

CSc 3320: Systems Programming

Spring 2021

Homework

3: Total points 100

Submission instructions:

1. Create a Google doc for each homework assignment submission.
2. Start your responses from page 2 of the document and copy these instructions on page 1.
3. Fill in your name, campus ID and panther # in the fields provided. If this information is missing in your document TWO POINTS WILL BE DEDUCTED per submission.
4. Keep this page 1 intact on all your submissions. If this *submissions instructions* page is missing in your submission TWO POINTS WILL BE DEDUCTED per submission.
5. Each homework will typically have 2-3 PARTS, where each PART focuses on specific topic(s).
6. Start your responses to each PART on a new page.
7. If you are being asked to write code copy the code into a separate txt file and submit that as well.
8. If you are being asked to test code or run specific commands or scripts, provide the evidence of your outputs through a screenshot and copy the same into the document.
9. Upon completion, download a .PDF version of the document and submit the same.

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Campus ID: hgunerli1

Panther #: 002504797

10 pts for the neatness factor of your presentation.

PART 1: 30pts

1. For each command tryout at least one example provided in **Chapter 3** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.

Part II : 30pts

2. For each command tryout at least one example provided in **Chapter 4** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.

Part III : 30pts

3. For each command tryout at least one example provided in **Chapter 5** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.

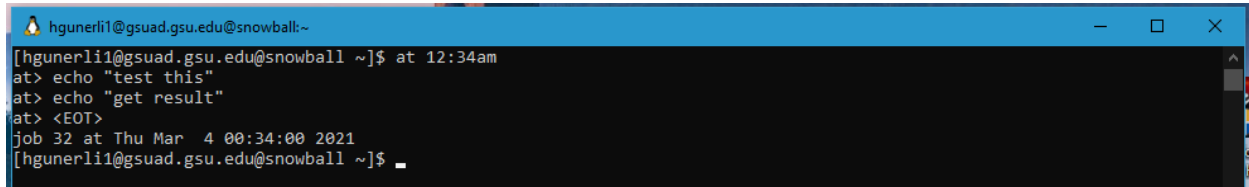
Part I: Chapter 3

1. at

Command name: at

Usage: allows you to schedule or delete jobs based on time.

Output:

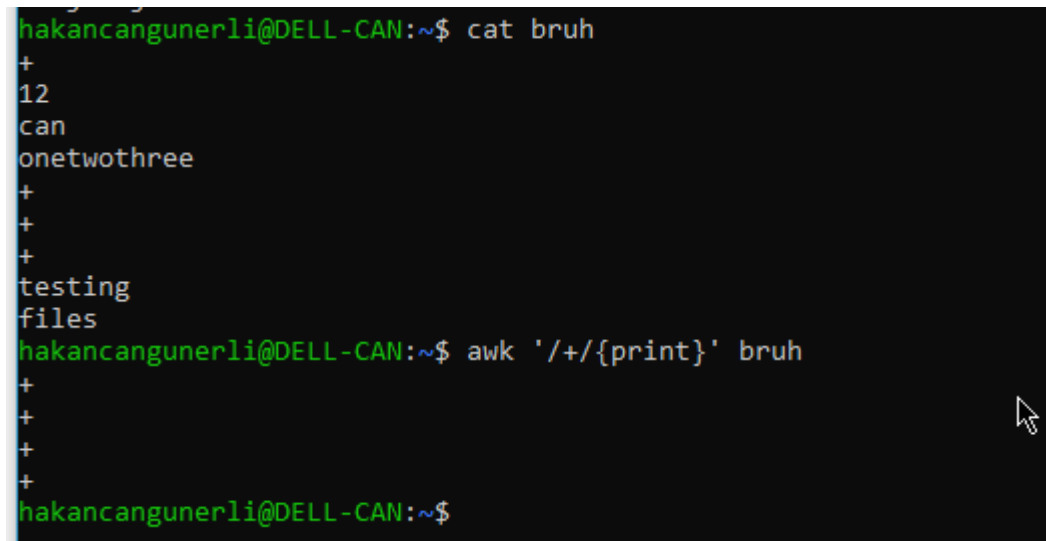
A terminal window with a blue title bar showing the user 'hgunerli1@gsuad.gsu.edu@snowball'. The prompt is '[hgunerli1@gsuad.gsu.edu@snowball ~]\$'. The user enters 'at 12:34am', followed by 'at> echo "test this"', 'at> echo "get result"', and 'at> <EOT>'. The terminal then shows 'job 32 at Thu Mar 4 00:34:00 2021' and returns to the prompt '[hgunerli1@gsuad.gsu.edu@snowball ~]\$'.

2. awk

Command name: awk

Usage: finding patterns in files/texts.

Output:

A terminal window with a black background and green text. The prompt is 'hakancangunerli@DELL-CAN:~\$'. The user enters 'cat bruh', and the terminal outputs '+', '12', 'can', 'onetwothree', '+', '+', '+', 'testing', 'files'. Then the user enters 'awk '/+/{print}' bruh', and the terminal outputs '+', '+', '+', '+'. The prompt returns to 'hakancangunerli@DELL-CAN:~\$'.

3. biff

Command name: biff

Usage: mail notification, does not exist

Output:

```
hgunerli1@gsuad.gsu.edu@snowball:~  
[hgunerli1@gsuad.gsu.edu@snowball ~]$ biff y  
-bash: biff: command not found  
[hgunerli1@gsuad.gsu.edu@snowball ~]$ biff  
-bash: biff: command not found  
[hgunerli1@gsuad.gsu.edu@snowball ~]$
```

4. cmp

Command name: cmp

Usage: check two files for equality byte by byte.

Output:

```
hgunerli1@gsuad.gsu.edu@snowball ~]$ cmp -l checkError.sh simple.sh  
1 44 43  
2 43 41  
13 57 43  
14 52 12  
15 40 43  
16 103 123  
17 150 151  
18 145 155  
19 143 160  
20 153 154  
21 40 145  
22 105 40  
23 162 123  
24 162 143  
25 157 162  
26 162 151  
27 40 160  
28 123 164  
29 143 12  
30 162 43  
31 151 12  
32 160 145  
33 164 143  
34 40 150  
35 52 157  
36 57 40  
37 12 103  
38 145 157  
39 143 156  
40 150 147  
41 157 162  
42 40 141  
43 42 164  
44 124 165  
45 162 154  
46 171 141  
47 40 164  
48 164 151  
50 40 156  
51 146 163  
52 151 41  
53 156 40  
54 144 116  
55 40 157  
56 157 167  
57 165 40  
58 164 171  
59 40 157  
60 163 165  
61 157 40
```

5. compress

Command name: compress

Usage: compacts the file.

Output:

```
[hgunerlii@gsuad.gsu.edu@snowball ~]$ ls
Lab4  checkError.sh  csc3320  dead.letter  hello.sh  history.txt  homeworks  lab6  program3  simple.sh
[hgunerlii@gsuad.gsu.edu@snowball ~]$ compress checkError.sh
-bash: compress: command not found
[hgunerlii@gsuad.gsu.edu@snowball ~]$ compress -cv checkError.sh
-bash: compress: command not found
[hgunerlii@gsuad.gsu.edu@snowball ~]$
```

6. cpio

Command name: cpio

Usage: create a backup files

Output:

```
[hgunerlii@gsuad.gsu.edu@snowball ~]$ cpio -ov > backup
checkError.sh
checkError.sh
simple.sh
simple.sh
history.txt
history.txt
4 blocks
[hgunerlii@gsuad.gsu.edu@snowball ~]$ ls
Lab4  checkError.sh  dead.letter  history.txt  lab6  simple.sh
backup  csc3320  hello.sh  homeworks  program3
[hgunerlii@gsuad.gsu.edu@snowball ~]$ cat backup
0qF000000000" @h5@checkError.sh$#/bin/bash
/* Check Error Script */
echo "Try to find out some errors!!!"
# Search for the words which can be matched by regex [^a]*ce
# And save the output to file "Result"
echo "The regex [^a]*ce can match the string(s):" > Result
grep '^a[^a]*ce$' << END >> Result
lance
ace
brace
decide
piece
-ENDHERE
# Check the existence of file "Result"
# Send the content in "Result" to your mailbox
# $1 is replaced by your campusID
ls mail $1 < Result
# $1 is replaced by your campusID
echo "The result has been sent to ${1}@student.gsu.edu"
echo "Congratulations! You have corrected all the errors!"
0qP000000000"
simple.sh#!/bin/bash
#
#Simple Script
#
echo Congratulations! Now you know shell script!
echo -n "The current time and date are: "
date
0qT000000000" 0w
97 ls
98 cp ../../Lab2_P2/ Public/Submission/Lab2/
99 ls
```

7. cron

Command name: cron

Usage: scheduled jobs, similar to at

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cron
cron: can't open or create /var/run/crond.pid: Permission denied
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sudo cron
[sudo] password for hakancangunerli:
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ _
```

8. crontab

Command name: crontab

Usage: schedule jobs at a scheduled time

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ crontab -e
no crontab for hakancangunerli - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: 1
crontab: installing new crontab
"/tmp/crontab.esURER/crontab":24: bad minute
errors in crontab file, can't install.
Do you want to retry the same edit? (y/n) y
crontab: installing new crontab
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

9. crypt

Command name: crypt

Usage: encrypt files, however it is not used that much anymore since it is easy to break for today's standards .

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ crypt testing.csv
-bash: crypt: command not found
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

10. diff

Command name: diff

Usage: compare and find differences between files

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ diff example.txt testing.csv
1,2c1,20
< testing
<
---
> Region,Rep
> East,Jones
> Central,Kivell
> Central,Jardine
> Central,Gill
> West,Sorvino
> East,Jones
> Central,Andrews
> Central,Jardine
> West,Thompson
> East,Jones
> Central,Morgan
> East,Howard
> East,Parent
> East,Jones
> Central,Smith
> East,Jones
> Central,Morgan
> East,Jones
> East,Parent
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

11. dump

Command name: dump

Usage: backed up file systems

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ dump
-bash: dump: command not found
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sudo dump
sudo: dump: command not found
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ dump -W
-bash: dump: command not found
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ dump -W \ -w
-bash: dump: command not found
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

12. egrep

Command name: egrep

Usage: similar to grep and fgrep, match pattern this one has extended regex.

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ egrep '^East|Central$' testing.csv
East,Jones
East,Jones
East,Jones
East,Howard
East,Parent
East,Jones
East,Jones
East,Jones
East,Parent
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```


13. fgrep

Command name: fgrep

Usage: filter fixed character strings

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ fgrep -i "Central" testing.csv
Central,Kivell
Central,Jardine
Central,Gill
Central,Andrews
Central,Jardine
Central,Morgan
Central,Smith
Central,Morgan
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ cat testing.csv
Region,Rep
East,Jones
Central,Kivell
Central,Jardine
Central,Gill
West,Sorvino
East,Jones
Central,Andrews
Central,Jardine
West,Thompson
East,Jones
Central,Morgan
East,Howard
East,Parent
East,Jones
Central,Smith
East,Jones
Central,Morgan
East,Jones
East,Parent
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$
```

14. find

Command name: find

Usage: search for files

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ find *csv
testing.csv
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ find *txt
find: '*txt': No such file or directory
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ nano example.txt
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ find *txt
example.txt
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

15. grep

Command name: grep

Usage: print lines that match patterns, like fgrep except fgrep is not for regexes.

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ grep -i "east" testing.csv
East,Jones
East,Jones
East,Jones
East,Howard
East,Parent
East,Jones
East,Jones
East,Jones
East,Jones
East,Parent
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

16. gunzip

Command name: gunzip

Usage: decompress files, antagonist to gzip

Output:

```

hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ gzip testing.csv
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv.gz  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ gunzip testing.csv.gz
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ _

```

17. gzip

Command name: gzip

Usage: compress files, similar to tar.

Output:

```

hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ gzip testing.csv
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv.gz  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ uncompress testing.csv.gz
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$

```

18. ln

Command name: ln

Usage: linking files.

Output:

```
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls  
Homework3_csc3320.docx  example.txt  testing.csv  ~$mework3_csc3320.docx  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ in testing.csv symbolic_link_for_testing  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls  
Homework3_csc3320.docx  example.txt  symbolic_link_for_testing  testing.csv  ~$mework3_csc3320.docx  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ is -l symbolic_link_for_testing  
-rw-rw-r-- 2 hakan@hakanerli 200 Mar  3 22:14 symbolic_link_for_testing  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat symbolic_link_for_testing  
Region,Rep  
East,Jones  
Central,Kivell  
Central,Jardine  
Central,Gill  
West,Sorvino  
East,Jones  
Central,Andrews  
Central,Jardine  
West,Thompson  
East,Jones  
Central,Morgan  
East,Howard  
East,Parent  
East,Jones  
Central,Smith  
East,Jones  
Central,Morgan  
East,Jones  
East,Parent  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

19. tar

Command name: tar

Usage: for compression

Output:

```
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ tar -cvf testing.tar testing.csv  
testing.csv  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls  
Homework3_csc3320.docx  example.txt  testing.csv  testing.tar  ~$mework3_csc3320.docx  
hakan@hakanerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

20. time

Command name: time

Usage: how long a command takes to run.

Output:

```

hakan@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ time fgrep -i 'central' testing.csv
Central,Kivell
Central,Jardine
Central,Gill
Central,Andrews
Central,Jardine
Central,Morgan
Central,Smith
Central,Morgan

real    0m0.005s
user    0m0.003s
sys      0m0.000s
hakan@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$

```

21. mount

Command name: mount

Usage: mount filesystems.

Output:

```

hakan@DELL-CAN:/mnt/d/Users/hakan/Desktop/jl es yu/csc3320 (sys)/hw3$ mount -l
/dev/sdb on / type ext4 (rw,relatime,discard,errors=remount-ro,data=ordered)
none on /mnt/usb1 type tmpfs (rw,relatime)
tools on /init type 9p (ro,relatime,dirsync,aname=tools;fmask=022,loose,access=client,msize=65536,trans=fd,rfd=6,wfd=6)
none on /dev type devtmpfs (rw,nosuid,relatime,size=4022616K,nr_inodes=1005654,mode=755)
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,noatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,noatime)
devpts on /dev/pts type devpts (rw,nosuid,noexec,noatime,gid=5,mode=620,ptmxmode=000)
none on /run type tmpfs (rw,nosuid,noexec,noatime,mode=755)
none on /run/lock type tmpfs (rw,nosuid,nodev,noexec,noatime)
none on /run/shm type tmpfs (rw,nosuid,nodev,noatime)
none on /run/user type tmpfs (rw,nosuid,nodev,noexec,noatime,mode=755)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,relatime)
tmpfs on /sys/fs/cgroup type tmpfs (rw,nosuid,nodev,noexec,relatime,mode=755)
cgroup2 on /sys/fs/cgroup/unified type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/cpu type cgroup (rw,nosuid,nodev,noexec,relatime,cpu)
cgroup on /sys/fs/cgroup/cpusacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpuacct)
cgroup on /sys/fs/cgroup/bklto type cgroup (rw,nosuid,nodev,noexec,relatime,bklto)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
cgroup on /sys/fs/cgroup/net_cls type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_prio)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/rdma type cgroup (rw,nosuid,nodev,noexec,relatime,rdma)
drivers on /usr/lib/usb/drivers type 9p (ro,nosuid,nodev,noatime,dirsync,aname=drivers;fmask=333;dmask=222,mmap,access=client,msize=65536,trans=fd,rfd=4,wfd=4)
lib on /usr/lib/usb/lib type 9p (ro,nosuid,nodev,noatime,dirsync,aname=lib;fmask=333;dmask=222,mmap,access=client,msize=65536,trans=fd,rfd=4,wfd=4)
drvfs on /mnt/c type 9p (rw,noatime,dirsync,aname=drvfs;path=C:\;uid=1000;gid=1000;symlinkroot=/mnt/,mmap,access=client,msize=262144,trans=virtio)
drvfs on /mnt/d type 9p (rw,noatime,dirsync,aname=drvfs;path=D:\;uid=1000;gid=1000;symlinkroot=/mnt/,mmap,access=client,msize=262144,trans=virtio)
hakan@DELL-CAN:/mnt/d/Users/hakan/Desktop/jl es yu/csc3320 (sys)/hw3$

```

22. tr

Command name: tr

Usage: translate and delete characters

Output:

```

hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  ~$mework3_csc3320.docx
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat testing.csv | tr "[a-z]" "[A-Z]"
REGION,REP
EAST,JONES
CENTRAL,KIVELL
CENTRAL,JARDINE
CENTRAL,GILL
WEST,SORVINO
EAST,JONES
CENTRAL,ANDREWS
CENTRAL,JARDINE
WEST,THOMPSON
EAST,JONES
CENTRAL,MORGAN
EAST,HOWARD
EAST,PARENT
EAST,JONES
CENTRAL,SMITH
EAST,JONES
CENTRAL,MORGAN
EAST,JONES
EAST,PARENT
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$

```

23. od

Command name: od

Usage: output content as octal values

Output:

```

hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ od -b testing.csv
0000000 122 145 147 151 157 156 054 122 145 160 015 012 105 141 163 164
0000020 054 112 157 156 145 163 015 012 103 145 156 164 162 141 154 054
0000040 113 151 166 145 154 154 015 012 103 145 156 164 162 141 154 054
0000060 112 141 162 144 151 156 145 015 012 103 145 156 164 162 141 154
0000100 054 107 151 154 154 015 012 127 145 163 164 054 123 157 162 166
0000120 151 156 157 015 012 105 141 163 164 054 112 157 156 145 163 015
0000140 012 103 145 156 164 162 141 154 054 101 156 144 162 145 167 163
0000160 015 012 103 145 156 164 162 141 154 054 112 141 162 144 151 156
0000200 145 015 012 127 145 163 164 054 124 150 157 155 160 163 157 156
0000220 015 012 105 141 163 164 054 112 157 156 145 163 015 012 103 145
0000240 156 164 162 141 154 054 115 157 162 147 141 156 015 012 105 141
0000260 163 164 054 110 157 167 141 162 144 015 012 105 141 163 164 054
0000300 120 141 162 145 156 164 015 012 105 141 163 164 054 112 157 156
0000320 145 163 015 012 103 145 156 164 162 141 154 054 123 155 151 164
0000340 150 015 012 105 141 163 164 054 112 157 156 145 163 015 012 103
0000360 145 156 164 162 141 154 054 115 157 162 147 141 156 015 012 105
0000400 141 163 164 054 112 157 156 145 163 015 012 105 141 163 164 054
0000420 120 141 162 145 156 164 015 012
0000430
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$

```

24. ul

Command name: ul

Usage: underline text

Output:

```
hakancangunerli@DELL-CAN: /r  × + ▾  
hakancangunerli@DELL-CAN:/mnt/c/Users/hakan$ echo $'t\b_e\b_s\b_t\b_i\b_\b_n\b_g\b_ world' | ul  
testing world  
hakancangunerli@DELL-CAN:/mnt/c/Users/hakan$ |
```

25. perl

Command name: perl

Usage: writing commands using perl, a programming language.

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ nano example_perl  
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ perl example_perl  
Hello, perlhakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat example_perl  
print "Hello, perl";  
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ _
```

26. sed

Command name: sed

Usage: stream editing, matching.

Output:

```

hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sed 's/East/Central/' testing.csv
Region,Rep
Central,Jones
Central,Kivell
Central,Jardine
Central,Gill
West,Sorvino
Central,Jones
Central,Andrews
Central,Jardine
West,Thompson
Central,Jones
Central,Morgan
Central,Howard
Central,Parent
Central,Jones
Central,Smith
Central,Jones
Central,Morgan
Central,Jones
Central,Parent
hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat testing.csv
Region,Rep
East,Jones
Central,Kivell
Central,Jardine
Central,Gill
West,Sorvino
West,Sorvino
East,Jones
Central,Andrews
Central,Jardine
West,Thompson
East,Jones
Central,Morgan
East,Howard
East,Parent
East,Jones
Central,Smith
East,Jones
Central,Morgan
East,Jones
East,Parent
hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$

```

27. sort

Command name: sort text files.

Usage: sort testing.csv

Output:

```

hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ cat testing.csv
Region,Rep
East,Jones
Central,Kivell
Central,Jardine
Central,Gill
West,Sorvino
East,Jones
Central,Andrews
Central,Jardine
West,Thompson
East,Jones
Central,Morgan
East,Howard
East,Parent
East,Jones
Central,Smith
East,Jones
Central,Morgan
East,Jones
East,Parent
hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ sort testing.csv
Central,Andrews
Central,Gill
Central,Jardine
Central,Jardine
Central,Kivell
Central,Morgan
Central,Morgan
Central,Smith
East,Howard
East,Jones
East,Jones
East,Jones
East,Jones
East,Jones
East,Jones
East,Parent
East,Parent
Region,Rep
West,Sorvino
West,Thompson
hakan@anguner11@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$

```


28. su

Command name: su

Usage: creates a temporary shell. This won't work for ubuntu since su is disabled by default.

Output

```
hakancangunerli@DELL-CAN:~$ su
Password:
su: Authentication failure
hakancangunerli@DELL-CAN:~$ sudo -i
/etc/update-motd.d/90-updates-available: 7: /usr/share/update-notifier/notify-updates-outdated: not found
run-parts: /etc/update-motd.d/90-updates-available exited with return code 127
/etc/update-motd.d/91-release-upgrade: 4: lsb_release: not found
ERROR: could not generate new MOTD

This message is shown once once a day. To disable it please create the
/root/.hushlogin file.
root@DELL-CAN:~#
```

29. umount

Command name: umount

Usage: unmount a filesystem, antagonist to mount

Output

[illegible]

Output

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/syshw
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ cat testing.csv
Region,Rep
East,Jones
Central,Kivell
Central,Jardine
Central,Gill
West,Sorvino
East,Jones
Central,Andrews
Central,Jardine
West,Thompson
East,Jones
Central,Morgan
East,Howard
East,Parent
East,Jones
Central,Smith
East,Jones
Central,Morgan
East,Jones
East,Parent
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ sort testing.csv | uniq -c
  1 Central,Andrews
  1 Central,Gill
  2 Central,Jardine
  1 Central,Kivell
  2 Central,Morgan
  1 Central,Smith
  1 East,Howard
  6 East,Jones
  2 East,Parent
  1 Region,Rep
  1 West,Sorvino
  1 West,Thompson
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$
```

32. whoami

Command name: whoami

Usage: print the userid

Output

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop$ whoami
hakancangunerli
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop$ _
```

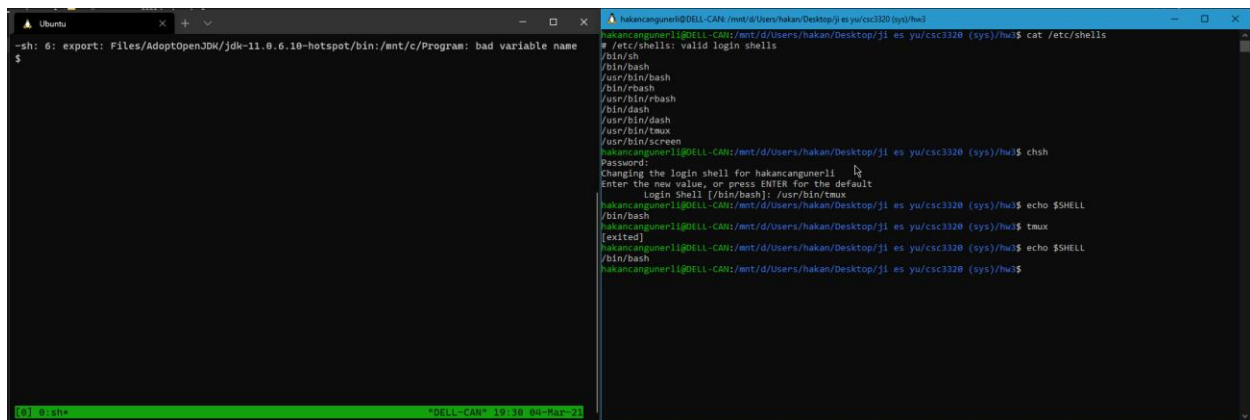
Part II: Chapter 4

1. chsh

Command name: chsh

Usage: changing the shell.

Output:



```
Ubuntu
--sh: 6: export: Files/AdoptOpenJDK/jdk-11.0.6.10-hotspot/bin:/mnt/c/Program: bad variable name
$

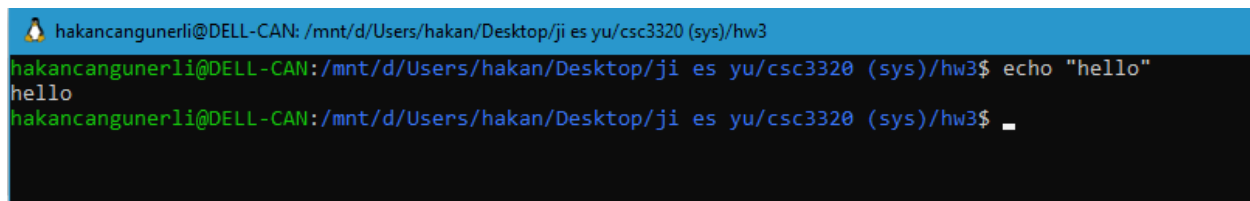
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/bin/dash
/usr/bin/dash
/usr/bin/tmux
/usr/bin/screen
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ chsh
Changing the login shell for hakancangunerli
Enter the new value, or press ENTER for the default
Login Shell (/bin/bash): /usr/bin/tmux
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ echo $SHELL
/bin/bash
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ tmux
[exited]
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ echo $SHELL
/bin/bash
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

2. echo

Command name: echo

Usage: output a line of text

Output:



```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ echo "hello"
hello
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

3. kill

Command name: kill

Usage: kill a process

Output:

```
hakancangunerli@DELL-CAN: /mnt/c/Users/hakan$ kill -l
1) SIGHUP      2) SIGINT      3) SIGQUIT     4) SIGILL      5) SIGTRAP
6) SIGABRT     7) SIGBUS      8) SIGFPE      9) SIGKILL     10) SIGUSR1
11) SIGSEGV    12) SIGUSR2    13) SIGPIPE    14) SIGALRM     15) SIGTERM
16) SIGSTKFLT  17) SIGCHLD    18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN    22) SIGTTOU    23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM  27) SIGPROF    28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS     34) SIGRTMIN   35) SIGRTMIN+1 36) SIGRTMIN+2 37) SIGRTMIN+3
38) SIGRTMIN+4 39) SIGRTMIN+5 40) SIGRTMIN+6 41) SIGRTMIN+7 42) SIGRTMIN+8
43) SIGRTMIN+9 44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5 60) SIGRTMAX-4 61) SIGRTMAX-3 62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
```

4. nohup

Command name: nohup

Usage: run the command even if the session gets disconnected.

Output:

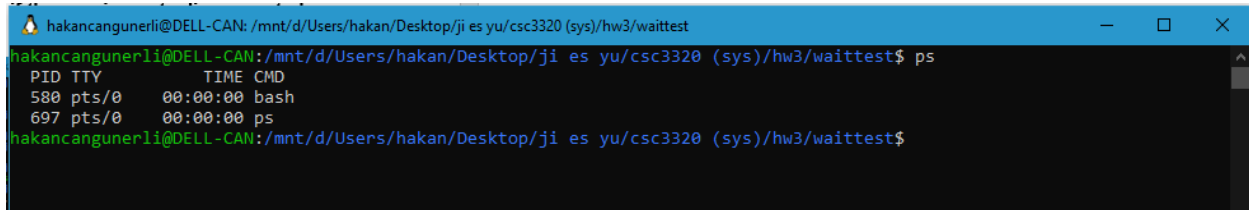
```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ nohup
nohup: missing operand
Try 'nohup --help' for more information.
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  testing.csv  ~$mework3_csc3320.docx
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ nano test.sh
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./test.sh
hello
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  test.sh  testing.csv  ~$mework3_csc3320.docx
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ nohup test.sh
nohup: ignoring input and appending output to 'nohup.out'
nohup: failed to run command 'test.sh': No such file or directory
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  example.txt  nohup.out  test.sh  testing.csv  ~$mework3_csc3320.docx
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./nohup.out
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

5. ps

Command name: ps

Usage: running processes of a system

Output:

A terminal window titled 'hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest'. The prompt is 'hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest\$'. The command 'ps' has been entered, and the output is displayed as a table with columns PID, TTY, TIME, and CMD. The first row shows PID 580, TTY pts/0, TIME 00:00:00, and CMD bash. The second row shows PID 697, TTY pts/0, TIME 00:00:00, and CMD ps.

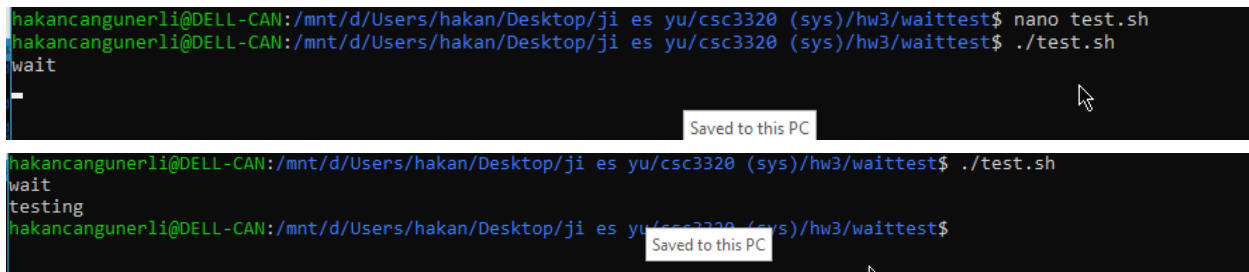
```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ ps
PID TTY          TIME CMD
 580 pts/0        00:00:00 bash
 697 pts/0        00:00:00 ps
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$
```

6. sleep

Command name: sleep

Usage: wait for an execution of a script

Output:

Two terminal window screenshots. The first screenshot shows the prompt 'hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest\$' followed by the command 'nano test.sh' and then './test.sh'. The output of the script is 'wait' followed by a blank line. The second screenshot shows the same prompt and command, but the output is 'wait' followed by 'testing' on the next line. Both screenshots have a 'Saved to this PC' notification box at the bottom.

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ nano test.sh
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ ./test.sh
wait
-

hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ ./test.sh
wait
testing
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$
```

7. eval

Command name: eval

Usage: execute commands, similar to exec.

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ nano tst.sh
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ ./tst.sh
total 0
drwxrwxrwx 1 hakancangunerli hakancangunerli 4096 Mar  4 20:21 .
drwxrwxrwx 1 hakancangunerli hakancangunerli 4096 Mar  4 20:18 ..
-rwxrwxrwx 1 hakancangunerli hakancangunerli   37 Mar  4 20:15 test.sh
-rwxrwxrwx 1 hakancangunerli hakancangunerli   31 Mar  4 20:21 tst.sh
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ cat tst.sh
COMMAND="ls -la"
eval $COMMAND
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ _
```

8. exec

Command name: exec

Usage: exec command allows the user to execute a command from the bash.

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sudo su
[sudo] password for hakancangunerli:
root@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3# exec ls -la
total 964
drwxrwxrwx 1 hakancangunerli hakancangunerli  4096 Mar  4 19:40 .
drwxrwxrwx 1 hakancangunerli hakancangunerli  4096 Mar  4 18:04 ..
-rwxrwxrwx 1 hakancangunerli hakancangunerli 983576 Mar  4 19:39 Homework3_csc3320.docx
-rwxrwxrwx 1 hakancangunerli hakancangunerli    9 Mar  4 18:27 example.txt
-rwxrwxrwx 1 hakancangunerli hakancangunerli   13 Mar  4 19:36 test.sh
-rwxrwxrwx 1 hakancangunerli hakancangunerli   280 Mar  3 21:14 testing.csv
-rwxrwxrwx 1 hakancangunerli hakancangunerli   162 Mar  4 18:04 '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

9. exit

Command name: exit

Usage: exit the terminal

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sudo su
[sudo] password for hakancangunerli:
root@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3# exit
exit
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

10. login

Command name: login

Usage: login to user

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sudo su
root@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3# login
DELL-CAN login: hakancangunerli
Password:
/etc/update-motd.d/90-updates-available: 7: /usr/share/update-notifier/notify-updates-outdated: not found
run-parts: /etc/update-motd.d/90-updates-available exited with return code 127
/etc/update-motd.d/91-release-upgrade: 4: lsb_release: not found

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

hakancangunerli@DELL-CAN:~$
```

11. shift

Command name: shift

Usage: shift parameters

Output:


```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat test.sh
echo "hello"
echo "amount of arguments $"
echo "before shift $1"
shift 2
echo "after shift $1"
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./test.sh
hello
amount of arguments
before shift
after shift
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ sh ./test.sh X1 X2 X3 X4
hello
amount of arguments X1 X2 X3 X4
before shift X1
after shift X3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ _
```

12. tee

Command name: tee

Usage: tee allows to read from the input and write to an output/file.

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/syshw
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ echo "test" | tee -a filename.txt
test
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ ls
Homework3_csc3320.docx  filename.txt
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$ cat filename.txt
test
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/syshw$
```

13. umask

Command name: umask

Usage: assign a def file permission for new created files

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)$ ls -l hw3/
total 1036
-rwxrwxrwx 1 hakancangunerli hakancangunerli 1057417 Mar  4 19:48 Homework3_csc3320.docx
-rwxrwxrwx 1 hakancangunerli hakancangunerli      9 Mar  4 18:27 example.txt
-rwxrwxrwx 1 hakancangunerli hakancangunerli      98 Mar  4 19:48 test.sh
-rwxrwxrwx 1 hakancangunerli hakancangunerli    280 Mar  3 21:14 testing.csv
-rwxrwxrwx 1 hakancangunerli hakancangunerli    162 Mar  4 18:04 '~$mework3_csc3320.docx'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)$ umask hw3/
-bash: umask: `h': invalid symbolic mode operator
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)$ umask
0022
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)$
```

14. wait

Command name: wait

Usage: wait allows you to wait for completing a process.

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ ./testing.sh
process uno running for 5 seconds ...
Process zwei is running for 15 seconds ...
Process uno exited with status 0
Process zwei exited with status 0
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$
```

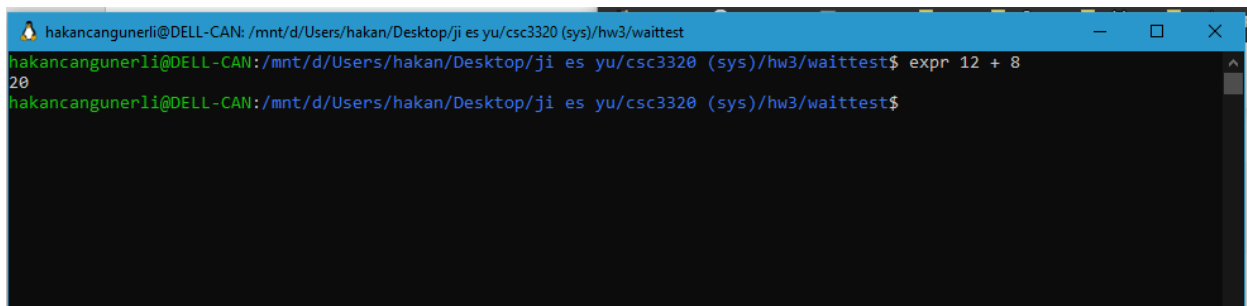
Part III: Chapter 5

1.expr

Command name: expr

Usage: evaluate expressions

Output:



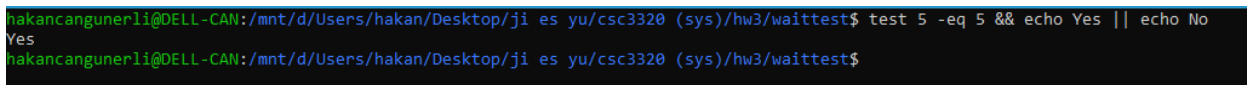
```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ expr 12 + 8
20
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$
```

2.test

Command name :test

Usage : check and compare values

Output:



```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$ test 5 -eq 5 && echo Yes || echo No
Yes
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3/waittest$
```

3.break

Command name :break

Usage : terminate the loop

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  break_test.sh  example.txt  testing.csv  ~$mework3_csc3320.docx'  ~$WRL2681.tmp'
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat break_test.sh
i=1
while(( $i<=10 ))
do
if (( $i==5 ))
then
break
fi
echo $i
((++i))
done
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./break_test.sh
1
2
3
4
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

4.case..in..esac

Command name : case..in..esac

Usage : similar to a switch statement

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./fruit.sh
I like bananas.
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat fruit.sh
FRUIT="banana"

case "$FRUIT" in
    "apple") echo "i hate apples ."
    ;;
    "banana") echo "I like bananas."
    ;;
    "kiwi") echo "i somewhat like kiwi."
    ;;
esac
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

5.continue

Command name :continue

Usage : skip the current iteration for loops.

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./continuetest.sh
1
2
3
4
6
7
8
9
10
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat continuetest.sh
for i in `seq 1 10`
do
if (( $i==5 ))
then
continue
fi
echo $i
done
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

6.export

Command name : export

Usage: export attribute for variables

Output:

```

hakancanguner1i@DELL-CAN:/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw$ export -p
declare -x HOME="/home/hakancanguner1i"
declare -x HOSTTYPE="x86_64"
declare -x LANG="C.UTF-8"
declare -x LESSCLOSE="/usr/bin/lesspipe %s %s"
declare -x LESSOPEN="| /usr/bin/lesspipe %s"
declare -x LOGNAME="hakancanguner1i"
declare -x LS_COLORS="rs=0:di=01;34:ln=01;36:mh=00;pi=40;33:so=01;35;do=01;35;bd=40;33;01:cd=40;33;01:or=00;31;01:ml=00;su=37;41;sg=30;41;ca=30;41;tw=30;42;ow=34;42;st=37;44;ex=01;32;*.tar=01;31;*.tgz=01;31;*.arc=01;31;*.arj=01;31;*.taz=01;31;*.lha=01;31;*.lzh=01;31;*.lzma=01;31;*.taz=01;31;*.txz=01;31;*.tro=01;31;*.t7z=01;31;*.zip=01;31;*.z=01;31;*.dz=01;31;*.gz=01;31;*.gz=01;31;*.lzo=01;31;*.xz=01;31;*.zst=01;31;*.tzt=01;31;*.bzip=01;31;*.bz=01;31;*.tbz=01;31;*.tbz2=01;31;*.t2=01;31;*.deb=01;31;*.rpm=01;31;*.jar=01;31;*.war=01;31;*.ear=01;31;*.sar=01;31;*.rar=01;31;*.alz=01;31;*.ace=01;31;*.zoo=01;31;*.cpio=01;31;*.7z=01;31;*.rz=01;31;*.cab=01;31;*.u18=01;31;*.sum=01;31;*.dmg=01;31;*.msd=01;31;*.jpe=01;35;*.jpg=01;35;*.mpe=01;35;*.mpg=01;35;*.gif=01;35;*.bmp=01;35;*.ppm=01;35;*.tga=01;35;*.xbm=01;35;*.xpm=01;35;*.tif=01;35;*.tiff=01;35;*.png=01;35;*.svg=01;35;*.svgz=01;35;*.mng=01;35;*.pnm=01;35;*.mov=01;35;*.mpeg=01;35;*.mp4=01;35;*.m4v=01;35;*.webm=01;35;*.ogm=01;35;*.mp4=01;35;*.m4v=01;35;*.vob=01;35;*.qt=01;35;*.nuv=01;35;*.wmv=01;35;*.asf=01;35;*.rmvb=01;35;*.flc=01;35;*.avi=01;35;*.fli=01;35;*.flv=01;35;*.gl=01;35;*.dl=01;35;*.xcf=01;35;*.xwd=01;35;*.yuv=01;35;*.emf=01;35;*.ogv=01;35;*.ogx=01;35;*.aac=00;36;*.au=00;36;*.flac=00;36;*.m4a=00;36;*.mid=00;36;*.midi=00;36;*.mka=00;36;*.mp3=00;36;*.mpe=00;36;*.ogg=00;36;*.oga=00;36;*.opus=00;36;*.spx=00;36;*.xspf=00;36;"
declare -x NAME="DELL-CAN"
declare -x OLDPWD
declare -x PATH="/home/hakancanguner1i:/local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/usr/lib64:/lib64:/mnt/d/Users/hakan/AppData/Local/Programs/Python/Python39/Scripts:/mnt/d/Users/hakan/AppData/Local/Programs/Python/Python38-32/Scripts:/mnt/d/Users/hakan/AppData/Local/Programs/Python/Python38-32:/mnt/c/Program Files/AdoptOpenJDK/jdk-11.0.6-hotspot/bin:/mnt/c/Program Files (x86)/Common Files/Oracle/Java/javapath:/mnt/d/programing/pliton/Scripts:/mnt/d/programing/pliton:/mnt/c/Windows/system32:/mnt/c/Windows:/mnt/c/Windows/System32/wbem:/mnt/c/Windows/System32/WindowsPowerShell/v1.0:/mnt/c/Windows/System32/OpenSSH:/mnt/c/Program Files (x86)/NVIDIA Corporation/PhysX/Common:/mnt/c/Program Files/NVIDIA Corporation/NVIDIA GeForce Experience:/mnt/c/Program Files/dotnet:/mnt/c/Program Files/Microsoft SQL Server/110/Tools/Binn:/mnt/c/Program Files (x86)/Callibre2:/mnt/d/Program Files/MATLAB/R2020a/bin:/mnt/c/src/flutter:/mnt/c/Program Files2/Docker/Docker/resources/bin:/mnt/c/ProgramData/DockerDesktop/version-bin:/mnt/c/Program Files (x86)/Intel/Intel(R) Management Engine Components/DM:/mnt/c/Program Files/Intel/Intel(R) Management Engine Components/DM:/mnt/d/programing/glt/cnd:/mnt/c/Windows/system32:/mnt/c/Windows:/mnt/c/Windows/System32/wbem:/mnt/c/Windows/System32/WindowsPowerShell/v1.0:/mnt/c/Windows/System32/OpenSSH:/mnt/c/Program Files/Microsoft SQL Server/Client SDK/ODBC/11W/Tools/Binn:/mnt/c/Program Files/Microsoft SQL Server/11W/Tools/Binn:/mnt/d/Program Files (x86)/Brackets/command:/mnt/c/Program Files/Common Files/Autodesk Shared:/mnt/d/Program Files/PuTTY:/mnt/d/Program Files/nodejs:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files (x86)/IVI Foundation/VISA/WinNI/Win:/mnt/d/programing/flutter/flutter/bin:/mnt/c/Users/hakan/AppData/Local/Microsoft/WindowsApps:/mnt/d/Users/hakan/AppData/Local/Programs/Microsoft VS Code/bin:/mnt/d/Program Files (x86)/GitHub CLI:/mnt/c/Users/hakan/.dotnet/tools:/mnt/c/Users/hakan/AppData/Local/GitHubDesktop/bin:/mnt/d/programing/lisp:/mnt/c/Users/hakan/AppData/Local/atom/bin:/mnt/d/Users/hakan/AppData/Local/Programs/Python/Python38-32/Scripts:/mnt/d/Program Files/heroku/bin:/mnt/c/Users/hakan/.dotnet/tools:/mnt/c/Users/hakan/AppData/Roaming/npm:/mnt/c/Users/hakan/AppData/Local/Microsoft/WindowsApps/snap/bin"
declare -x PWD="/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw"
declare -x SHELL="/usr/bin/bash"
declare -x SHLV="1"
declare -x TERM="xterm-256color"
declare -x USER="hakancanguner1i"
declare -x XSLENV=""
declare -x XSL_DISTRO_NAME="Ubuntu"
declare -x XSL_INTEROP="/run/XSL/782_interop"
declare -x XDG_DATA_DIRS="/usr/local/share:/usr/share:/var/lib/snapd/desktop"
declare -x P
hakancanguner1i@DELL-CAN:/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw$

```

7.for..in..do..done

Command name : for i in

Usage: iteration statement

Output:

```

hakancanguner1i@DELL-CAN:/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw$ ./continuetest.sh
1
2
3
4
5
6
7
8
9
10
hakancanguner1i@DELL-CAN:/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw$ cat continuetest.sh
for i in `seq 1 10`
do
if (( $i==5 ))
then
continue
fi
echo $i
done
hakancanguner1i@DELL-CAN:/mnt/d/Users/hakan/Desktop/j1 es yu/csc3320 (sys)/hw$

```

8. if..then..elif..fi

Command name : if then elif fi

Usage: conditional expression

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./continuetest.sh
1
2
3
4
6
7
8
9
10
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat continuetest.sh
for i in `seq 1 10`
do
if (( $i==5 ))
then
continue
fi
echo $i
done
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

9.read

Command name : read

Usage: read from a file

Output:

```
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat readtest.sh
read -p "testing read here: " input
echo $input
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./readtest.sh
testing read here: testing the read
testing the read
hakancangunerli@DELL-CAN:/mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

10.readonly

Command name : readonly

Usage: readonly attribute for variables

Output:

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ trap -1
1) SIGHUP      2) SIGINT      3) SIGQUIT      4) SIGILL      5) SIGTRAP
6) SIGABRT     7) SIGBUS      8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV    12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT  17) SIGCHLD    18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN    22) SIGTTOU    23) SIGURG      24) SIGXCPU    25) SIGXFSZ
26) SIGVTALRM  27) SIGPROF    28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS     34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4 39) SIGRTMIN+5 40) SIGRTMIN+6 41) SIGRTMIN+7 42) SIGRTMIN+8
43) SIGRTMIN+9 44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6 59) SIGRTMAX-5 60) SIGRTMAX-4 61) SIGRTMAX-3 62) SIGRTMAX-2
63) SIGRTMAX-1 64) SIGRTMAX
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```

13.while..do..done

Command name : while..do..done

Usage: perform a command multiple times

Output:

```
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ls
Homework3_csc3320.docx  break_test.sh  example.txt  testing.csv  ~$mework3_csc3320.docx' '~$WRL2681.tmp'
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ cat break_test.sh
i=1
while(( $i<=10 ))
do
if (( $i==5 ))
then
break
fi
echo $i
((++i))
done
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$ ./break_test.sh
1
2
3
4
hakancangunerli@DELL-CAN: /mnt/d/Users/hakan/Desktop/ji es yu/csc3320 (sys)/hw3$
```