Bash/Linux Tutorial

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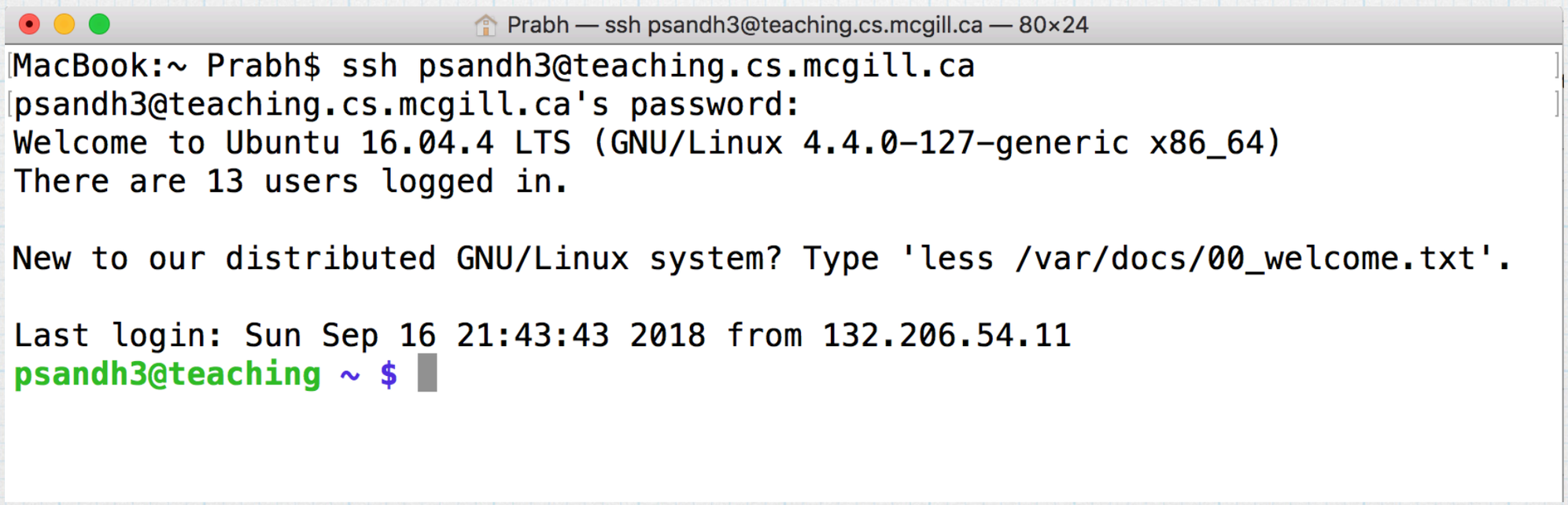
Basic Commands

Remote login

* Command :
  ssh <username>@teaching.cs.mcgill.ca

* Use cs login and password



Present working directory

* Command :
  pwd

```
psandh3@teaching ~ $ pwd
/home/2015/psandh3
psandh3@teaching ~ $
```

Make directory

* current directory : .
* home directory : ~
* root directory : /
* Command :
  mkdir <dir_name>

```
psandh3@teaching ~ $ mkdir tutorial1
psandh3@teaching ~ $
```

Change directory

* Previous directory : ..
* Command :

cd <dir_name>

```
psandh3@teaching ~ $ cd tutorial1/
psandh3@teaching ~/tutorial1 $ pwd
/home/2015/psandh3/tutorial1
psandh3@teaching ~/tutorial1 $
```

Create file

* Command :
  echo "some text" > <filename>

```
psandh3@teaching ~/tutorial1 $ echo "Hi" > a
```

* Command :
  touch <filename>

```
psandh3@teaching ~/tutorial1 $ touch a
psandh3@teaching ~/tutorial1 $ touch b
psandh3@teaching ~/tutorial1 $ touch c
```

List files

* Command :
  ls

```
psandh3@teaching ~/tutorial1 $ ls
a   b   c
psandh3@teaching ~/tutorial1 $
```

Example

* Create the following directory structure :
* pjot_fall2018/comp206/tutorial1/
* pjot_fall2018/comp206/tutorial1/file1
* pjot_fall2018/comp206/tutorial1/file2
* pjot_fall2018/comp206/tutorial2/

Copy

* Command :
  cp <source> <destination>

```
psandh3@teaching ~ $ cd tutorial2/
psandh3@teaching ~/tutorial2 $ cp ~/tutorial1/a ./
psandh3@teaching ~/tutorial2 $ ls
a
psandh3@teaching ~/tutorial2 $
```

Move

* Command :
  mv <source> <destination>

```
psandh3@teaching ~/tutorial2 $ ls ../tutorial1
a  b  c
psandh3@teaching ~/tutorial2 $ mv ../tutorial1/a ./
psandh3@teaching ~/tutorial2 $ ls ../tutorial1
b  c
psandh3@teaching ~/tutorial2 $ ls
a
psandh3@teaching ~/tutorial2 $
```

wc

* print newline, word count for a given file
* Input redirection : <
* Command :
  wc -l < <filename>

```
psandh3@teaching ~/tutorial1 $ wc -l < b
0
psandh3@teaching ~/tutorial1 $
```

cat

* Output redirection : >
* Command :
  cat <filename1>

```
psandh3@teaching ~/tutorial2 $ echo "Hello World!" > hello.dat
psandh3@teaching ~/tutorial2 $ ls
a  hello.dat
psandh3@teaching ~/tutorial2 $ cat hello.dat
Hello World!
psandh3@teaching ~/tutorial2 $
```

Manpage

* man : system's manual pager
* press q to quit
* Command :

```
man <command_to_know>
```

Pipes

* hold the output of one program and feed it to the input of another : |

```
psandh3@teaching ~/tutorial1 $ ls -la > my_list.dat
psandh3@teaching ~/tutorial1 $ ls
a  b  c  my_list.dat
psandh3@teaching ~/tutorial1 $ cat my_list.dat
total 27
drwxr-xr-x  2 psandh3 nogroup   6 Sep 16 22:39 .
drwx--x--x 77 psandh3 nogroup 113 Sep 16 22:08 ..
-rw-r--r--  1 psandh3 nogroup   3 Sep 16 22:31 a
-rw-r--r--  1 psandh3 nogroup   0 Sep 16 21:58 b
-rw-r--r--  1 psandh3 nogroup   0 Sep 16 21:58 c
-rw-r--r--  1 psandh3 nogroup   0 Sep 16 22:39 my_list.dat
psandh3@teaching ~/tutorial1 $ wc -l < my_list.dat
7
psandh3@teaching ~/tutorial1 $ ls -la | wc -l
7
psandh3@teaching ~/tutorial1 $
```

Bash Scripting

Bash Scripting

```
#!/bin/bash

echo "Hello, World!"
```

```
psandh3@teaching ~/tutorial1 $ vim my.bash
psandh3@teaching ~/tutorial1 $ ls -l my.bash
-rw-r--r-- 1 psandh3 nogroup 37 Sep 16 22:57 my.bash
psandh3@teaching ~/tutorial1 $ chmod 755 my.bash
psandh3@teaching ~/tutorial1 $ ls -l my.bash
-rwxr-xr-x 1 psandh3 nogroup 37 Sep 16 22:57 my.bash
psandh3@teaching ~/tutorial1 $ ./my.bash
Hello, World!
psandh3@teaching ~/tutorial1 $
```

Variables

```bash
#!/bin/bash

echo "Hello, World!"
x=3
y=4
z=$(($x+$y))
echo $z
```

```
psandh3@teaching ~/tutorial1 $ vim my.bash
psandh3@teaching ~/tutorial1 $ ./my.bash
Hello, World!
7
psandh3@teaching ~/tutorial1 $
```

back-ticks

```
#!/bin/bash

z=`echo "Hello, World!" | wc -w`
echo $z
```

```
psandh3@teaching ~/tutorial1 $ vim my.bash
psandh3@teaching ~/tutorial1 $ bash my.bash
2
psandh3@teaching ~/tutorial1 $
```

Control flow

```
#!/bin/bash

dir=$1
y=`ls $dir | wc -l`

if test $y -gt 0
then
  echo "There are following files :"
  ls
else
  echo "The directory is empty"
fi
```

```
psandh3@teaching ~/tutorial1 $ vim my.bash
psandh3@teaching ~/tutorial1 $ ./my.bash .
There are following files :
a  b  c  my.bash  my_list.dat
psandh3@teaching ~/tutorial1 $
```

Some more Commands

cut

```
psandh3@teaching ~/tutorial1 $ cat student.dat
Pjot McGill Montreal Sable McConnell
Joy Concordia Montreal Horse FDA
Savy UofT Toronto Tigger Schulich
David UWaterloo Waterloo Wably Burnside
psandh3@teaching ~/tutorial1 $ cut -f1 -d' ' student.dat
Pjot
Joy
Savy
David
psandh3@teaching ~/tutorial1 $
```

sort

```
psandh3@teaching ~/tutorial1 $ cat student.dat
Pjot McGill Montreal Sable McConnell
Joy Concordia Montreal Horse FDA
Savy UofT Toronto Tigger Schulich
David UWaterloo Waterloo Wably Burnside
psandh3@teaching ~/tutorial1 $ sort -k1 student.dat
David UWaterloo Waterloo Wably Burnside
Joy Concordia Montreal Horse FDA
Pjot McGill Montreal Sable McConnell
Savy UofT Toronto Tigger Schulich
psandh3@teaching ~/tutorial1 $
```

translate

```
psandh3@teaching ~/tutorial1 $ echo "Hello, World!" | tr "a-z" "A-Z"
HELLO, WORLD!
psandh3@teaching ~/tutorial1 $ echo "pjot88" | tr -d "0-9"
pjot
psandh3@teaching ~/tutorial1 $ echo "pjot88" | tr -dc "0-9"
88psandh3@teaching ~/tutorial1 $
```

grep

```
psandh3@teaching ~/tutorial1 $ cat student.dat
Pjot McGill Montreal Sable McConnell
Joy Concordia Montreal Horse FDA
Savy UofT Toronto Tigger Schulich
David UWaterloo Waterloo Wably Burnside
psandh3@teaching ~/tutorial1 $ grep "pjot" student.dat
psandh3@teaching ~/tutorial1 $ grep -i "pjot" student.dat
Pjot McGill Montreal Sable McConnell
psandh3@teaching ~/tutorial1 $
```

Keep Exploring!