windows to LINUX
Let’s gently move to LINUX environment @ HCC
2nd task : (Make a folder)

* Windows : You right click and create a new folder.

Linux:

You tell Linux to “make directory”: `mkdir`

```
rohita@AKBLab-330:~:/HCC$ mkdir One Two Three Ten
rohita@AKBLab-330:~:/HCC$ ls
One Ten Three Two
rohita@AKBLab-330:~:/HCC$
```

Multiple directories with single command
3rd task: (Lets copy something to our new folder)

Windows: Select document------>right click--------> copy ---------> Go to new folder------> Paste

Linux

You tell Linux to “copy files: CP” to folder “One”

```
rohita@AKBLab-330:~/.HCC$ ls
File1  File2  One  Ten  Three  Two
rohita@AKBLab-330:~/.HCC$ cp File1 File2 One
```

```
File1  File2  One  Ten  Three  Two
rohita@AKBLab-330:~/.HCC$ cp -r Two One
```

You tell Linux to “copy folder: CP -r ” to folder “One”
Other commands to cover

Move/rename files: **mv**  
Example: `mv oldname newname`

Copy files: **cp**  
Example: `cp myfile myfilecopy`

Change the current directory: **cd**  
Example: `cd mydirectory`

See contents of the directory: **ls**

See directory contents with more details: **ls -l**

Print working directory: **pwd**

Print file to screen: **more**  
Example: `more myfile`

Merging multiple files: **cat**  
Example: `cat file1 file2 > combinedfile`

Create empty file: **touch**  
Example: `touch newfile`

Search a string in a file: **grep**  
Example: `grep mystring myfile`

Compress & decompress files: **tar, zip, gzip**

Remove files: **rm**  
Example: `rm filetodelete`

Remove entire directory: **rm -rf**  
Example: `rm -rf directorytodelete`

See more at: [http://www.comptechdoc.org/os/linux/usersguide/linux_ugbasics.html](http://www.comptechdoc.org/os/linux/usersguide/linux_ugbasics.html)
Getting Started - Logging in

- Quick start guide for Windows
- Quick start guide for Mac/Linux
Basic exercise - create directory/file

```
[demo02@login.crane ~]$ ls
[demo02@login.crane ~]$ pwd
/home/demo/demo02
[demo02@login.crane ~]$ mkdir mydir
[demo02@login.crane ~]$ ls
mydir
[demo02@login.crane ~]$ cd mydir/
[demo02@login.crane mydir]$ ls
/home/demo/demo02/mydir
[demo02@login.crane mydir]$ ls
mydir
[demo02@login.crane mydir]$ ls -l
-rw-r--r-- 1 demo02 demo 0 Jun 24 16:15 myfile
[demo02@login.crane mydir]$ cd ..
[demo02@login.crane ~]$ rm -rf mydir
[demo02@login.crane ~]$ ls
[demo02@login.crane ~]$
```
Globus Connect

Use Globus Connect to:

- Transfer files between HCC clusters (Tusker, Crane, & Sandhills)
- Transfer files between your laptop/pc and HCC clusters
- Share files with colleagues
Globus Connect

Getting Started: ([HCC-DOCS full instructions](#))

- Sign up for a Globus account
- Install Globus Connect Personal on your computer
- Activate HCC endpoint(s): hcc#tusker, hcc#crane, hcc#sandhills
- Log in to Globus account ([online](#)) and [start making transfers](#)

Important:

- `/home` is read-only via Globus Connect (transfer from `/home`, but not to `/home`).
- `/work` is readable/writable via Globus Connect (can transfer files to and from `/work`).
Exercise: Transfer files with Globus

- Download example query file to your laptop: 
  Blast query file
- Transfer file from your laptop to your Crane work directory using Globus
One editor: nano or any other you prefer
Start nano by running ‘nano’.

Save: Control + o
Exit: Control + x
Exercise - Create submit script

Using nano, create the text file to the right.

Save it as ‘helloworld.submit’.

We will submit it to SLURM later.

```bash
#!/bin/sh
#SBATCH --time=00:05:00
#SBATCH --job-name=helloworld
#SBATCH --error=helloworld.%J.err
#SBATCH --output=helloworld.%J.out
#SBATCH --qos=short

echo “this is my first slurm job”
sleep 30
```
Cluster Basics

- Every job must be run through a scheduler: Submitting Jobs using SLURM
- Software is managed through the module software: Using Module
- Every user has two directories to use: Where to Put Data
Exercise - Submit hello world job

[demo02@login.crane ~]$ mv helloworld.submit $WORK
[demo02@login.crane ~]$ cd $WORK
[demo02@login.crane demo02]$ ls
helloworld.submit
[demo02@login.crane demo02]$ sbatch helloworld.submit
Submitted batch job 770465
[demo02@login.crane demo02]$ queue -u demo02

<table>
<thead>
<tr>
<th>JOBID</th>
<th>PARTITION</th>
<th>NAME</th>
<th>USER</th>
<th>ST</th>
<th>TIME</th>
<th>NODES</th>
<th>Nodelist(REASON)</th>
</tr>
</thead>
<tbody>
<tr>
<td>770465</td>
<td>batch</td>
<td>helloworld</td>
<td>demo02</td>
<td>R</td>
<td>0:04</td>
<td>1</td>
<td>c2215</td>
</tr>
</tbody>
</table>

[demo02@login.crane demo02]$ ls
helloworld.770465.err helloworld.770465.out helloworld.submit
[demo02@login.crane demo02]$ more helloworld.770465.out
“this is my first slurm job”
[demo02@login.crane demo02]$ |
Exercise - Run BLAST job

● Use the example mouse.query file we copied using Globus earlier
● Example submit script provided at: 
   /work/demo/shared/blastexample/blast.submit
● Uses small example database
Exercise - Run BLAST job