



Islington college
(इस्लिङ्टन कलेज)

Module Code & Module Title

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Assessment Weightage & Type

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

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INTRODUCTION

UNIX refers to a family of Operating Systems which satisfy the POSIX standard and is licenced governed by The Open Group company. Originally created by researchers at AT&T Bell Labs using a high level programming language(C), it was highly popular as it was easier to understand, portable and modular in nature, and provided multi-user platform (Indiana University, 2019). The basic principles of the UNIX OS is derived from previous Multix (Estes, 2018) was created to serve as an OS for large scale systems. Now various flavours of the UNIX OS is provided by vendors, the most popular being the Mac OS, a single user UNIX OS provided by Apple Inc. POSIX (Portable Operating System Interface) standard specifies a set of UNIX features required in an OS to be more flexible (Rouse, 2005). The shell scripting used in this course work is based on the Bourn Again Shell in Linux which is derived from the Bourne shell developed by Stephen Bourne in 7th version of UNIX developed in bell labs (Shotts Jr., 2019).

GNU/Linux or simply Linux is a set of Operating system mostly Open Source which uses Linux kernel developed by Linus Torvalds and various component and softwires developed by the GNU community started by Richard Stallman (Giometti, 2017). Most of the popular Linux distributions like Ubuntu are POSIX certified OS (Lewine, 1991) which has many UNIX like features and also supports a similar command line Interface native to UNIX. The OS used in this project is “elementary OS Loki” which is based on the Ubuntu 16.04 LTS.

The main objectives of this course work are as follows:

- To gather general insight on general UNIX and UNIX Shell,
- To perform some simple file and directory based UNIX operations,
- To understand and describe the mechanics of commands used.

TRANSCRIPT

```
rajat@L10W-B:~/CW2 2feb/scripts$ cat 17030954cw2
```

```
Script started on Sat 02 Feb 2019 07:41:45 PM +0545
```

```
rajat@L10W-B:~$
```

```
rajat@L10W-B:~$ PS1='$PWD> '
```

1. Creating New Directories (8%)

Task 1

```
$ mkdir -p WorldCup/{Argentina,France,Germany,Brazil,Japan}
```

```
$ ls -R WorldCup/
```

```
WorldCup/:
```

```
Argentina Brazil France Germany Japan
```

```
WorldCup/Argentina:
```

```
WorldCup/Brazil:
```

```
WorldCup/France:
```

```
WorldCup/Germany:
```

```
WorldCup/Japan:
```

Total Marks : 2 + 2 =4

2. Removing Existing Files and directories (8%)

Task 2

```
$ cd WorldCup/Argentina
```

```
$ pwd
```

```
/home/rajat/WorldCup/Argentina
```

```
$ cal>file1
```

```
$ touch file3 file2
```

Total Marks : 2 + 2 =4

Task 3

```
$ cd ..
```

```
$ rm Argentina/file1 Argentina/file2
```

```
$ rm -i Argentina/file3
```

```
rm: remove regular empty file 'Argentina/file3'? y
```

```
$ ls -a Argentina/
```

```
. ..
```

```
$ rmdir Argentina
```

```
$ ls -aR
```

```
. .. Brazil France Germany Japan
```

```
./Brazil: . ..
```

```
./France: . ..
```

```
./Germany: . ..
```

```
./Japan: . ..
```

Total Marks : 2

3. Usage of the echo command (6%)

Task 4

```
$ echo -e "Hello! I am proud to be part of Islingtonians.\n14 < (2+2)"
```

```
Hello! I am proud to be part of Islingtonians.  
14 < (2+2)
```

```
$ pwd
```

```
/home/rajat/WorldCup
```

```
$ cd; pwd
```

```
/home/rajat
```

```
$ cd WorldCup/Japan/
```

```
$ pwd
```

```
/home/rajat/WorldCup/Japan
```

Total Marks : 2

Task 5

```
$ pwd; cd; pwd
```

```
/home/rajat/WorldCup/Japan
```

```
/home/rajat
```

```
$ echo -e "this command will first display the current directory \nand then go to the home  
directory"
```

```
this command will first display the current directory  
and then go to the home directory
```

Total Marks : 2

Task 6

```
$ cd WorldCup/Japan
```

```
$ pwd; cd ..; pwd; cd ..; pwd
```

```
/home/rajat/WorldCup/Japan
```

```
/home/rajat/WorldCup
```

```
/home/rajat
```

\$ echo -e "this command will first show the path to the current directory,\nthen change to the previous directory, again show the current directory,\nchange the directory and finally shows the current working directory"

this command will first show the path to the current directory,
then change to the previous directory, again show the current directory,
change the directory and finally shows the current working directory

Total Marks : 2

4. Usage of the ls command (6 %)

Task 7

\$ cd; pwd

/home/rajat

\$ echo -e "this command will go to the home directory"

this command will go to the home directory

\$ ls

17030954cw2 Desktop NOS WorldCup

\$ echo -e "this command will list all of the contents in the current directory"

this command will list all of the contents in the current directory

\$ ls -a

.	..	Documents	.minimise.ds	Templates
17030954cw2		Downloads	.bash_history	.nano
.bashrc		.gnome	nano.save	WorldCup
.cache		.config	.dbus	Public
Desktop		sda		

\$ echo -e "this command will list all the contents in the directory including the hidden items"

this command will list all the contents in the directory including the hidden items

\$ ls -al

```
total 232
drwxr-xr-x 32 rajat rajat 4096 Feb  2 19:42 .
drwxr-xr-x  3 root  root  4096 Aug 17 11:40 ..
-rw-rw-r-- 1 rajat rajat 4096 Feb  2 19:44 17030954cw2
-rw-r--r-- 1 rajat rajat 5696 Feb  2 19:30 .bashrc
drwxr-xr-x  3 rajat rajat 4096 Aug  4 17:29 Desktop
drwxr-xr-x  5 rajat rajat 4096 Jan 13 08:39 Documents
drwx----- 3 rajat rajat 4096 Aug  3 2018 .kde
drwxrwxr-x  6 rajat rajat 4096 Feb  2 19:42 WorldCup
```

\$ echo -e "this command will list all the contents in the directory including the hidden items in list view"

this command will list all the contents in the directory including the hidden items in list view

Total Marks : 2 + 2 + 2 + 2 = 8

Task 8

```
$ cd; pwd; cd cw2; pwd
```

```
/home/rajat
```

```
bash: cd: cw2: No such file or directory
```

```
/home/rajat
```

```
$ echo -e "this command will go to the home directory and tries to \nopen a non-existing directory and then prints the current location"
```

```
this command will go to the home directory and tries to  
open a non-existing directory and then prints the current location
```

```
$ ls -R WorldCup
```

```
WorldCup: Brazil France Germany Japan
```

```
WorldCup/Brazil:
```

```
WorldCup/France:
```

```
WorldCup/Germany:
```

```
WorldCup/Japan:
```

```
$ echo -e "this command will recursively display all the contents of the directory and subdirectories."
```

```
this command will recursively display all the contents of the directory and subdirectories.
```

Total Marks : 4 + 4 = 8

5. Usage of the cat command (12%)

Task 9

```
$ cd WorldCup/France
```

```
$ cat>testX
```

```
aaabb Aaaaa
```

```
AAAAA
```

```
bbbcc Bbbbb
```

```
BBBBB
```

```
ff--ff Ccccc
```

```
CCCCC
```

```
ccdd Dddd
```

```
DDDD
```

```
^Z [1]+ Stopped cat > testX
```

```
$ cat testX>testY
```

```
$ cat testX>testZ
```

Total Marks : 2

Task 10

```
$ cat testX
```

```
aaabb Aaaaa
```

```
AAAAA
```

```
bbbcc Bbbbb
```

```
BBBBB
```

```
ff--ff Ccccc
```

```
CCCCC
```

```
ccdd Dddd
```

```
DDDD
```

```
$ cat testY
```

```
aaabb Aaaaa
```

```
AAAAA
```

```
bbbcc Bbbbb
```

```
BBBBB
```

```
ff--ff Ccccc
```

```
CCCCC
```

```
ccdd Dddd
```

```
DDDD
```

```
$ cat testZ
```

```
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff-ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD
```

Total Marks : 2

Task 11

```
$ cp testX ../Brazil
```

```
$ cp testY ../Brazil
```

```
$ cp testZ ../Brazil
```

Total Marks : 2

Task 12

```
$ cat testX testY testZ
```

```
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff-ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD  
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff-ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD  
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB
```

```
ff--ff Ccccc
CCCCC
ccdd Dddd
DDDD
```

```
$ cat testX testY testZ > testResult # to create
```

```
$ cat testX - testY >> testResult test # to append
```

```
hi
```

```
hello
```

```
bye          ^Z      [2]+  Stopped          cat testX - testY test >> testResult
```

```
$ cat testResult
```

```
aaabb Aaaaa
AAAAA
bbbcc Bbbbb
BBBBB
ff--ff Ccccc
CCCCC
ccdd Dddd
DDDD
aaabb Aaaaa
AAAAA
bbbcc Bbbbb
BBBBB
ff--ff Ccccc
CCCCC
ccdd Dddd
DDDD
aaabb Aaaaa
AAAAA
bbbcc Bbbbb
BBBBB
ff--ff Ccccc
CCCCC
ccdd Dddd
DDDD
aaabb Aaaaa
AAAAA
bbbcc Bbbbb
BBBBB
ff--ff Ccccc
CCCCC
ccdd Dddd
DDDD
hi
hello
bye
```

Total Marks : 2 + 2 = 4

Task 13

```
$ cat test[XYZ]
```

```
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff--ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD  
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff--ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD  
aaabb Aaaaa  
AAAAA  
bbbcc Bbbbb  
BBBBB  
ff--ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD
```

```
$ echo -e "displays the contents of the testX, testY, testZ files"
```

```
displays the contents of the testX, testY, testZ files
```

Total Marks : 2

6. Usage of the chmod command (12%)

Task 14

```
$ ls -l
```

```
total 16
```

```
-rw-rw-r-- 1 rajat rajat 309 Feb  2 19:46 testResult
```

```
-rw-rw-r-- 1 rajat rajat  74 Feb  2 19:45 testX
```

```
-rw-rw-r-- 1 rajat rajat  74 Feb  2 19:45 testY
```

```
-rw-rw-r-- 1 rajat rajat  74 Feb  2 19:45 testZ
```

```
$ chmod 000 testX
```

```
$ ls -l testX
```

```
----- 1 rajat rajat 74 Feb  2 19:45 testX
```

```
$ cat testX
```

```
cat: testX: Permission denied
```

```
$ cat>>testX
```

```
bash: testX: Permission denied
```

```
$ chmod 600 testX
```

```
$ ls -l testX
```

```
-rw----- 1 rajat rajat 74 Feb  2 19:45 testX
```

```
$ cat testX
```

```
aaabb Aaaaa
```

```
AAAAA
```

```
bbbcc Bbbbb
```

```
BBBBB
```

```
ff--ff Ccccc
```

```
CCCCC
```

```
ccdd Ddddd
```

```
DDDDD
```

```
$ cat>>testX
```

```
written
```

```
^Z      [3]+  Stopped          cat >> testX
```

Total Marks : 6

Task 15

```
$ cd ..
```

```
$ ls -ld France
```

```
drwxrwxr-x 2 rajat rajat 4096 Feb  2 19:45 France
```

```
$ chmod 000 France
```

```
$ ls -ld France
```

```
d----- 2 rajat rajat 4096 Feb  2 19:45 France
```

```
$ cat France/testX
```

```
cat: France/testX: Permission denied
```

```
$ touch France/newFile
```

```
touch: cannot touch 'France/newFile': Permission denied
```

```
$ ls -a France
```

```
ls: cannot open directory 'France': Permission denied
```

```
$ chmod 700 France
```

```
$ ls -ld France
```

```
drwx----- 2 rajat rajat 4096 Feb  2 19:45 France
```

```
$ cat France/testX
```

```
aaabb Aaaaa
```

```
AAAAA
```

```
bbbcc Bbbbb
```

```
BBBBB
```

```
ff--ff Ccccc
```

```
CCCCC
```

```
ccdd Ddddd
```

```
DDDDD
```

```
written
```

```
$ touch France/newFile
```

```
$ ls -a France
```

```
. .. newFile testResult testX testY testZ
```

Total Marks : 6

7. Usage of the grep command (10%)

Task 16

```
$ cd Brazil
```

```
$ grep bb testX
```

```
aaabb Aaaaa  
bbbcc Bbbbbb
```

```
$ echo -e "to search all the lines with 'bb' in testX file"
```

```
to search all the lines with 'bb' in testX file
```

```
$ grep -v bb testX
```

```
AAAAA  
BBBBB  
ff--ff Ccccc  
CCCCC  
ccdd Ddddd  
DDDDD
```

```
$ echo -e "to search all the lines without 'bb' in testX file"
```

```
to search all the lines without 'bb' in testX file
```

```
$ grep -n bb testX
```

```
1:aaabb Aaaaa  
3:bbbcc Bbbbbb
```

```
$ echo -e "to search all the no of lines and lines with 'bb' in testX file"
```

```
to search all the no of lines and lines with 'bb' in testX file
```

```
$ grep -l bb *
```

```
testX  
testY  
testZ
```

```
$ echo -e "to search all the files which contains 'bb'"
```

```
to search all the files which contains 'bb'
```

```
$ grep -i bb *
```

```
testX:aaabb Aaaaa  
testX:bbbcc Bbbbbb  
testX:BBBBB  
testY:aaabb Aaaaa  
testY:bbbcc Bbbbbb  
testY:BBBBB  
testZ:aaabb Aaaaa  
testZ:bbbcc Bbbbbb  
testZ:BBBBB
```



```
$ echo -e "to search all the files which contains 'bb' or 'BB' ignoring the case"
```

```
to search all the files which contains 'bb' or 'BB' ignoring the case
```

```
$ grep -i BB *
```

```
testX:aaabb Aaaaa  
testX:bbbcc Bbbbb  
testX:BBBBB  
testY:aaabb Aaaaa  
testY:bbbcc Bbbbb  
testY:BBBBB  
testZ:aaabb Aaaaa  
testZ:bbbcc Bbbbb  
testZ:BBBBB
```

```
$ echo -e "to search all the files which contains 'bb' or 'BB' ignoring the case"
```

```
to search all the files which contains 'bb' or 'BB' ignoring the case
```

```
$ grep -c bb *
```

```
testX:2  
testY:2  
testZ:2
```

```
$ echo -e "to list the files and the count of occurrence of 'bb' in them"
```

```
to list the files and the count of occurrence of 'bb' in them
```

```
$ grep '^A' *
```

```
testX:AAAAA  
testY:AAAAA  
testZ:AAAAA
```

```
$ echo -e "to list the files and the lines which start with 'A' in them"
```

```
to list the files and the lines which start with 'A' in them
```

```
$ grep -n '^' testX
```

```
1:aaabb Aaaaa  
2:AAAAA  
3:bbbcc Bbbbb  
4:BBBBB  
5:ff--ff Ccccc  
6:CCCCC  
7:ccdd Ddddd  
8:DDDDD
```

```
$ echo -e "to list all the lines with number of the file testX"
```

```
to list all the lines with number of the file testX
```

Total Marks : 10

8. Aliasing (19%)

Task 17

```
$ alias lsR='ls -R'
```

```
$ alias lsI='ls -l'
```

```
$ alias
```

```
alias l='ls -CF'
```

```
alias la='ls -A'
```

```
alias ll='ls -aF'
```

```
alias lsR='ls -R'
```

```
alias lsI='ls -l'
```

```
$ cd; pwd;
```

```
/home/rajat
```

```
$ lsI
```

```
total 72
```

```
-rw-rw-r-- 1 rajat rajat 16384 Feb  2 19:48 17030954cw2
```

```
drwxr-xr-x 3 rajat rajat  4096 Aug  4 17:29 Desktop
```

```
drwxr-xr-x 5 rajat rajat  4096 Jan 13 08:39 Documents
```

```
drwxr-xr-x 5 rajat rajat  4096 Feb  2 13:11 Downloads
```

```
drwxrwxr-x 3 rajat rajat  4096 Feb  2 19:32 sda
```

```
drwxrwxr-x 6 rajat rajat  4096 Feb  2 19:42 WorldCup
```

```
$ lsR WorldCup # home directory too large for recursive listing
```

```
WorldCup:
```

```
Brazil France Germany Japan
```

```
WorldCup/Brazil:
```

```
testX testY testZ
```

```
WorldCup/France:
```

```
newFile testResult testX testY testZ
```

```
WorldCup/Germany:
```

```
WorldCup/Japan:
```

Total Marks : 2 + 2 = 4

Task 18

```
$ unalias lsR
```

```
$ unalias lsI
```

```
$ alias
```

```
alias l='ls -CF'
```

```
alias la='ls -A'
```

```
alias ll='ls -aF'
```

Total Marks : 2

Task 19

```
$ echo "alias lsR='ls -R'" >> ~/.bashrc
```

```
$ echo "alias lsI='ls -l'" >> ~/.bashrc
```

```
$ finger # current login details
```

Login	Name	Tty	Idle	Login Time	Office	Office Phone
rajat	Shrestha R.	tty7	6:03	Feb 2 13:48	(:0)	

```
$ exit
```

There are stopped jobs.

```
$ exit
```

Script done on Sat 02 Feb 2019 07:52:16 PM +0545

Script started on Sat 02 Feb 2019 08:04:01 PM +0545

```
rajat@L10W-B:~$ PS1='$PWD> '
```

```
$ finger # new session
```

Login	Name	Tty	Idle	Login Time	Office	Office Phone
rajat	Shrestha R.	tty7	7	Feb 2 19:56	(:0)	

```
$ lsI
```

total 80

```
-rw-rw-r-- 1 rajat rajat 3466 Feb 2 20:02 17030954
-rw-rw-r-- 1 rajat rajat 20312 Feb 2 19:52 17030954cw2
drwxr-xr-x 3 rajat rajat 4096 Aug 4 17:29 Desktop
drwxr-xr-x 5 rajat rajat 4096 Jan 13 08:39 Documents
drwxr-xr-x 5 rajat rajat 4096 Feb 2 13:11 Downloads
drwxrwxr-x 6 rajat rajat 4096 Feb 2 19:42 WorldCup
```

```
$ lsR WorldCup # home directory too large for recursive listing
```

WorldCup:

Brazil France Germany Japan

WorldCup/Brazil:

testX testY testZ

WorldCup/France:

newFile testResult testX testY testZ

WorldCup/Germany:

WorldCup/Japan:

Total Marks : 2 + 2 = 4

Task 20

```
$ echo "alias noAllf='ls -a | wc -l'" >> ~/.bashrc
```

Total Marks : 3**# Task 21**

```
$ echo "alias noAsubsir='ls -aR | wc -l'" >> ~/.bashrc
```

Total Marks : 3**# Task 22**

```
$ echo "alias noAcs='cd; pwd; ls -aR | grep ^[gtw] | wc -l'" >> ~/.bashrc
```

```
$ source ~/.bashrc
```

```
rajat@L10W-B:~$ PS1='$PWD> '
```

```
$ alias
```

```
alias l='ls -CF'
```

```
alias la='ls -A'
```

```
alias ll='ls -aF'
```

```
alias lsR='ls -R'
```

```
alias lsI='ls -l'
```

```
alias noAcs='cd; pwd; ls -aR | grep ^[gtw] | wc -l'
```

```
alias noAllf='ls -a | wc -l'
```

```
alias noAsubsir='ls -aR | wc -l'
```

Total Marks : 3

9. Usage of your own commands (3%)**# Task 23**

\$ noAllf

47

Task 24

\$ noAsubsir

62845

Task 25

\$ noAcs

/home/rajat
6140

10. Command history (6%)**# Task 26**

\$ history 10

```
1858 PS1='$PWD> '  
1859 alias  
1860 # Task 23  
1861 noAllf  
1862 # Task 24  
1863 noAsubsir  
1864 # Task 25  
1865 noAcs  
1866 #history  
1867 history 10
```

\$ clear

Task 27

\$!-7

```
noAcs  
/home/rajat  
6140
```

Task 28

\$ fc -e - c #recent command starting with c

```
clear
```

\$ exit

Script done on Sat 02 Feb 2019 08:05:44 PM +0545

CONCLUSION

This coursework is based doing various tasks as defined by using UNIX shell scripting to manipulate various files and directories which can also be done in any POSIX certified OS in this case 'elementary OS' which is based on a popular Linux distribution Ubuntu. To complete the given tasks various UNIX based operations to create, modify, delete, search and navigate the files and directories were used. The process was scripted and documented properly. Several operations which required a brief explanations were also described using the echo command and the '#' symbol was used to indicate various steps and notify the viewer about several operations. The tasks (i.e. 1-28) were executed successfully as directed and are recorded in the script file named 17030954cw2. In addition, some undesired texts in the script file was also cleared for ease of inspecting. The script file is also submitted along with this documentation of the coursework.

Hence, deeper understanding on UNIX and UNIX shell was gained through various websites and books Tasks were completed successfully by using various commands and their actions were justified.

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