



NETWORKING AND SYSTEM ADMINISTRATION LAB

ASSIGNMENT 4 - BASIC LINUX COMMANDS

**SUBMITTED TO
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Q. Explain linux commands wc, tar(create, extract using gzip, xz, bzip2), expr, redirections and piping, ssh, ssh-keygen, scp, ssh-copy-id with examples

COMMANDS

1. wc

- wc stands for word count.
- Used for counting purpose.
- It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.
- #wc state.txt

```
This message is shown once a day. To disable it please create the
/home/swathy/.hushlogin file.
swathy@LAPTOP-1TOUJQNG:~$ cd /mnt
swathy@LAPTOP-1TOUJQNG:/mnt$ cd c
swathy@LAPTOP-1TOUJQNG:/mnt/c$ cd Users
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users$ cd HP
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP$ cd Downloads
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ wc qwert.txt
 0  2 23 qwert.txt
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ wc qwert.txt
 6  7 92 qwert.txt
```

2. tar

- The Linux ‘tar’ stands for tape archive, is used to create Archive and extract the Archive files
- Linux tar command to create compressed or uncompressed Archive files

```

swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ tar cf archieve.tar qwert.txt capital.txt
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ ls
!qhlogs.doc'          RESUME.pdf
Appointment_slip.pdf   SmartWorkbench_32.exe
CT20213724165_Application (1).pdf' 'Swathy\'\'s Resume-converted-converted (1).pdf'
CT20213724165_Application (10).pdf' 'Unconfirmed 91588.crdownload'
CT20213724165_Application (11).pdf' VC_redist.x64.exe
CT20213724165_Application (12).pdf' VC_redist.x86.exe
CT20213724165_Application (2).pdf' VirtualBox-6.1.26-145957-Win.exe
CT20213724165_Application (3).pdf' ZoomInstaller.exe
CT20213724165_Application (4).pdf' archieve.tar
CT20213724165_Application (5).pdf' capital.txt
CT20213724165_Application (6).pdf' 'certificate (1).pdf'
CT20213724165_Application (7).pdf' certificate.pdf
CT20213724165_Application (8).pdf' com.alightcreative.motion-v3.7.1.apk
CT20213724165_Application (9).pdf' desktop.ini
CT20213724165_Application.pdf      dia-setup-0.97.2-2-unsigned.exe
CT20213724165_Resume.pdf          filmora-idco_setup_full1901.exe
Desktop - Shortcut.lnk'          mysql-workbench-community-8.0.26-winx64.msi
LAB.rar                          qwert.txt
LabExam3728.pdf                 text.txt.txt
New Text Document.txt'          ubuntu-21.04-desktop-amd64.iso
New folder'                     xampp-windows-x64-8.0.9-0-VS16-installer.exe

```

3.expr

- The expr command evaluates a given expression and displays its corresponding output. It is used for:
 - Basic operations like addition, subtraction, multiplication, division, and modulus on integers.
 - Evaluating regular expressions, string operations like substring, length of strings etc.
 - Performing operations on variables inside a shell script

#expr 10 + 2

```

swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ expr 5 + 10
15

```

4. Redirections & Piping 7

- A pipe is a form of redirection to send the output of one command/program/process to another command/program/process for further processing.
- Pipe is used to combine two or more commands, the output of one command acts as input to another command, and this command's output may act as input to the next command and so on.

```
#ls -l | wc -l
```

```
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ ls -l|wc -l
43
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$
```

5. ssh

- ssh stands for “Secure Shell”.
- It is a protocol used to securely connect to a remote server/system.
- ssh is secure in the sense that it transfers the data in encrypted form between the host and the client.
- It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.

```
#ssh user_name@host(IP/Domain_name)
```

```
#ssh -X root@server1.example.com
```

```
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ ssh swathy@LAPTOP-1TOUJQNG
ssh: connect to host laptop-1toujqng port 22: Connection refused
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ S_
```

6. scp

- SCP (secure copy) is a command-line utility that allows you to securely
- copy files and directories between two locations.
- With scp, you can copy a file or directory:
- From your local system to a remote system.
- From a remote system to your local system.
- Between two remote systems from your local system.
- Remote file system locations are specified in format [user@]host:/path

7.ssh-keygen

- ssh-keygen command to generate a public/private authentication

key pair. Authentication keys allow a user to connect to a remote system without supplying a password. Keys must be generated for each user separately.

If you generate key pairs as the root user, only the root can use the keys.

\$ssh-keygen -t rsa

```
swathy@LAPTOP-1TOUJQNG:/mnt/c/Users/HP/Downloads$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/swathy/.ssh/id_rsa): rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in rsa
Your public key has been saved in rsa.pub
The key fingerprint is:
SHA256:XmBrLu+Y1MkWjySIW0IWlcFjkNtZdX5G/nTkZQS00xY swathy@LAPTOP-1TOUJQNG
The key's randomart image is:
+---[RSA 3072]-----+
|  o=oo .. . .oo=|
|  ..= . o o  =.|
|  o+ + o . + E o|
|  o..o. . o o o +|
|  o o . S .  =|
|  + o * . .|
|  . o O .|
|  . *|
|  o.o|
+-----[SHA256]-----+
```

8. ssh-copy-id

- The ssh-copy-id command allows you to install an SSH key on a remote server's authorized keys.
- This command facilitates SSH key login, which removes the need for a password for each login, thus ensuring a password-less, automatic login process.

`$ssh-copy-id username@remote_host`