

Linux and Networking Basics - Part 2

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Server Info:

Name: omics10 (omics10.hlm.ad.moffitt.usf.edu)
IP Address: 10.6.96.86

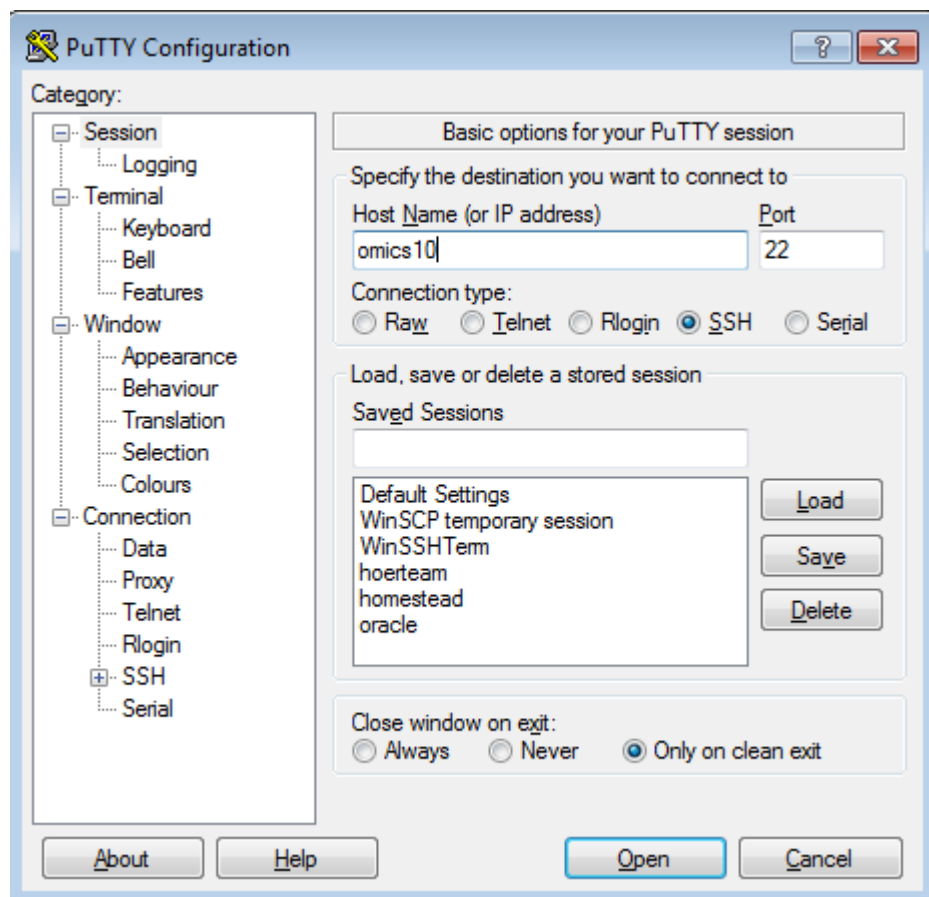
User accounts:

username: userX, where X is 1,2,3,...,50
password: the same as username

Example:
username: user1
password: user1

Connecting to the server

1. Download putty.exe from [here](https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html) (<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>) (use the "Alternative Link") or any SSH client and type "omics10" in the "Host Name" field.
2. On OSX, open Terminal and type `ssh userX@omics10`
3. Enter your username when asked "Login"
4. Enter your password

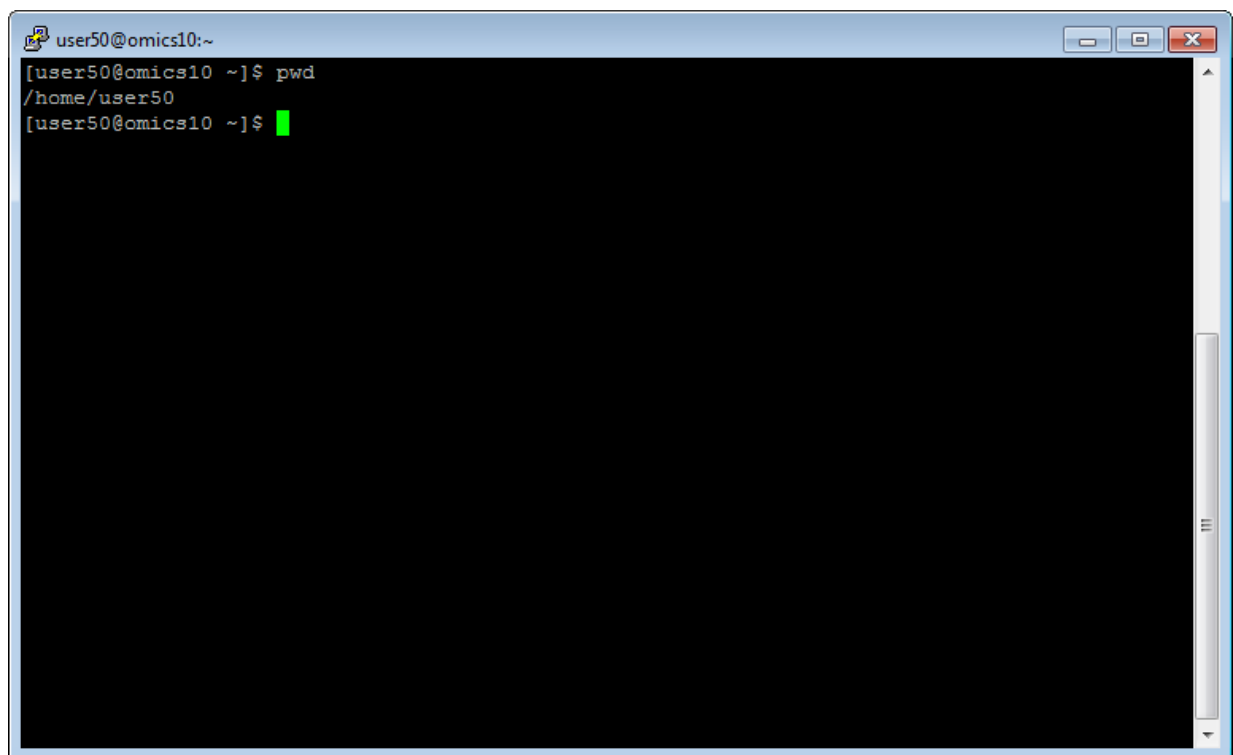


Commands

Calendar

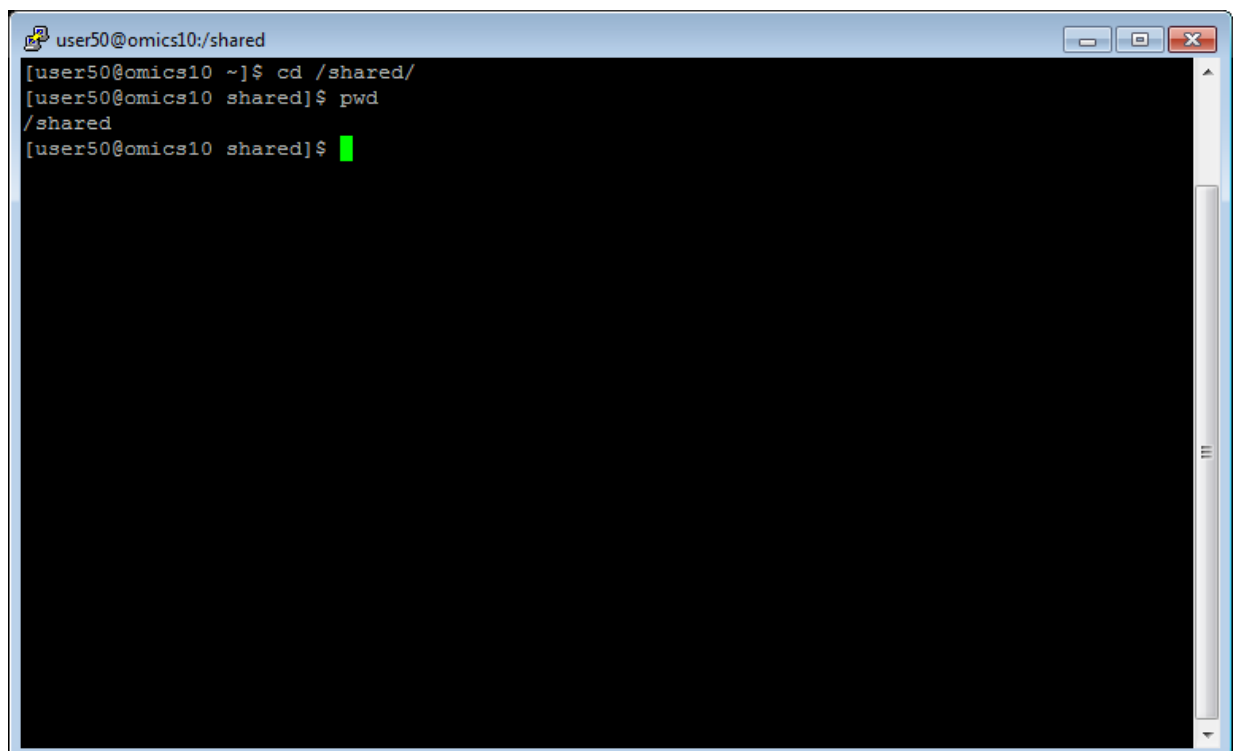
```
user50@omics10:~  
[user50@omics10 ~]$ cal  
October 2019  
Su Mo Tu We Th Fr Sa  
      1  2  3  4  5  
  6  7  8  9 10 11 12  
13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30 31  
[user50@omics10 ~]$
```

Print Working Directory

A terminal window titled 'user50@omics10:~' with standard window controls. The terminal shows the command 'pwd' being executed, which returns '/home/user50'. The prompt then returns to '[user50@omics10 ~]\$' with a green cursor.

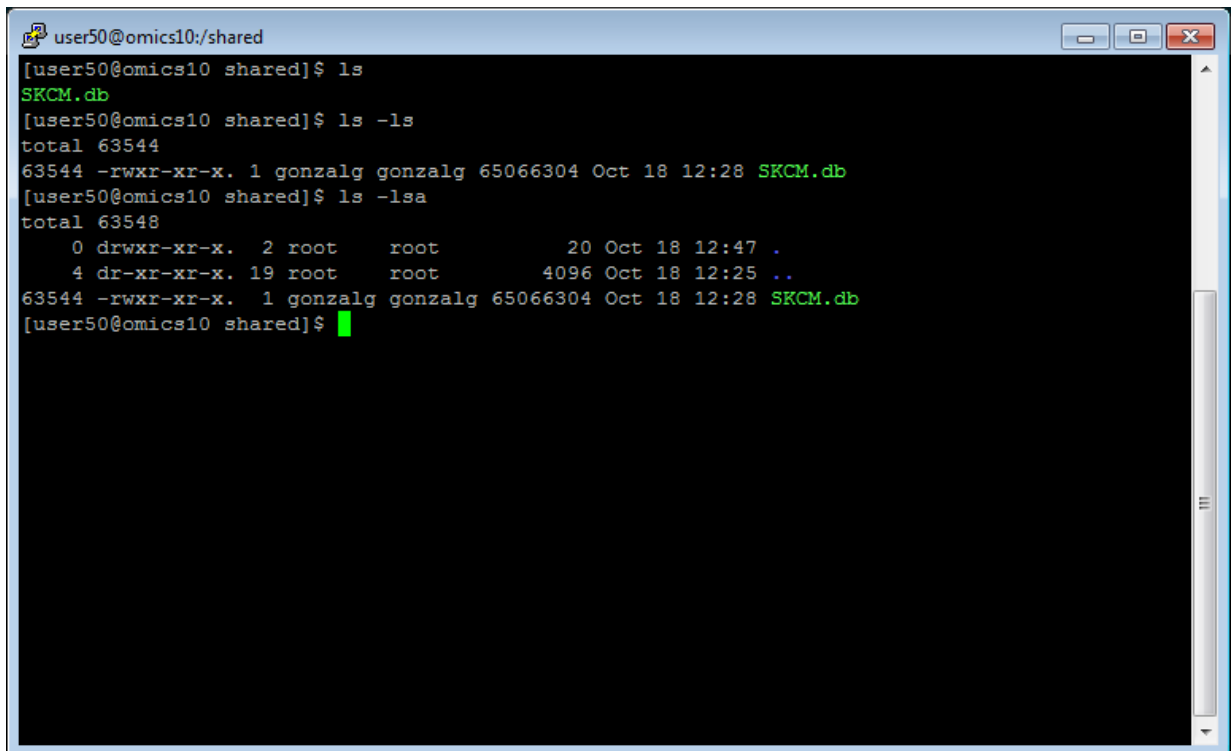
```
user50@omics10:~  
[user50@omics10 ~]$ pwd  
/home/user50  
[user50@omics10 ~]$
```

Change directory and then Print Working Directory

A terminal window titled 'user50@omics10:/shared' with standard window controls. The terminal shows the command 'cd /shared/' being executed, followed by 'pwd' which returns '/shared'. The prompt then returns to '[user50@omics10 shared]\$' with a green cursor.

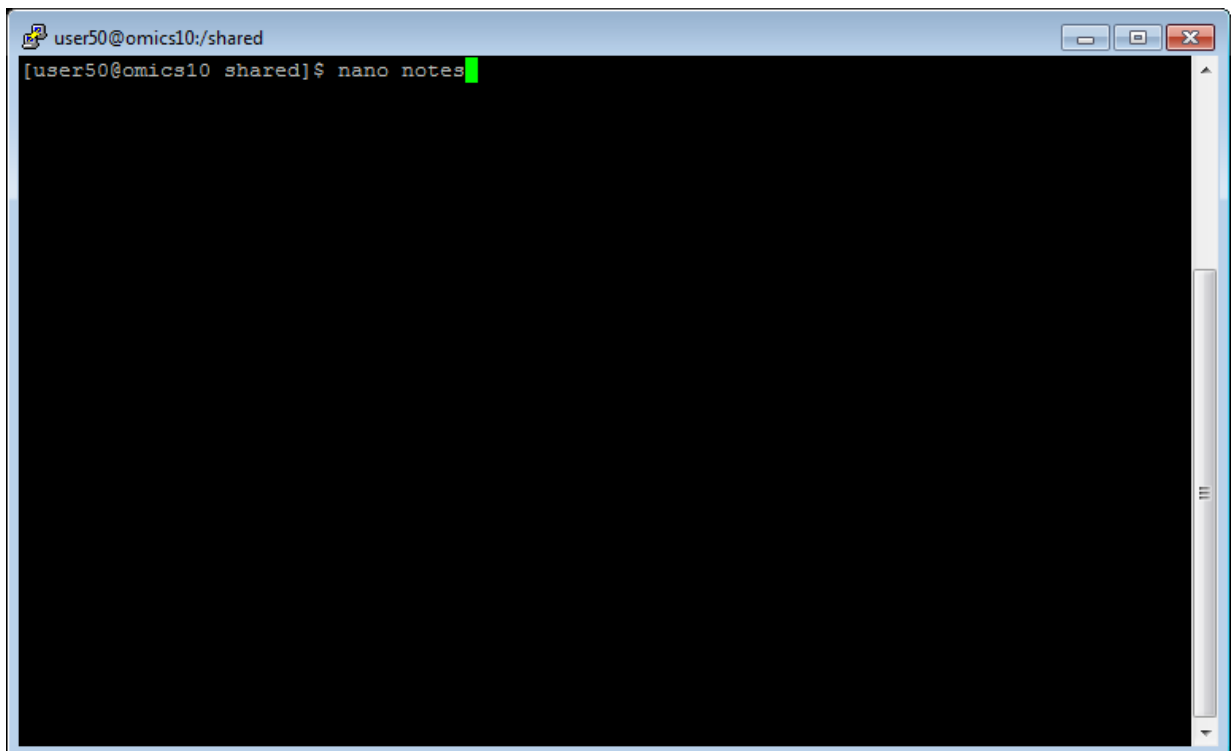
```
user50@omics10:/shared  
[user50@omics10 ~]$ cd /shared/  
[user50@omics10 shared]$ pwd  
/shared  
[user50@omics10 shared]$
```

List Files and directories in current location

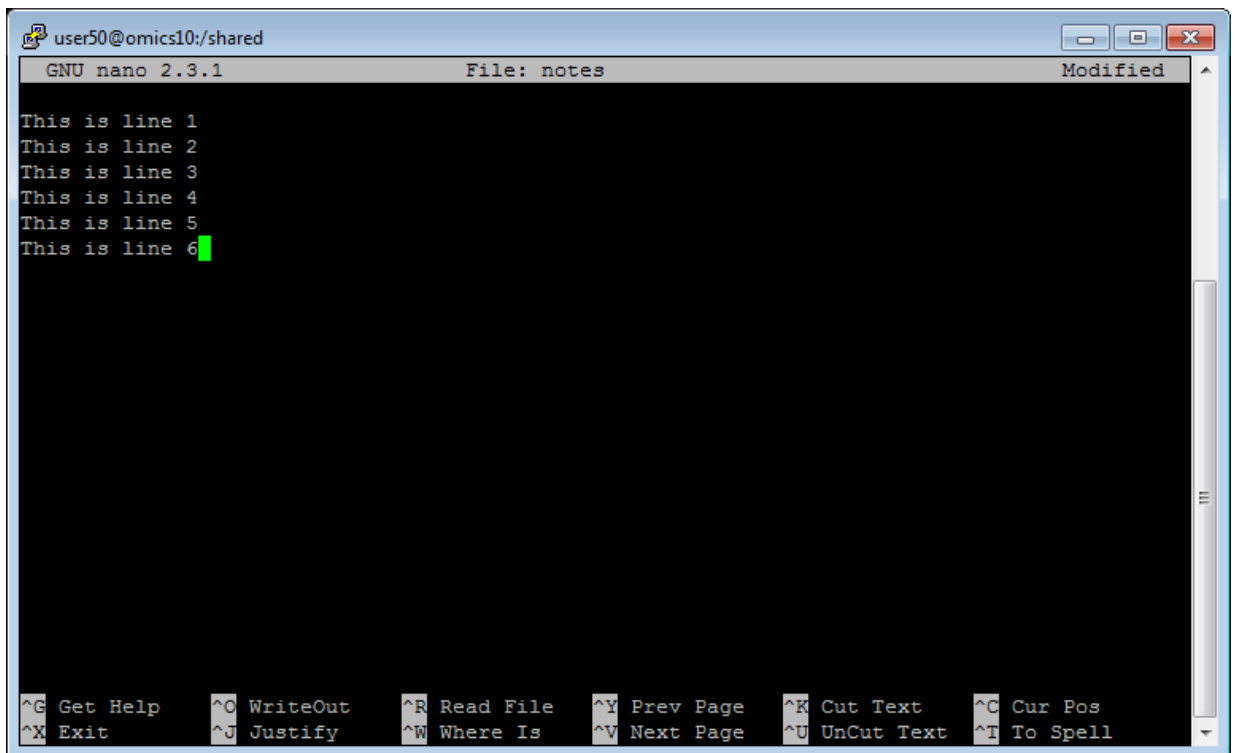


```
user50@omics10:/shared
[user50@omics10 shared]$ ls
SKCM.db
[user50@omics10 shared]$ ls -ls
total 63544
63544 -rwxr-xr-x. 1 gonzalg gonzalg 65066304 Oct 18 12:28 SKCM.db
[user50@omics10 shared]$ ls -lsa
total 63548
0 drwxr-xr-x. 2 root root 20 Oct 18 12:47 .
4 dr-xr-xr-x. 19 root root 4096 Oct 18 12:25 ..
63544 -rwxr-xr-x. 1 gonzalg gonzalg 65066304 Oct 18 12:28 SKCM.db
[user50@omics10 shared]$
```

Create a file

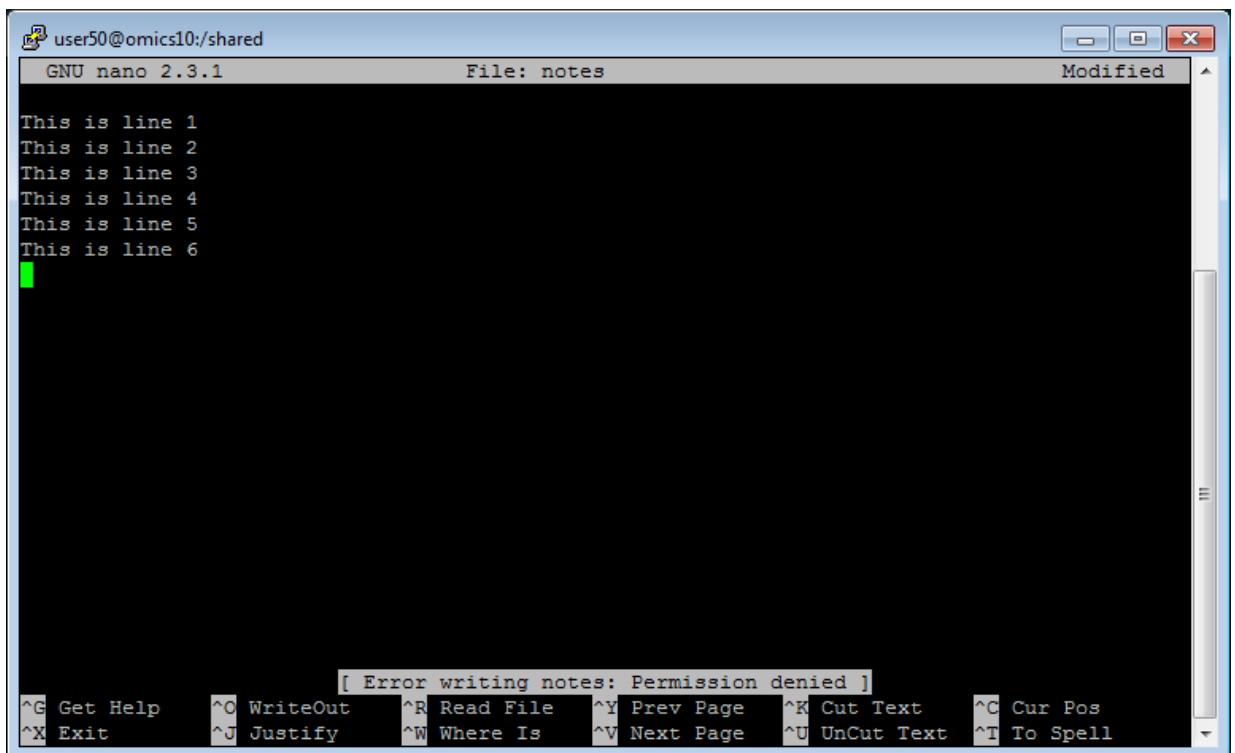


```
user50@omics10:/shared
[user50@omics10 shared]$ nano notes
```



```
GNU nano 2.3.1      File: notes      Modified
This is line 1
This is line 2
This is line 3
This is line 4
This is line 5
This is line 6
```

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell

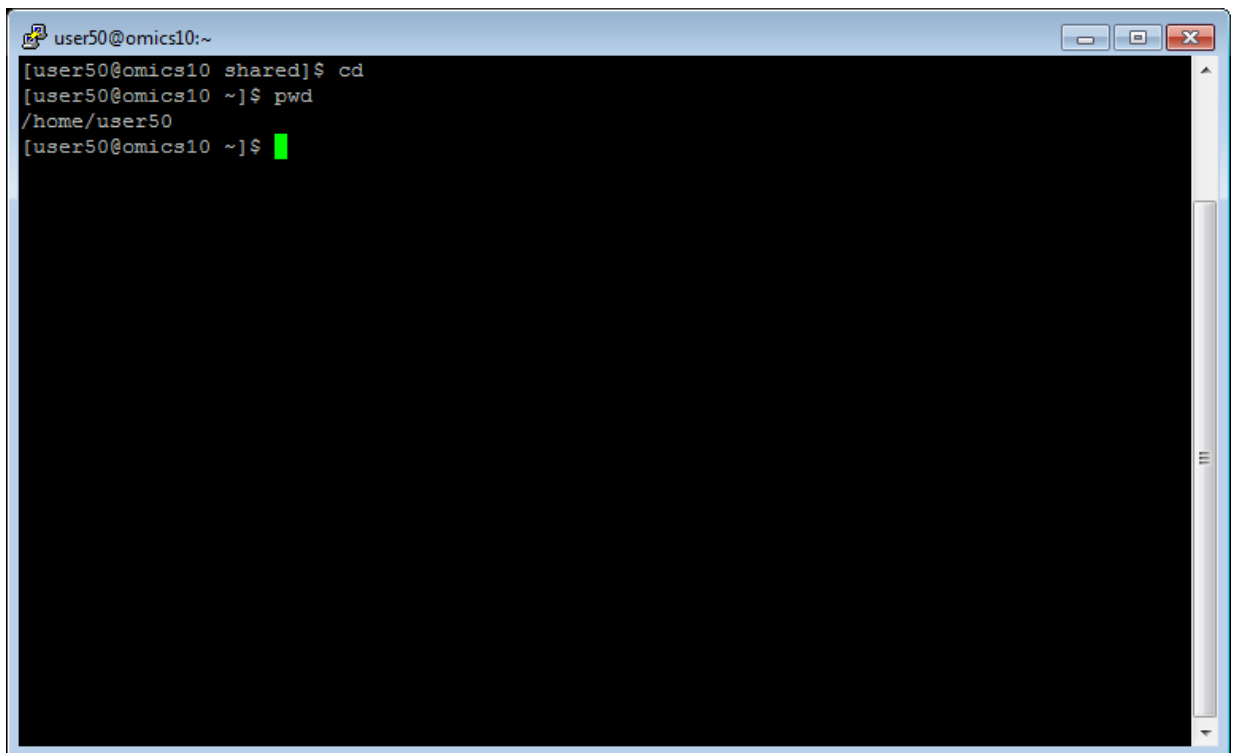


```
GNU nano 2.3.1      File: notes      Modified
This is line 1
This is line 2
This is line 3
This is line 4
This is line 5
This is line 6
```

[Error writing notes: Permission denied]

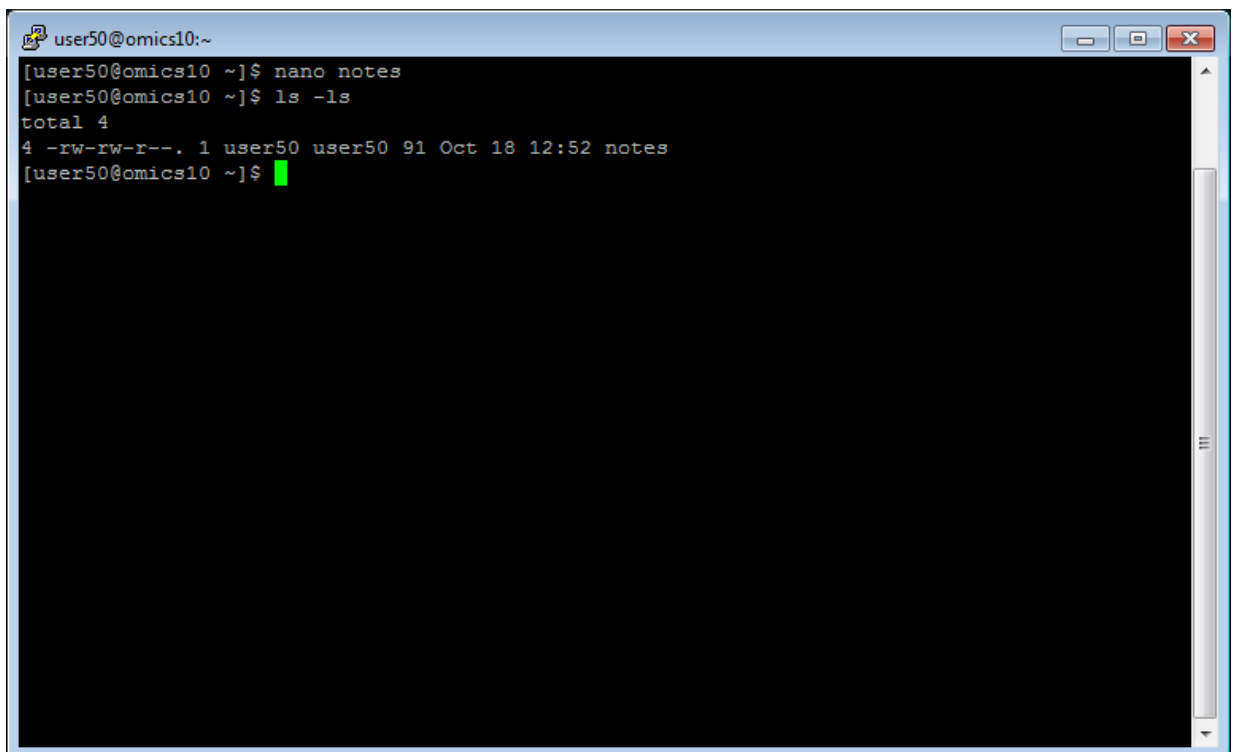
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell

Go to the Home Directory



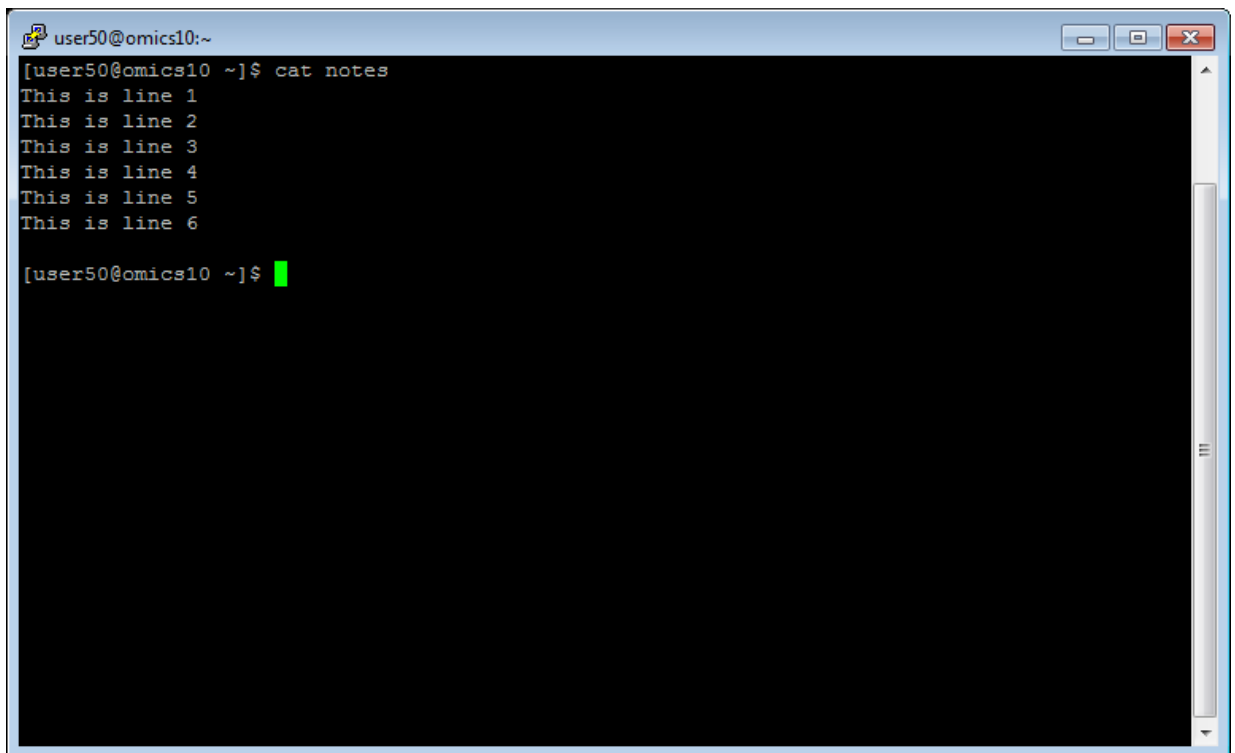
```
user50@omics10:~  
[user50@omics10 shared]$ cd  
[user50@omics10 ~]$ pwd  
/home/user50  
[user50@omics10 ~]$
```

Create the file (again) and list files



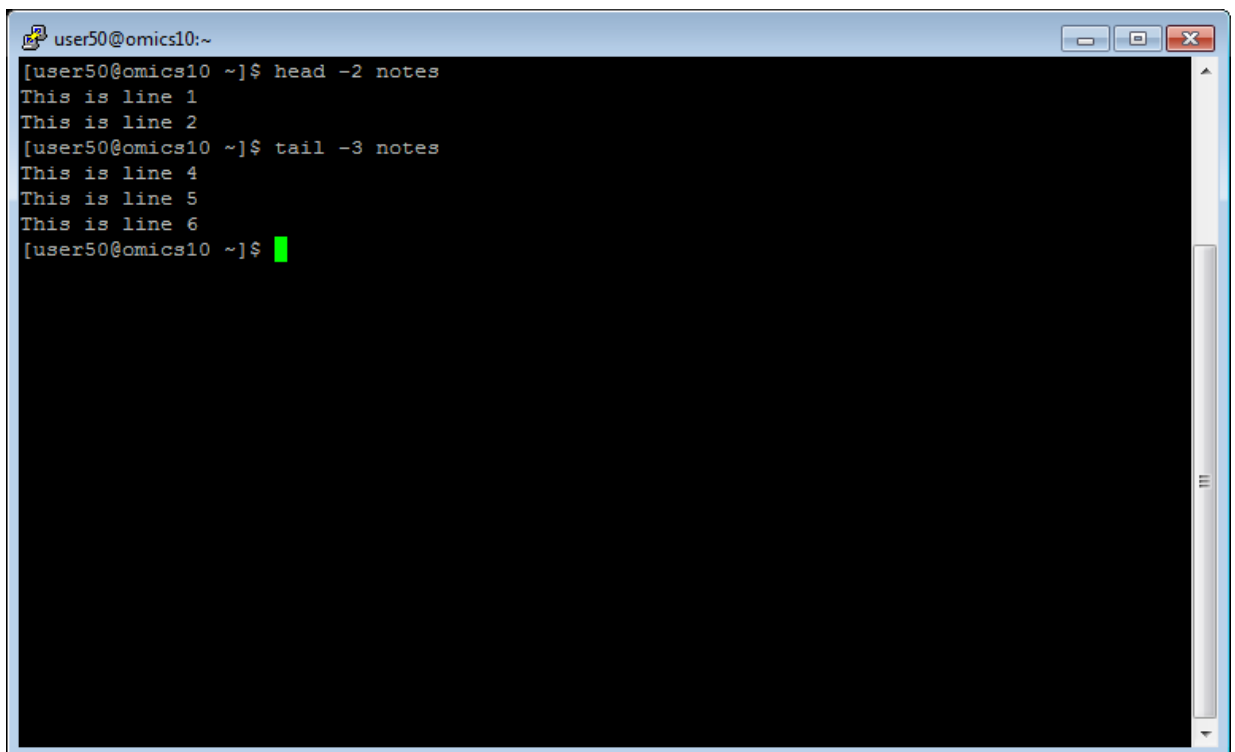
```
user50@omics10:~  
[user50@omics10 ~]$ nano notes  
[user50@omics10 ~]$ ls -ls  
total 4  
4 -rw-rw-r--. 1 user50 user50 91 Oct 18 12:52 notes  
[user50@omics10 ~]$
```

Display contents of a file



```
user50@omics10:~  
[user50@omics10 ~]$ cat notes  
This is line 1  
This is line 2  
This is line 3  
This is line 4  
This is line 5  
This is line 6  
[user50@omics10 ~]$
```

Displaying some lines of a file:



```
user50@omics10:~  
[user50@omics10 ~]$ head -2 notes  
This is line 1  
This is line 2  
[user50@omics10 ~]$ tail -3 notes  
This is line 4  
This is line 5  
This is line 6  
[user50@omics10 ~]$
```

Create a directory

```
user50@omics10:~  
[user50@omics10 ~]$ mkdir data  
[user50@omics10 ~]$ ls -ls  
total 4  
0 drwxrwxr-x. 2 user50 user50 6 Oct 18 12:59 data  
4 -rw-rw-r--. 1 user50 user50 90 Oct 18 12:54 notes  
[user50@omics10 ~]$
```

Copy a file:

```
user50@omics10:~  
[user50@omics10 ~]$ cp /shared/SKCM.db .  
[user50@omics10 ~]$ ls -ls  
total 63548  
0 drwxrwxr-x. 2 user50 user50 6 Oct 18 13:01 data  
4 -rw-rw-r--. 1 user50 user50 90 Oct 18 12:54 notes  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:01 SKCM.db  
[user50@omics10 ~]$ cp /shared/SKCM.db data/  
[user50@omics10 ~]$ ls -ls data/  
total 63544  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:02 SKCM.db  
[user50@omics10 ~]$ cp /shared/SKCM.db data/SKCM2.db  
[user50@omics10 ~]$ ls -ls data/  
total 127088  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:02 SKCM2.db  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:02 SKCM.db  
[user50@omics10 ~]$
```

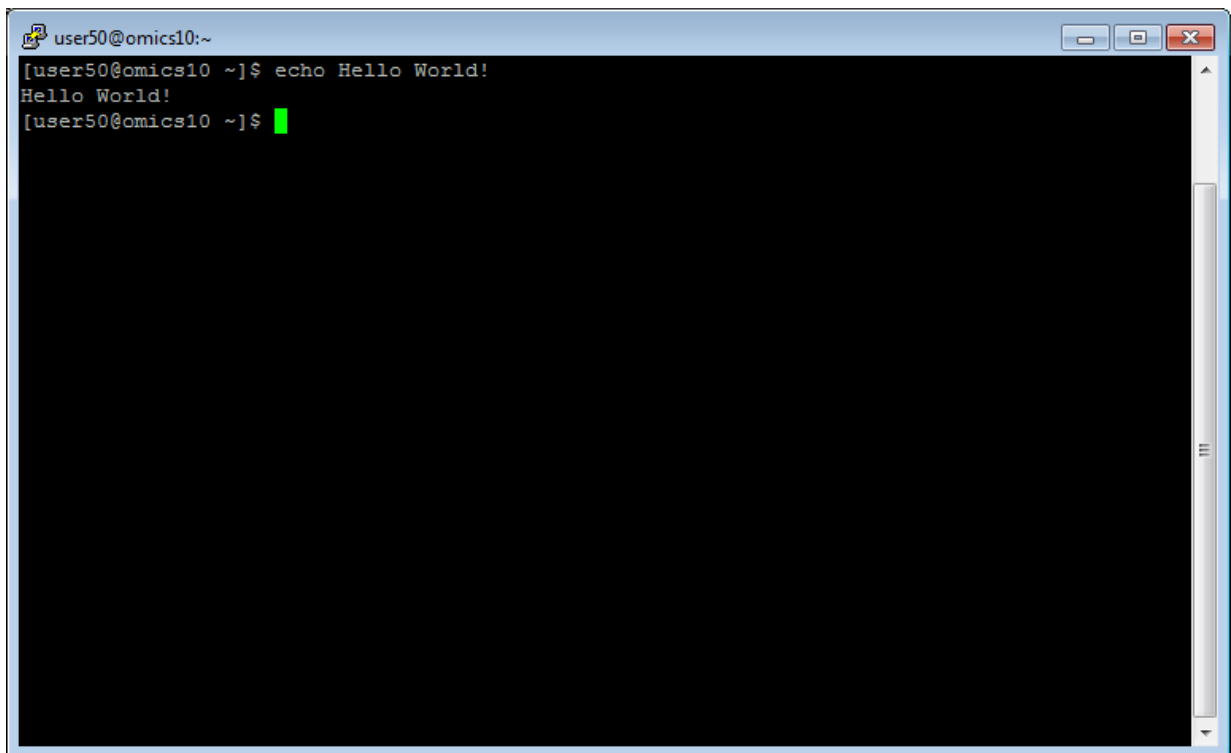
Delete a file:


```
user50@omics10:~  
[user50@omics10 ~]$ pwd  
/home/user50  
[user50@omics10 ~]$ cd data  
[user50@omics10 data]$ pwd  
/home/user50/data  
[user50@omics10 data]$ ls -ls  
total 127088  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:04 SKCM2.db  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:02 SKCM.db  
[user50@omics10 data]$ rm SKCM2.db  
[user50@omics10 data]$ ls -ls  
total 63544  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:02 SKCM.db  
[user50@omics10 data]$ cd ..  
[user50@omics10 ~]$ pwd  
/home/user50  
[user50@omics10 ~]$
```

Delete a Directory

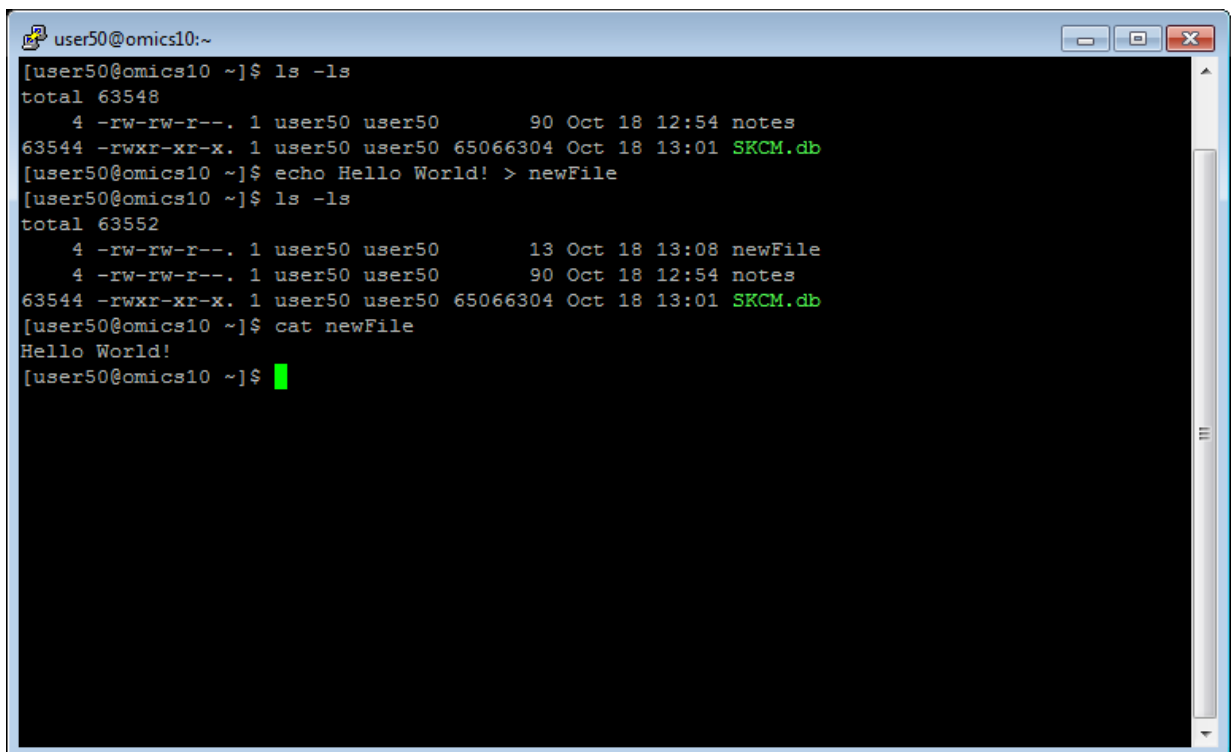
```
user50@omics10:~  
[user50@omics10 ~]$ ls -ls  
total 63548  
0 drwxrwxr-x. 2 user50 user50 20 Oct 18 13:05 data  
4 -rw-rw-r--. 1 user50 user50 90 Oct 18 12:54 notes  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:01 SKCM.db  
[user50@omics10 ~]$ rm data  
rm: cannot remove 'data': Is a directory  
[user50@omics10 ~]$ rm -fr data/  
[user50@omics10 ~]$ ls -ls  
total 63548  
4 -rw-rw-r--. 1 user50 user50 90 Oct 18 12:54 notes  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:01 SKCM.db  
[user50@omics10 ~]$
```

echo command



```
user50@omics10:~  
[user50@omics10 ~]$ echo Hello World!  
Hello World!  
[user50@omics10 ~]$
```

Redirect standard output



```
user50@omics10:~  
[user50@omics10 ~]$ ls -ls  
total 63548  
  4 -rw-rw-r--. 1 user50 user50      90 Oct 18 12:54 notes  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:01 SKCM.db  
[user50@omics10 ~]$ echo Hello World! > newFile  
[user50@omics10 ~]$ ls -ls  
total 63552  
  4 -rw-rw-r--. 1 user50 user50      13 Oct 18 13:08 newFile  
  4 -rw-rw-r--. 1 user50 user50      90 Oct 18 12:54 notes  
63544 -rwxr-xr-x. 1 user50 user50 65066304 Oct 18 13:01 SKCM.db  
[user50@omics10 ~]$ cat newFile  
Hello World!  
[user50@omics10 ~]$
```

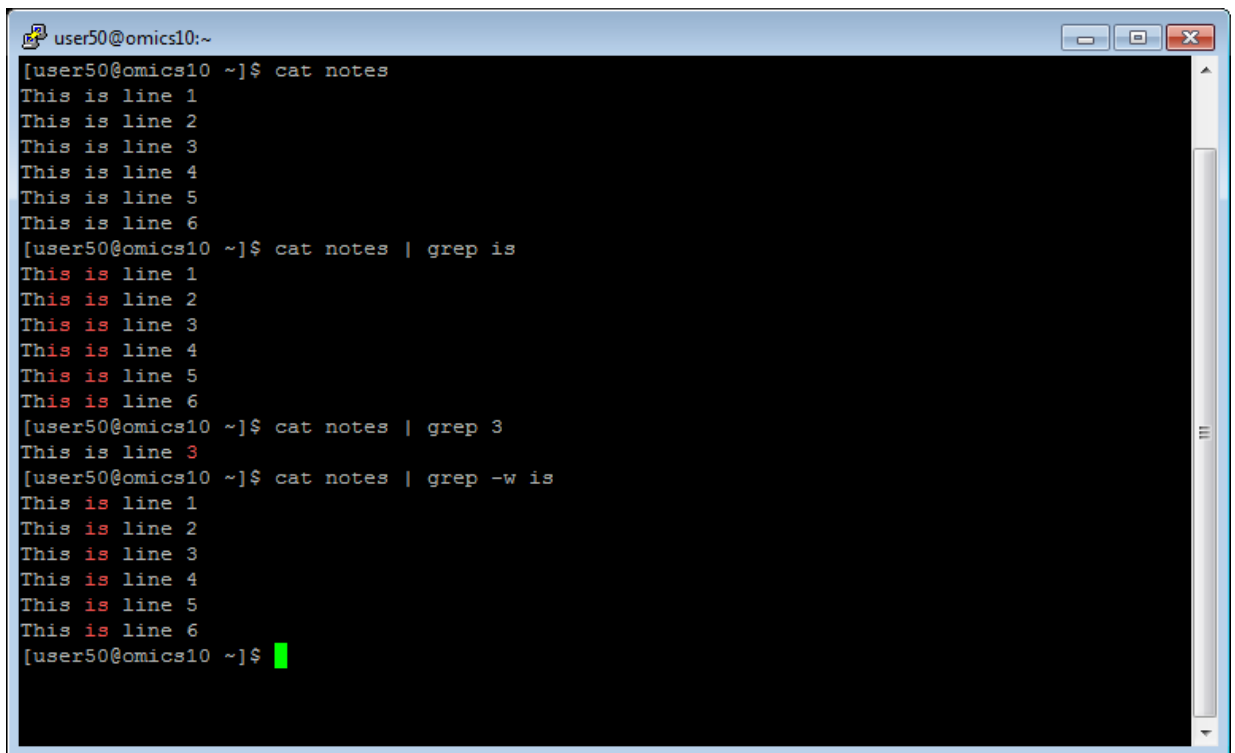
Count words:

```
user50@omics10:~  
[user50@omics10 ~]$ wc newFile  
1  2 13 newFile  
[user50@omics10 ~]$ wc -l newFile  
1 newFile  
[user50@omics10 ~]$ wc -w newFile  
2 newFile  
[user50@omics10 ~]$ wc -c newFile  
13 newFile  
[user50@omics10 ~]$ wc SKCM.db  
401525 10038125 65066304 SKCM.db  
[user50@omics10 ~]$ wc -l SKCM.db  
401525 SKCM.db  
[user50@omics10 ~]$ wc -w SKCM.db  
10038125 SKCM.db  
[user50@omics10 ~]$ wc -c SKCM.db  
65066304 SKCM.db  
[user50@omics10 ~]$
```

Redirection (pipe):

```
user50@omics10:~  
[user50@omics10 ~]$ cat newFile | wc  
1  2 13  
[user50@omics10 ~]$ cat newFile | wc -l  
1  
[user50@omics10 ~]$ cat newFile | wc -w  
2  
[user50@omics10 ~]$ cat newFile | wc -c  
13  
[user50@omics10 ~]$ cat SKCM.db | wc  
401525 10038125 65066304  
[user50@omics10 ~]$ cat SKCM.db | wc -l  
401525  
[user50@omics10 ~]$ cat SKCM.db | wc -w  
10038125  
[user50@omics10 ~]$ cat SKCM.db | wc -c  
65066304  
[user50@omics10 ~]$
```

grep command



```
user50@omics10:~  
[user50@omics10 ~]$ cat notes  
This is line 1  
This is line 2  
This is line 3  
This is line 4  
This is line 5  
This is line 6  
[user50@omics10 ~]$ cat notes | grep is  
This is line 1  
This is line 2  
This is line 3  
This is line 4  
This is line 5  
This is line 6  
[user50@omics10 ~]$ cat notes | grep 3  
This is line 3  
[user50@omics10 ~]$ cat notes | grep -w is  
This is line 1  
This is line 2  
This is line 3  
This is line 4  
This is line 5  
This is line 6  
[user50@omics10 ~]$
```

Exercises

1. How many entries there are for sample TP53 in the SKCM.db file?
2. Create a new file with only data for the TP53 sample from the SKCM.db file