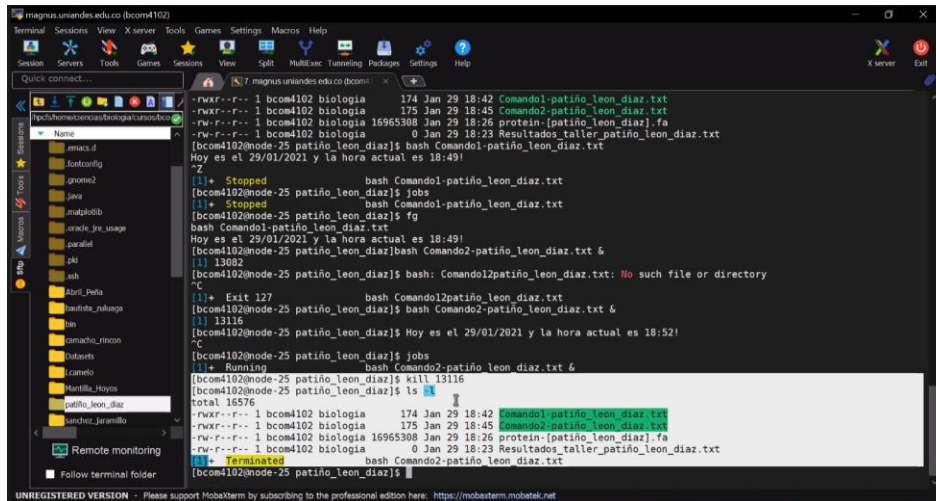
19. Ahora inicie la ejecución del comando 2 pero antes de ejecutarlo envíelo al background.

The screenshot shows a MobaXterm terminal window with a file explorer on the left. The terminal output includes a file listing for 'total 16576' and several commands being executed, such as 'ls -l', 'chmod 744 Comando2-patino_leon_diaz.txt', and 'ls -l'. The terminal also shows the current date and time as 'Hoy es el 29/01/2021 y la hora actual es 18:49!'.

20. Revise la lista de procesos en ejecución.

The screenshot shows a MobaXterm terminal window with a file explorer on the left. The terminal output includes a file listing for 'total 16576' and several commands being executed, such as 'ls -l', 'chmod 744 Comando2-patino_leon_diaz.txt', and 'ls -l'. The terminal also shows the current date and time as 'Hoy es el 29/01/2021 y la hora actual es 18:49!'.

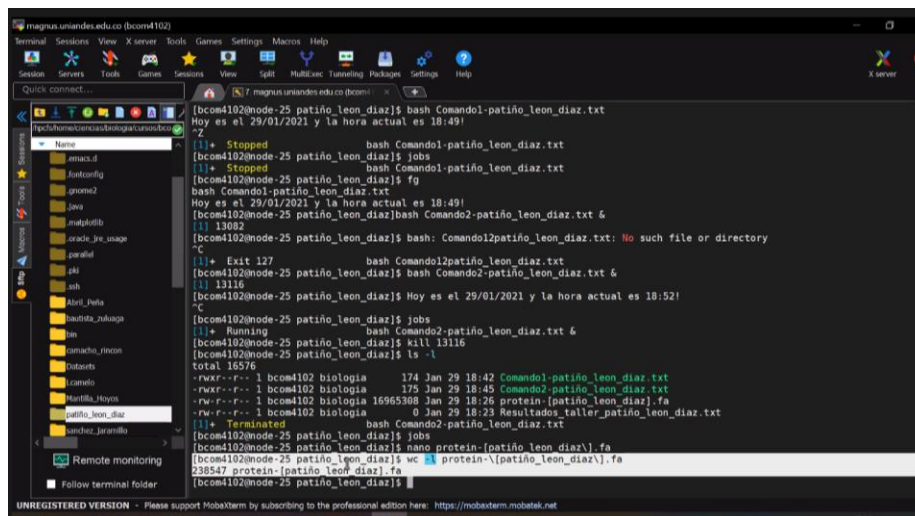
21. Mate (*kill*) el comando que mandó y si aún queda el proceso de *sleep*, mátelo también.



```
magnus.uniandes.edu.co (bcom4102)
Terminal Sessions View X server Tools Games Settings Macros Help
Quick connect...
Name
amacs.d
fontconfig
gnome2
java
matplotlib
oracle_jre_usage
parallel
pki
ssh
Abri_Pelia
bautista_zuluaga
bin
comacho_rmon
Outserts
Camelo
Martilla_Hoyas
patino_leon_diaz
sanchez_jaramilla
Remote monitoring
Follow terminal folder
UNREGISTERED VERSION - Please support Mobaxterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net

[bc4102@node-25 patino_leon_diaz]$ pwd
174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
175 Jan 29 18:45 Comandol-patino_leon_diaz.txt
176 Jan 29 18:46 protein-[patino_leon_diaz].fa
177 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ cat Comandol-patino_leon_diaz.txt
Hoy es el 29/01/2021 y la hora actual es 18:49!
[bc4102@node-25 patino_leon_diaz]$ jobs
[bc4102@node-25 patino_leon_diaz]$ fg
bash Comandol-patino_leon_diaz.txt
Hoy es el 29/01/2021 y la hora actual es 18:49!
[bc4102@node-25 patino_leon_diaz]$ cat Comandol-patino_leon_diaz.txt &
[bc4102@node-25 patino_leon_diaz]$ kill 13116
[bc4102@node-25 patino_leon_diaz]$ ls
total 16576
-rwxr--r-- 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rwxr--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comandol-patino_leon_diaz.txt
-rwxr--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rwxr--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ nano protein-[patino_leon_diaz].fa
[bc4102@node-25 patino_leon_diaz]$ wc protein-[patino_leon_diaz].fa
238547 protein-[patino_leon_diaz].fa
[bc4102@node-25 patino_leon_diaz]$
```

22. Identifique el número de líneas en el archivo inicial que copió.



```
magnus.uniandes.edu.co (bcom4102)
Terminal Sessions View X server Tools Games Settings Macros Help
Quick connect...
Name
amacs.d
fontconfig
gnome2
java
matplotlib
oracle_jre_usage
parallel
pki
ssh
Abri_Pelia
bautista_zuluaga
bin
comacho_rmon
Outserts
Camelo
Martilla_Hoyas
patino_leon_diaz
sanchez_jaramilla
Remote monitoring
Follow terminal folder
UNREGISTERED VERSION - Please support Mobaxterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net

[bc4102@node-25 patino_leon_diaz]$ bash Comandol-patino_leon_diaz.txt
Hoy es el 29/01/2021 y la hora actual es 18:49!
[bc4102@node-25 patino_leon_diaz]$ jobs
[bc4102@node-25 patino_leon_diaz]$ fg
bash Comandol-patino_leon_diaz.txt
Hoy es el 29/01/2021 y la hora actual es 18:49!
[bc4102@node-25 patino_leon_diaz]$ cat Comandol-patino_leon_diaz.txt &
[bc4102@node-25 patino_leon_diaz]$ kill 13116
[bc4102@node-25 patino_leon_diaz]$ ls
total 16576
-rwxr--r-- 1 bcom4102 biologia 174 Jan 29 18:42 Comandol-patino_leon_diaz.txt
-rwxr--r-- 1 bcom4102 biologia 175 Jan 29 18:45 Comandol-patino_leon_diaz.txt
-rwxr--r-- 1 bcom4102 biologia 16965308 Jan 29 18:26 protein-[patino_leon_diaz].fa
-rwxr--r-- 1 bcom4102 biologia 0 Jan 29 18:23 Resultados_taller_patino_leon_diaz.txt
[bc4102@node-25 patino_leon_diaz]$ nano protein-[patino_leon_diaz].fa
[bc4102@node-25 patino_leon_diaz]$ wc protein-[patino_leon_diaz].fa
238547 protein-[patino_leon_diaz].fa
[bc4102@node-25 patino_leon_diaz]$
```

23. Entre al archivo y revise el formato.

24. Cuente cuantas secuencias tiene. 21772 secuencias que codifican para proteínas

25. Entre las secuencias hay varias de nombre “BECN1-regulated autophagy”, Revise cuantas son y que diferencias hay en los nombres.

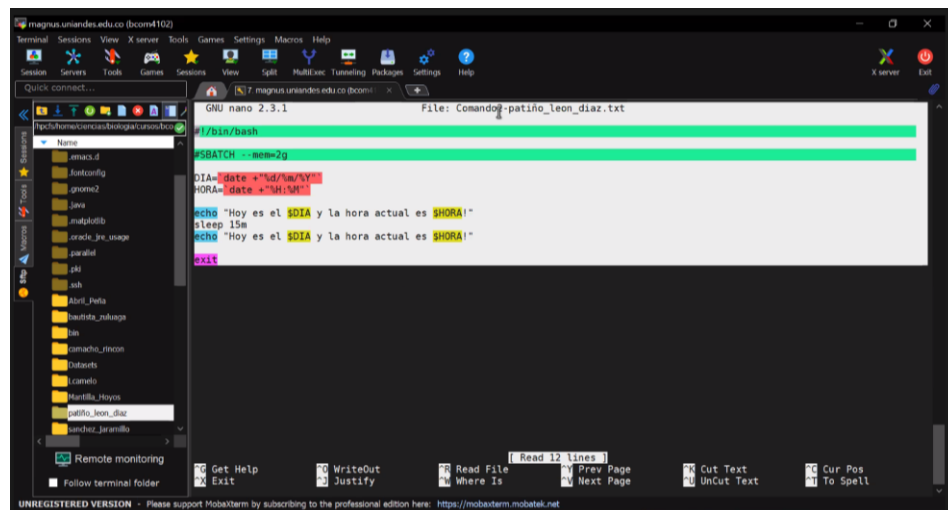
La secuencia que codifica para a la proteína **..BECN1-regulated autophagy**. Tiene 5 isoformas que tienes los codigos de acceso en la línea de comando y con color verde.

Ademas las isoforma numero 1, tiene dos versiones , dado la terminacion 0,2 del juego referencia .

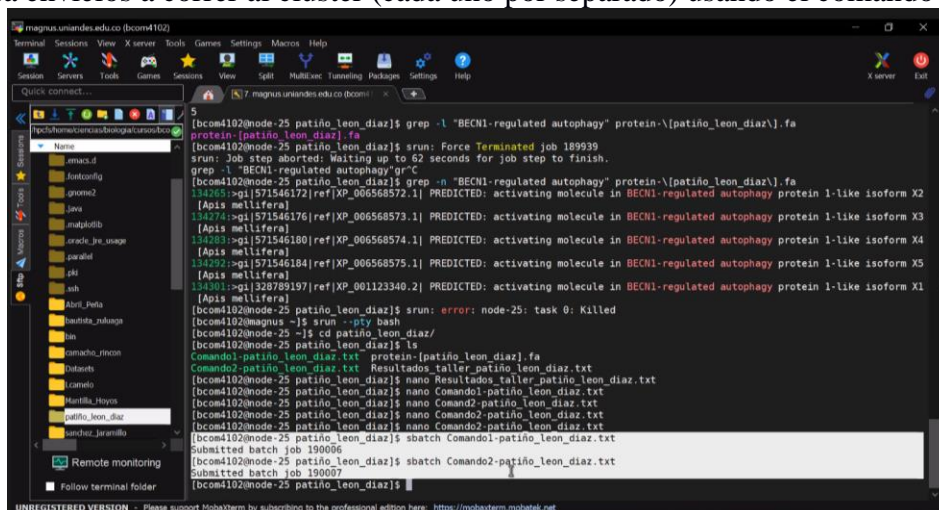
Ahora vamos a hacer uso del poder de cómputo del Cluster.

26. Modifique los archivos de comando para que tengan después de la primera línea el siguiente cabezote:

```
#SBATCH --mem=2g
```



27. Ahora envíelos a correr al cluster (cada uno por separado) usando el comando *sbatch*.



28. Revise el estado de los trabajos con *squeue*.


```
[bcom4102@node-25 patino_leon_diaz]$ srun: error: node-25: task 0: Killed
[bcom4102@magnus -]$ srun -pty bash
[bcom4102@node-25 -]$ cd patino_leon_diaz/
[bcom4102@node-25 patino_leon_diaz]$ ls
Comando1-patino_leon_diaz.txt protein-[patino_leon_diaz].fa
Comando2-patino_leon_diaz.txt Resultados_taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Resultados_taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Comando1-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Comando2-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ sbatch Comando1-patino_leon_diaz.txt
Submitted batch job 190006
[bcom4102@node-25 patino_leon_diaz]$ sbatch Comando2-patino_leon_diaz.txt
Submitted batch job 190007
[bcom4102@node-25 patino_leon_diaz]$ squeue -u
squeue: option requires an argument -- 'u'
Try 'squeue --help' for more information
[bcom4102@node-25 patino_leon_diaz]$ queue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190004 short bash bcom4102 R 9:57 1 node-25
190007 short Comando2 bcom4102 R 1:22 1 node-25
190006 short Comando1 bcom4102 R 1:41 1 node-25
[bcom4102@node-25 patino_leon_diaz]$
```

29. Espere a que termine el primero, revise los archivos de salida.

```
[bcom4102@node-25 patino_leon_diaz]$ srun: error: node-25: task 0: Killed
[bcom4102@magnus -]$ srun -pty bash
[bcom4102@node-25 -]$ cd patino_leon_diaz/
[bcom4102@node-25 patino_leon_diaz]$ ls
Comando1-patino_leon_diaz.txt protein-[patino_leon_diaz].fa
Comando2-patino_leon_diaz.txt Resultados_taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Resultados_taller_patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Comando1-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ nano Comando2-patino_leon_diaz.txt
[bcom4102@node-25 patino_leon_diaz]$ sbatch Comando1-patino_leon_diaz.txt
Submitted batch job 190006
[bcom4102@node-25 patino_leon_diaz]$ sbatch Comando2-patino_leon_diaz.txt
Submitted batch job 190007
[bcom4102@node-25 patino_leon_diaz]$ squeue -u
squeue: option requires an argument -- 'u'
Try 'squeue --help' for more information
[bcom4102@node-25 patino_leon_diaz]$ queue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190004 short bash bcom4102 R 9:57 1 node-25
190007 short Comando2 bcom4102 R 1:22 1 node-25
190006 short Comando1 bcom4102 R 1:41 1 node-25
[bcom4102@node-25 patino_leon_diaz]$ jobs
[bcom4102@node-25 patino_leon_diaz]$ squeue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190004 short bash bcom4102 R 12:01 1 node-25
190007 short Comando2 bcom4102 R 3:26 1 node-25
[bcom4102@node-25 patino_leon_diaz]$ cat
Comando1-patino_leon_diaz.txt protein-[patino_leon_diaz].fa slurm-190006.out
Comando2-patino_leon_diaz.txt Resultados_taller_patino_leon_diaz.txt slurm-190007.out
[bcom4102@node-25 patino_leon_diaz]$
```

30. Puede terminar la sesión de *script* con el comando *exit*.

```
[bcom4102@magnus.uniandes.edu.co]
[Apis mellifera]
134292>:gi|571546184|ref|XP_006568575.1| PREDICTED: activating molecule in BECN1-regulated autophagy protein 1-like isoform X5
[Apis mellifera]
134301>:gi|328789197|ref|XP_001123340.2| PREDICTED: activating molecule in BECN1-regulated autophagy protein 1-like isoform X1
[Apis mellifera]
[bcom4102@magnus patino_leon_diaz]$ nano Comando1-patino_leon_diaz.txt
[bcom4102@magnus patino_leon_diaz]$ nano Comando2-patino_leon_diaz.txt
[bcom4102@magnus patino_leon_diaz]$ sbatch Comando1-patino_leon_diaz.txt
Submitted batch job 190053
[bcom4102@magnus patino_leon_diaz]$ sbatch Comando2-patino_leon_diaz.txt
Submitted batch job 190054
[bcom4102@magnus patino_leon_diaz]$ squeue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190054 short Comando2 bcom4102 R 0:09 1 node-25
190053 short Comando1 bcom4102 R 0:17 1 node-25
[bcom4102@magnus patino_leon_diaz]$ squeue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190054 short Comando2 bcom4102 R 1:55 1 node-25
[bcom4102@magnus patino_leon_diaz]$ ls
Comando1-patino_leon_diaz.txt protein-[patino_leon_diaz].fa slurm-190054.out
Comando2-patino_leon_diaz.txt slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ nano slurm-19005
[bcom4102@magnus patino_leon_diaz]$ nano slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ nano slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ exit
exit
Script done, file is Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$ nano Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$ md5sum
2
11+ Stopped md5sum
[bcom4102@magnus ~]$ md5sum Resultados_taller_1_patino_leon_diaz.txt
3f32ad47bc8c53737274b7970fc482cf Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$
```

31. Ahora que se ha creado el archivo con el comando *md5sum* calcule el md5 del archivo creado.

```
[bcom4102@magnus.uniandes.edu.co]
[Apis mellifera]
134292>:gi|571546184|ref|XP_006568575.1| PREDICTED: activating molecule in BECN1-regulated autophagy protein 1-like isoform X5
[Apis mellifera]
134301>:gi|328789197|ref|XP_001123340.2| PREDICTED: activating molecule in BECN1-regulated autophagy protein 1-like isoform X1
[Apis mellifera]
[bcom4102@magnus patino_leon_diaz]$ nano Comando1-patino_leon_diaz.txt
[bcom4102@magnus patino_leon_diaz]$ nano Comando2-patino_leon_diaz.txt
[bcom4102@magnus patino_leon_diaz]$ sbatch Comando1-patino_leon_diaz.txt
Submitted batch job 190053
[bcom4102@magnus patino_leon_diaz]$ sbatch Comando2-patino_leon_diaz.txt
Submitted batch job 190054
[bcom4102@magnus patino_leon_diaz]$ squeue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190054 short Comando2 bcom4102 R 0:09 1 node-25
190053 short Comando1 bcom4102 R 0:17 1 node-25
[bcom4102@magnus patino_leon_diaz]$ squeue -u bcom4102
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
190054 short Comando2 bcom4102 R 1:55 1 node-25
[bcom4102@magnus patino_leon_diaz]$ ls
Comando1-patino_leon_diaz.txt protein-[patino_leon_diaz].fa slurm-190054.out
Comando2-patino_leon_diaz.txt slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ nano slurm-19005
[bcom4102@magnus patino_leon_diaz]$ nano slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ nano slurm-190053.out
[bcom4102@magnus patino_leon_diaz]$ exit
exit
Script done, file is Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$ nano Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$ md5sum
2
11+ Stopped md5sum
[bcom4102@magnus ~]$ md5sum Resultados_taller_1_patino_leon_diaz.txt
3f32ad47bc8c53737274b7970fc482cf Resultados_taller_1_patino_leon_diaz.txt
[bcom4102@magnus ~]$
```

Descargue y entregue los archivos de salida del clúster, el archivo resultado de *script* y el número md5 obtenido. Numero md5 obtenido **3f32ad47bc8c53737274b7970fc482cf**

