

Assignment No3

4. Run commands (ps,fg, bg, find, du, df, head, tail, less, more) in your terminal and share the results.

bg

```
[5]+ Stopped ./hello1
harshayee@harshayee-VirtualBox:~$ bg %5
bash: bg: job 5 already in background
harshayee@harshayee-VirtualBox:~$ bg %4
bash: bg: job 4 already in background
harshayee@harshayee-VirtualBox:~$
```

fg

```
harshayee@harshayee-VirtualBox:~$ ./hello3&
[5] 5124
harshayee@harshayee-VirtualBox:~$ jobs
[1] Running ./hello &
[2] Running ./hello &
[3] Running ./hello1 &
[4]- Running ./hello2 &
[5]+ Running ./hello3 &
harshayee@harshayee-VirtualBox:~$ fg %2
./hello
^E^Z
[2]+ Stopped ./hello
harshayee@harshayee-VirtualBox:~$ fg %3
./hello1
```

more

```
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harshayee@harshayee-VirtualBox -
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:listing:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
system-network:x:100:100:systemd Network Management,,:/run/systemd:/usr/sbin/nologin
system-resolve:x:101:101:systemd Resolver,,:/run/systemd:/usr/sbin/nologin
messagebus:x:102:102:systemd Message Bus,,:/run/systemd:/usr/sbin/nologin
system-timesync:x:103:103:systemd Time Synchronization,,:/run/systemd:/usr/sbin/nologin
syslog:x:104:104:syslog:/usr/sbin/nologin
_apt:x:105:65534:apt:/var/lib/apt:/bin/false
tss:x:106:110:7pm software stack,,:/var/lib/tss:/bin/false
uuldd:x:107:106:run/uuidd:/usr/sbin/nologin
system-qom:x:108:117:systemd Userspace OOM Killer,,:/run/systemd:/usr/sbin/nologin
tcpd:x:109:109:tcpd:/usr/sbin/nologin
avahi-autoipd:x:110:119:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:111:46:usbmuxd daemon,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,:/var/lib/dnsmasq:/usr/sbin/nologin
kernoops:x:113:65534:kernel Oops Tracking Daemon,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124:whoopsie:/bin/false
sssd:x:118:125:SSSD system user,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:126:speech-dispatcher,,:/run/speech-dispatcher:/bin/false
fwupd-refresh:x:120:120:fwupd-refresh user,,:/run/systemd:/usr/sbin/nologin
m-openssh:x:121:127:NetworkManager OpenSSH,,:/var/lib/openssh/sshroot:/usr/sbin/nologin
samedie:x:122:129:/var/lib/samedie:/usr/sbin/nologin
colord:x:123:138:colord colour management daemon,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:/var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:/run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,:/run/hplip:/bin/false
xdg-desktop-portal-gnome:x:128:134:GNOME Display Manager:/var/lib/gdm:/bin/false
```

```
harshayee@harshayee-VirtualBox:~$ du -h a2.sh
4.0K    a2.sh
harshayee@harshayee-VirtualBox:~$
```

find

```
harshayee@harshayee-VirtualBox:~$ find . -type f -name "*.txt"
./.cache/tracker3/files/locale-for-miner-apps.txt
./.cache/tracker3/files/first-index.txt
./.cache/tracker3/files/last-crawl.txt
./documents/apple.txt
./out.txt
./Documents/apple.txt
./snap/firefox/common/.mozilla/firefox/s23k881j.default/pkcs11.txt
./snap/firefox/common/.mozilla/firefox/s23k881j.default/SiteSecurityServiceState.txt
./snap/firefox/common/.mozilla/firefox/s23k881j.default/serviceworker.txt
./snap/firefox/common/.mozilla/firefox/s23k881j.default/AlternateServices.txt
./.thunderbird/uvp35fle.default-release/pkcs11.txt
./.thunderbird/uvp35fle.default-release/SiteSecurityServiceState.txt
./.thunderbird/uvp35fle.default-release/encrypted-openpgp-passphrase.txt
harshayee@harshayee-VirtualBox:~$
```

Ps

```
harshayee@harshayee-VirtualBox:~$ ps -ax
```

PID	TTY	STAT	TIME	COMMAND
1	?	Ss	0:01	/sbin/init splash
2	?	S	0:00	[kthreadd]
3	?	I<	0:00	[rcu_gp]
4	?	I<	0:00	[rcu_par_gp]
5	?	I<	0:00	[slub_flushwq]
6	?	I<	0:00	[netns]
8	?	I<	0:00	[kworker/0:0H-events_highpri]
10	?	I<	0:00	[mm_percpu_wq]
11	?	I	0:00	[rcu_tasks_kthread]
12	?	I	0:00	[rcu_tasks_rude_kthread]
13	?	I	0:00	[rcu_tasks_trace_kthread]
14	?	S	0:00	[ksoftirqd/0]
15	?	I	0:04	[rcu_preempt]
16	?	S	0:00	[migration/0]
17	?	S	0:00	[idle_inject/0]
19	?	S	0:00	[cpuhp/0]
20	?	S	0:00	[cpuhp/1]
21	?	S	0:00	[idle_inject/1]
22	?	S	0:00	[migration/1]
23	?	S	0:00	[ksoftirqd/1]
25	?	I<	0:00	[kworker/1:0H-events_highpri]

Assignment No3

2. Run the command to take backup of file and share your output.

```
harshayee@harshayee-VirtualBox:~$ ln -s out.txt in.txt
harshayee@harshayee-VirtualBox:~$ ls -l out.txt in.txt
lrwxrwxrwx 1 harshayee harshayee    7 Sep 12 19:58 in.txt -> out.txt
-rw-rw-r-- 1 harshayee harshayee 1870 Sep 12 14:16 out.txt
harshayee@harshayee-VirtualBox:~$
```

Assignment No3

5. With a shell program show the difference of break and continue statements.

Continue statement:

```
harshayee@harshayee-VirtualBox:~$ cat cb.sh
a=0
while [ $a -le 50 ]
do
    echo Loop $a
    echo "Loop will break as soon as this 10"
    ((a++))
    if (($a==10))
    then
        echo "Lets go back to the start"
        continue
    fi
    echo "still executing"
done
harshayee@harshayee-VirtualBox:~$
```

```
harshayee@harshayee-VirtualBox:~$ ./cb.sh
Loop 0
Loop will break as soon as this 10
still executing
Loop 1
Loop will break as soon as this 10
still executing
Loop 2
Loop will break as soon as this 10
still executing
Loop 3
Loop will break as soon as this 10
still executing
Loop 4
Loop will break as soon as this 10
still executing
Loop 5
Loop will break as soon as this 10
still executing
Loop 6
Loop will break as soon as this 10
still executing
Loop 7
Loop will break as soon as this 10
still executing
Loop 8
```

Assignment No3

```
harshayee@harshayee-VirtualBox:~$ ./bc.sh
Loop 0
Loop will break as soon as this is 10
Loop 1
Loop will break as soon as this is 10
Loop 2
Loop will break as soon as this is 10
Loop 3
Loop will break as soon as this is 10
Loop 4
Loop will break as soon as this is 10
Loop 5
Loop will break as soon as this is 10
Loop 6
Loop will break as soon as this is 10
Loop 7
Loop will break as soon as this is 10
Loop 8
Loop will break as soon as this is 10
Loop 9
Loop will break as soon as this is 10
Loop 10
Loop will break as soon as this is 10
harshayee@harshayee-VirtualBox:~$ cat bc.sh
a=0
while [ $a -le 50 ]
do
    echo Loop $a
    echo "Loop will break as soon as this is 10"
    if (($a==10))
    then
        break
    fi
    ((a++))
done
harshayee@harshayee-VirtualBox:~$
```

Assignment No3

1. Write a shell program to implement basic arithmetic operations using function.

```
harshayee@harshayee-VirtualBox:~$ vim f.sh
harshayee@harshayee-VirtualBox:~$ ./f.sh
10
20
The sum is 30
20
10
The sub is 10
15
11
The mul is 165
50
10
The div is 5
harshayee@harshayee-VirtualBox:~$ cat f.sh
#!/bin/bash
add()
{
    a=$1
    b=$2
    echo $a
    echo $b
    c=$(( $a + $b ))
    #echo $c
    return $c
}

add 10 20
return=$?

echo The sum is $return

sub()
{
    x=$1
    y=$2
    echo $x
    echo $y
    z=$(( $x - $y ))
    #echo $z
    return $z
}

sub 20 10
return=$?
```

3. How to take hardlink and softlink of a file in linux? Explain its differences.

A hard link is a direct reference to a file, while a soft link points to a file by its file name.

Hard links use the index node or inode number for the identification of a file. Since hard links point to inode, they cannot be implemented on directories. The `ln` command is executed to create a hard link.

Soft link is an alias or alternate path to original file. Soft link does not use inode number. Soft links are also referred to as a symbolic link, because they contain the name of the target file of the link.