

ASSESSMENT -1

Animikha Sinha | Cyber Security and Ethical Hacking

File and Directory Operations

1. ls: List files and directories

```
animikha@LAPTOP-PUGUNFUJ: ~  
animikha@LAPTOP-PUGUNFUJ:~$ ls  
A1Q2.c      A3Q1.c      Megumi      a.txt      child7.c    first       matMul2.c   pthreadsMonCat.c  temp_alert  
A1Q3.c      A3Q2.c      Pipes.c     addition.cpp child8.c     haruno.c    matMul3.c   raceCond.c       temp_sms.py  
A1Q4       A3Q3.c      Pipes_2.c   bin         crc.c        hello.py    matMul4.c   raymondTree.cpp  temp_sms.py.save  
A1Q4.c      A4Q1.cpp    Pthreads_1.c bullyAlgo.c device_control.py ic-projects  node_modules  ringAlgo.c       test  
A2Q1.c      A4Q2.cpp    Shared_memo_1.c caz.c       device_status.py itadori      ompFibo.c     sakura.c         twilo_conf.py  
A2Q1_hcf    ANIMIKHA    Shared_memory.c caz3.c      dotProduct.c  lamBake.c   p-c_sema_071021.c semaphores_071021.c vectorAdd.c  
A2Q1_hcf.c  CAT_1.c     SumMonCat   child2      ex1.c         lamp2.c     package-lock.json shm_write.c       vegetables  
A2Q1_lcm    FAT_A.c++   SumMonCat.c child3.c    execlp.c      lamportAlgo.c led_control.py pipes.c        suzuKasaAlgo.c   suzuKasaAlgo.cpp.save  
A2Q1_lcm.c  FAT_B.c     Yuji        child4.c    execlpMonCat.c lucky_number_generator.py pr_090921.c  suzuKasaAlgo.cpp.txt  
A2Q2.c      Fushiguro   __pycache__ child5.c    fcfsMonCat.c  matMul.c    pret.cpp  
A2Q3.c      Itadori     a.out      child6.c    fcfs_020921.c  
animikha@LAPTOP-PUGUNFUJ:~$
```

2. cd: Change directory

Changing from home to root directory

```
animikha@LAPTOP-PUGUNFUJ:~$ cd /  
animikha@LAPTOP-PUGUNFUJ:/$
```

3. pwd: Prints current working directory

```
animikha@LAPTOP-PUGUNFUJ:~$ cd /
animikha@LAPTOP-PUGUNFUJ:/$ pwd
/
```

4. mkdir: Make directory

```
animikha@LAPTOP-PUGUNFUJ:~$ mkdir CyberSecurity
animikha@LAPTOP-PUGUNFUJ:~$ ls
A1Q2.c      A3Q1.c      Itadori      a.out        child6.c     fcfs_020921.c  matMul.c     prct.cpp     taxt
A1Q3.c      A3Q2.c      Megumi       a.txt        child7.c     first          matMul2.c    pthreadsMonCat.c  temp_alert
A1Q4       A3Q3.c      Pipes.c      addition.cpp  child8.c     haruno.c       matMul3.c    raceCond.c      temp_sms.py
A1Q4.c      A4Q1.cpp    Pipes_2.c    bin          crc.c        hello.py       matMul4.c    raymondTree.cpp  temp_sms.py.save
A2Q1.c      A4Q2.cpp    Pthreads_1.c bullyAlgo.c   device_control.py  ic-projects   node_modules  ringAlgo.c      test
A2Q1_hcf    ANIMIKHA    Shared_memo_1.c caz.c        device_status.py  itadori       ompFibo.c    sakura.c        twilo_conf.py
A2Q1_hcf.c  CAT_1.c     Shared_memory.c caz3.c       dotProduct.c     lamBake.c     p-c_sema_071021.c  semaphores_071021.c  vectorAdd.c
A2Q1_lcm    CyberSecurity  SumMonCat   child2       ex1.c        lamp2.c        package-lock.json  shm_write.c        vegetables
A2Q1_lcm.c  FAT_A.c++   SumMonCat.c  child3.c     exec1p.c      lampportAlgo.c package.json    suzuKasaAlgo.c
A2Q2.c      FAT_B.c     Yuji        child4.c     exec1pMonCat.c  led_control.py pipes.c       suzuKasaAlgo.cpp
A2Q3.c      Fushiguro   __pycache__  child5.c     fcfsMonCat.c   lucky_number_generator.py pr_090921.c  suzuKasaAlgo.cpp.save
animikha@LAPTOP-PUGUNFUJ:~$
```

5. touch: Create an empty file

```
animikha@LAPTOP-PUGUNFUJ:~$ touch emptyFile.txt
animikha@LAPTOP-PUGUNFUJ:~$ cat emptyFile.txt
animikha@LAPTOP-PUGUNFUJ:~$ _
```

6. cp: Copy files and directories

```
animikha@LAPTOP-PUGUNFUJ:~$ cat cs.txt
I am a Security Analyst

animikha@LAPTOP-PUGUNFUJ:~$ cp cs.txt emptyFile.txt
animikha@LAPTOP-PUGUNFUJ:~$ cat emptyFile.txt
I am a Security Analyst

animikha@LAPTOP-PUGUNFUJ:~$ _
```

7. mv: Move or rename files and directories

```
animikha@LAPTOP-PUGUNFUJ:~$ mv cs.txt CyberSecurity
animikha@LAPTOP-PUGUNFUJ:~$ ls CyberSecurity
cs.txt
animikha@LAPTOP-PUGUNFUJ:~$
```

8. rm: Remove files and directories

```
animikha@LAPTOP-PUGUNFUJ:~$ rm emptyFile.txt
animikha@LAPTOP-PUGUNFUJ:~$ cat emptyFile.txt
cat: emptyFile.txt: No such file or directory
animikha@LAPTOP-PUGUNFUJ:~$
```

9. find: Search for files and directories

```
animikha@LAPTOP-PUGUNFUJ:~$ find sakura.c  
sakura.c  
animikha@LAPTOP-PUGUNFUJ:~$ _
```

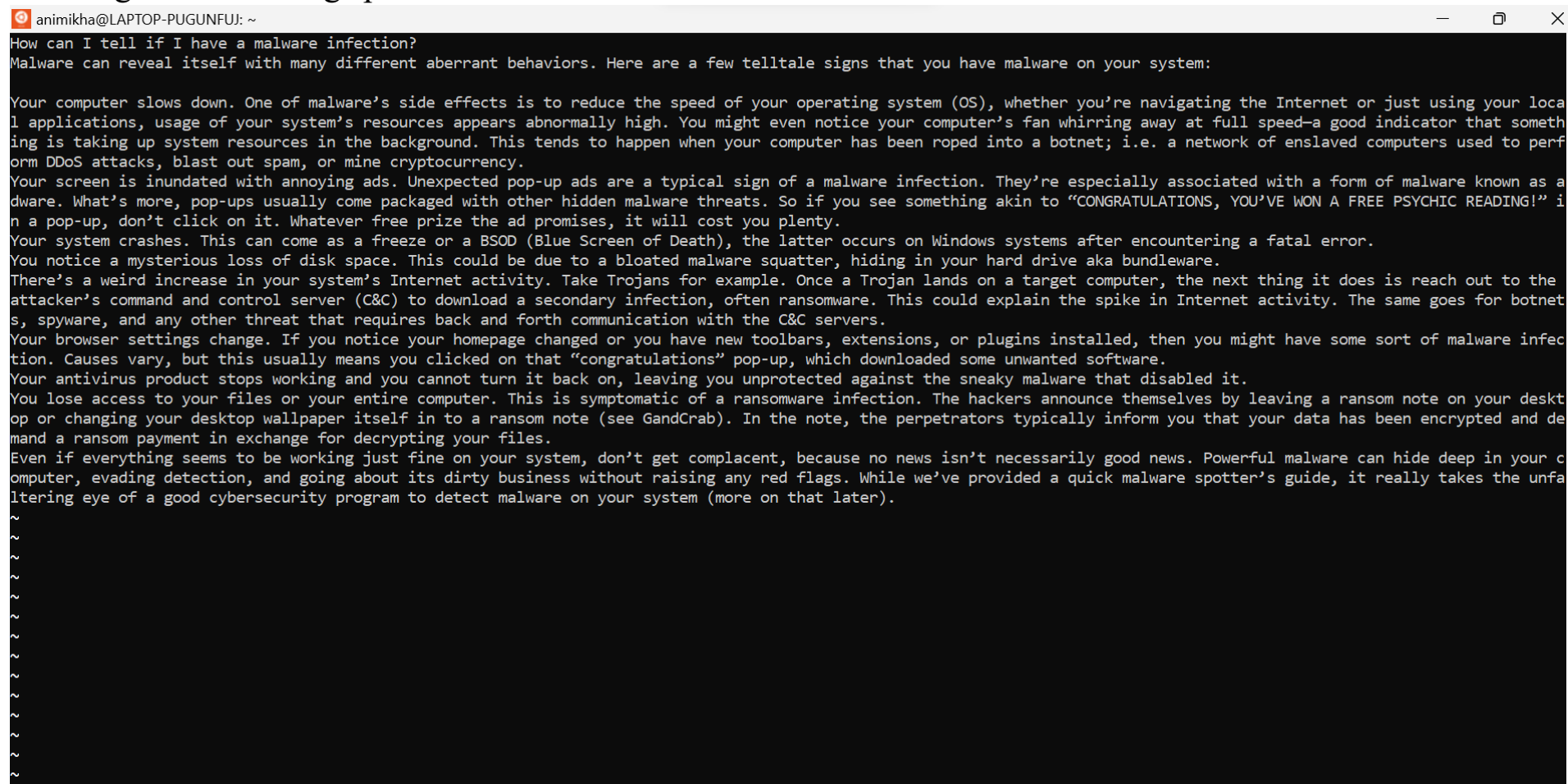
File Viewing and Editing

1. cat: Concatenate and display file content

```
animikha@LAPTOP-PUGUNFUJ:~$ cat sakura.c
#include<stdio.h>
int main()
{
    printf("Hello\n");
}
animikha@LAPTOP-PUGUNFUJ:~$ _
```

2. less: View file content with pagination

The less command is a Linux terminal pager that shows a file's contents one screen at a time. It is useful when dealing with a large text file because it doesn't load the entire file but accesses it page by page, resulting in fast loading speeds



```
animikha@LAPTOP-PUGUNFUJ: ~
How can I tell if I have a malware infection?
Malware can reveal itself with many different aberrant behaviors. Here are a few telltale signs that you have malware on your system:

Your computer slows down. One of malware's side effects is to reduce the speed of your operating system (OS), whether you're navigating the Internet or just using your local applications, usage of your system's resources appears abnormally high. You might even notice your computer's fan whirring away at full speed—a good indicator that something is taking up system resources in the background. This tends to happen when your computer has been roped into a botnet; i.e. a network of enslaved computers used to perform DDoS attacks, blast out spam, or mine cryptocurrency.

Your screen is inundated with annoying ads. Unexpected pop-up ads are a typical sign of a malware infection. They're especially associated with a form of malware known as adware. What's more, pop-ups usually come packaged with other hidden malware threats. So if you see something akin to "CONGRATULATIONS, YOU'VE WON A FREE PSYCHIC READING!" in a pop-up, don't click on it. Whatever free prize the ad promises, it will cost you plenty.

Your system crashes. This can come as a freeze or a BSOD (Blue Screen of Death), the latter occurs on Windows systems after encountering a fatal error.

You notice a mysterious loss of disk space. This could be due to a bloated malware squatter, hiding in your hard drive aka bundleware.

There's a weird increase in your system's Internet activity. Take Trojans for example. Once a Trojan lands on a target computer, the next thing it does is reach out to the attacker's command and control server (C&C) to download a secondary infection, often ransomware. This could explain the spike in Internet activity. The same goes for botnets, spyware, and any other threat that requires back and forth communication with the C&C servers.

Your browser settings change. If you notice your homepage changed or you have new toolbars, extensions, or plugins installed, then you might have some sort of malware infection. Causes vary, but this usually means you clicked on that "congratulations" pop-up, which downloaded some unwanted software.

Your antivirus product stops working and you cannot turn it back on, leaving you unprotected against the sneaky malware that disabled it.

You lose access to your files or your entire computer. This is symptomatic of a ransomware infection. The hackers announce themselves by leaving a ransom note on your desktop or changing your desktop wallpaper itself into a ransom note (see GandCrab). In the note, the perpetrators typically inform you that your data has been encrypted and demand a ransom payment in exchange for decrypting your files.

Even if everything seems to be working just fine on your system, don't get complacent, because no news isn't necessarily good news. Powerful malware can hide deep in your computer, evading detection, and going about its dirty business without raising any red flags. While we've provided a quick malware spotter's guide, it really takes the unfaltering eye of a good cybersecurity program to detect malware on your system (more on that later).

~
~
~
~
~
~
~
~
~
~
~
```

3. head: Display the beginning of a file

```
animikha@LAPTOP-PUGUNFUJ:~$ head malware.txt
```

```
How can I tell if I have a malware infection?
```

```
Malware can reveal itself with many different aberrant behaviors. Here are a few telltale signs that you have malware on your system:
```

Your computer slows down. One of malware's side effects is to reduce the speed of your operating system (OS), whether you're navigating the web or running applications, usage of your system's resources appears abnormally high. You might even notice your computer's fan whirring away at full speed, indicating it is taking up system resources in the background. This tends to happen when your computer has been roped into a botnet; i.e. a network of infected computers used to perform DDoS attacks, blast out spam, or mine cryptocurrency.

Your screen is inundated with annoying ads. Unexpected pop-up ads are a typical sign of a malware infection. They're especially associated with adware. What's more, pop-ups usually come packaged with other hidden malware threats. So if you see something akin to "CONGRATULATIONS, YOU WON A PRIZE!" in a pop-up, don't click on it. Whatever free prize the ad promises, it will cost you plenty.

Your system crashes. This can come as a freeze or a BSOD (Blue Screen of Death), the latter occurs on Windows systems after encountering a critical error.

You notice a mysterious loss of disk space. This could be due to a bloated malware squatter, hiding in your hard drive aka bundleware.

There's a weird increase in your system's Internet activity. Take Trojans for example. Once a Trojan lands on a target computer, the next step is to connect to the attacker's command and control server (C&C) to download a secondary infection, often ransomware. This could explain the spike in Internet activity. Other threats like worms, spyware, and any other threat that requires back and forth communication with the C&C servers.

Your browser settings change. If you notice your homepage changed or you have new toolbars, extensions, or plugins installed, then you might be infected. Causes vary, but this usually means you clicked on that "congratulations" pop-up, which downloaded some unwanted software.

Your antivirus product stops working and you cannot turn it back on, leaving you unprotected against the sneaky malware that disabled it.

```
animikha@LAPTOP-PUGUNFUJ:~$
```

4. tail: Display the end of a file

```
animikha@LAPTOP-PUGUNFUJ:~$ tail malware.txt
```

Your computer slows down. One of malware's side effects is to reduce the speed of your operating system (OS), whether you're navigating applications, usage of your system's resources appears abnormally high. You might even notice your computer's fan whirring away at something is taking up system resources in the background. This tends to happen when your computer has been roped into a botnet; i.e. a network of computers used to perform DDoS attacks, blast out spam, or mine cryptocurrency.

Your screen is inundated with annoying ads. Unexpected pop-up ads are a typical sign of a malware infection. They're especially associated with adware. What's more, pop-ups usually come packaged with other hidden malware threats. So if you see something akin to "CONGRATULATIONS" in a pop-up, don't click on it. Whatever free prize the ad promises, it will cost you plenty.

Your system crashes. This can come as a freeze or a BSOD (Blue Screen of Death), the latter occurs on Windows systems after encountering a critical error.

You notice a mysterious loss of disk space. This could be due to a bloated malware squatter, hiding in your hard drive aka bundleware.

There's a weird increase in your system's Internet activity. Take Trojans for example. Once a Trojan lands on a target computer, the attacker's command and control server (C&C) to download a secondary infection, often ransomware. This could explain the spike in Internet traffic, spyware, and any other threat that requires back and forth communication with the C&C servers.

Your browser settings change. If you notice your homepage changed or you have new toolbars, extensions, or plugins installed, then you've been infected. Causes vary, but this usually means you clicked on that "congratulations" pop-up, which downloaded some unwanted software.

Your antivirus product stops working and you cannot turn it back on, leaving you unprotected against the sneaky malware that disabled it.

You lose access to your files or your entire computer. This is symptomatic of a ransomware infection. The hackers announce themselves by locking your files or changing your desktop wallpaper itself in to a ransom note (see GandCrab). In the note, the perpetrators typically inform you that they have your files and demand a ransom payment in exchange for decrypting your files.

Even if everything seems to be working just fine on your system, don't get complacent, because no news isn't necessarily good news. Malware can be stealthy, evading detection, and going about its dirty business without raising any red flags. While we've provided a quick malware spotting guide, it's important to have a filtering eye of a good cybersecurity program to detect malware on your system (more on that later).

```
animikha@LAPTOP-PUGUNFUJ:~$
```

5. nano: Text editor for creating and editing files

```
animikha@LAPTOP-PUGUNFUJ: ~  
GNU nano 4.8 ransomware.txt  
Ransomware is a type of malware (malicious software) that locks a victim's data or device and threatens to keep  
The earliest ransomware attacks simply demanded a ransom in exchange for the encryption key needed to regain acc
```

```
animikha@LAPTOP-PUGUNFUJ:~$ nano ransomware.txt_
```

6. vi/vim: Powerful text editor for experienced users

```
animikha@LAPTOP-PUGUNFUJ: ~  
animikha@LAPTOP-PUGUNFUJ:~$ vi antivirus  
animikha@LAPTOP-PUGUNFUJ:~$ _
```

The first IBM PC compatible "in the wild" computer virus, and one of the first to spread exponentially.[15][16] Most of the computer viruses written in the early and mid-1980s were written in Basic. That changed when more and more programmers became acquainted with computer languages like C and C++.[17]

Before internet connectivity was widespread, computer viruses were typically spread through floppy disks. During this time, virus checkers essentially had to check executables. As the use of the internet became common, viruses began to spread online.[18]:wq

```
~  
:wq_
```

File Permissions

1. chmod: Change file permissions

```
animikha@LAPTOP-PUGUNFUJ:~$ chmod a+x antivirus_
```

2. chown: Change file owner

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo chown root antivirus  
[sudo] password for animikha:  
animikha@LAPTOP-PUGUNFUJ:~$
```


3. chgrp: Change file group

```
-rwxrwxrwx 1 animikha animikha 53 Aug 14 2021 sakura.c
```

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo chgrp root sakura.c
```

```
[sudo] password for animikha:
```

```
animikha@LAPTOP-PUGUNFUJ:~$
```

```
-rwxrwxrwx 1 animikha root 53 Aug 14 2021 sakura.c
```

File Compression and Archiving

1. tar: Archive files

```
animikha@LAPTOP-PUGUNFUJ:~$ tar cvf file.tar *.c
A1Q2.c
A1Q3.c
A1Q4.c
A2Q1.c
A2Q1_hcf.c
A2Q1_lcm.c
A2Q2.c
A2Q3.c
A3Q1.c
A3Q2.c
A3Q3.c
CAT_1.c
FAT_B.c
Pipes.c
Pipes_2.c
Pthreads_1.c
Shared_memo_1.c
Shared_memory.c
SumMonCat.c
bullyAlgo.c
caz.c
caz3.c
child3.c
child4.c
child5.c
child6.c
child7.c
child8.c
```

2. gzip: Compress files

```
animikha@LAPTOP-PUGUNFUJ:~$ gzip -f child3.c
animikha@LAPTOP-PUGUNFUJ:~$ gzip -L child3.gz
gzip 1.10
Copyright (C) 2018 Free Software Foundation, Inc.
Copyright (C) 1993 Jean-loup Gailly.
This is free software. You may redistribute copies of it under the terms of
the GNU General Public License <https://www.gnu.org/licenses/gpl.html>.
There is NO WARRANTY, to the extent permitted by law.
animikha@LAPTOP-PUGUNFUJ:~$
```

3. unzip: Extract files from a ZIP archive

```
animikha@LAPTOP-PUGUNFUJ:~$ unzip '*.zip'
unzip: cannot find or open *.zip, *.zip.zip or *.zip.ZIP.

No zipfiles found.
animikha@LAPTOP-PUGUNFUJ:~$
```

Process Management

1. ps: List running processes

```
animikha@LAPTOP-PUGUNFUJ: ~  
animikha@LAPTOP-PUGUNFUJ:~$ ps  
  PID TTY          TIME CMD  
    9 pts/0        00:00:00 bash  
   401 pts/0        00:00:00 ps  
animikha@LAPTOP-PUGUNFUJ:~$ ~
```

2. top: Display real-time system information and processes

```
animikha@LAPTOP-PUGUNFUJ: ~  
top - 11:09:11 up 19 min,  0 users,  load average: 0.00, 0.00, 0.00  
Tasks:  6 total,   1 running,  4 sleeping,   1 stopped,   0 zombie  
%Cpu(s):  0.0 us,   0.0 sy,   0.0 ni,100.0 id,   0.0 wa,   0.0 hi,   0.0 si,   0.0 st  
GiB Mem :   3.6 total,   3.2 free,   0.1 used,   0.2 buff/cache  
GiB Swap:   1.0 total,   1.0 free,   0.0 used.   3.3 avail Mem  


| PID | USER     | PR | NI | VIRT  | RES  | SHR  | S | %CPU | %MEM | TIME+   | COMMAND |
|-----|----------|----|----|-------|------|------|---|------|------|---------|---------|
| 1   | root     | 20 | 0  | 1816  | 1184 | 1104 | S | 0.0  | 0.0  | 0:00.03 | init    |
| 7   | root     | 20 | 0  | 1816  | 96   | 0    | S | 0.0  | 0.0  | 0:00.00 | init    |
| 8   | root     | 20 | 0  | 1816  | 96   | 0    | S | 0.0  | 0.0  | 0:00.05 | init    |
| 9   | animikha | 20 | 0  | 10548 | 5372 | 3564 | S | 0.0  | 0.1  | 0:00.12 | bash    |
| 411 | animikha | 20 | 0  | 10892 | 3712 | 3180 | T | 0.0  | 0.1  | 0:00.02 | top     |
| 412 | animikha | 20 | 0  | 10892 | 3712 | 3180 | R | 0.0  | 0.1  | 0:00.00 | top     |


```

3. kill: Terminate processes

```
animikha@LAPTOP-PUGUNFUJ:~$ 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
```

```
animikha@LAPTOP-PUGUNFUJ:~$ kill 411
```

4. bg: Run processes in the background

```
animikha@LAPTOP-PUGUNFUJ: ~  
animikha@LAPTOP-PUGUNFUJ:~$ jobs  
animikha@LAPTOP-PUGUNFUJ:~$ sleep 500  
^Z  
[1]+  Stopped                  sleep 500  
animikha@LAPTOP-PUGUNFUJ:~$ jobs  
[1]+  Stopped                  sleep 500  
animikha@LAPTOP-PUGUNFUJ:~$ bg %1  
[1]+ sleep 500 &  
animikha@LAPTOP-PUGUNFUJ:~$ jobs  
[1]+  Running                  sleep 500 &  
animikha@LAPTOP-PUGUNFUJ:~$
```


5. fg: Bring background processes to the foreground



animikha@LAPTOP-PUGUNFUJ: ~

```
animikha@LAPTOP-PUGUNFUJ:~$ jobs
animikha@LAPTOP-PUGUNFUJ:~$ sleep 500
^Z
[1]+  Stopped                  sleep 500
animikha@LAPTOP-PUGUNFUJ:~$ jobs
[1]+  Stopped                  sleep 500
animikha@LAPTOP-PUGUNFUJ:~$ bg %1
[1]+ sleep 500 &
animikha@LAPTOP-PUGUNFUJ:~$ jobs
[1]+  Running                  sleep 500 &
animikha@LAPTOP-PUGUNFUJ:~$ fg %1
sleep 500
```

System Information

1. uname: Print system information

```
animikha@LAPTOP-PUGUNFUJ:~$ uname -s
Linux
animikha@LAPTOP-PUGUNFUJ:~$ uname -n
LAPTOP-PUGUNFUJ
animikha@LAPTOP-PUGUNFUJ:~$ uname -r
5.10.16.3-microsoft-standard-WSL2
animikha@LAPTOP-PUGUNFUJ:~$ uname -v
#1 SMP Fri Apr 2 22:23:49 UTC 2021
animikha@LAPTOP-PUGUNFUJ:~$ uname -m
x86_64
animikha@LAPTOP-PUGUNFUJ:~$ _
```

2. df: Display disk space usage

```
animikha@LAPTOP-PUGUNFUJ:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/sdb        263174212   6914056 242822000    3% /
tools          224090436 181433208  42657228   81% /init
none           1859384      0    1859384    0% /dev
tmpfs          1861468      0    1861468    0% /sys/fs/cgroup
none           1861468      4    1861464    1% /run
none           1861468      0    1861468    0% /run/lock
none           1861468      0    1861468    0% /run/shm
none           1861468      0    1861468    0% /run/user
drivers         224090436 181433208  42657228   81% /usr/lib/wsl/drivers
lib            224090436 181433208  42657228   81% /usr/lib/wsl/lib
none           1861468      4    1861464    1% /mnt/wsl
drvfsa         224090436 181433208  42657228   81% /mnt/c
drvfsa         152765436 118675832  34089604   78% /mnt/d
drvfsa          52032508   6141164   45891344   12% /mnt/e
drvfsa          51199996   47296232   3903764   93% /mnt/f
animikha@LAPTOP-PUGUNFUJ:~$
```

3. free: Display memory usage

```
animikha@LAPTOP-PUGUNFUJ:~$ free
              total        used        free      shared  buff/cache   available
Mem:         3722936       106720       3384324          72       231892       3465748
Swap:        1048576           0       1048576
animikha@LAPTOP-PUGUNFUJ:~$
```

4. uptime: Show system uptime

```
animikha@LAPTOP-PUGUNFUJ:~$ uptime
15:20:26 up 3:13, 0 users, load average: 0.00, 0.00, 0.00
animikha@LAPTOP-PUGUNFUJ:~$
```

5. who: Display logged-in users

```
animikha@LAPTOP-PUGUNFUJ:~$ who -m -H
NAME      LINE      TIME      COMMENT
animikha@LAPTOP-PUGUNFUJ:~$ who -T -H
NAME      LINE      TIME      COMMENT
animikha@LAPTOP-PUGUNFUJ:~$ who -u
animikha@LAPTOP-PUGUNFUJ:~$
```

6. w: Display logged-in users and their activities

```
animikha@LAPTOP-PUGUNFUJ:~$ w
15:28:48 up 3:21, 0 users, load average: 0.00, 0.00, 0.00
USER      TTY      FROM      LOGIN@    IDLE   JCPU   PCPU   WHAT
animikha@LAPTOP-PUGUNFUJ:~$ w -u
15:29:46 up 3:22, 0 users, load average: 0.00, 0.00, 0.00
USER      TTY      FROM      LOGIN@    IDLE   JCPU   PCPU   WHAT
animikha@LAPTOP-PUGUNFUJ:~$ w -s
15:29:51 up 3:22, 0 users, load average: 0.00, 0.00, 0.00
USER      TTY      FROM      IDLE   WHAT
animikha@LAPTOP-PUGUNFUJ:~$
```

Networking

1. ifconfig: Configure network interfaces

```
animikha@LAPTOP-PUGUNFUJ:~$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.27.86.226 netmask 255.255.240.0 broadcast 172.27.95.255
    inet6 fe80::215:5dff:fe6f:3fd3 prefixlen 64 scopeid 0x20<link>
    ether 00:15:5d:6f:3f:d3 txqueuelen 1000 (Ethernet)
    RX packets 1954 bytes 513389 (513.3 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 118 bytes 8200 (8.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

animikha@LAPTOP-PUGUNFUJ:~$
```

2. ping: Send ICMP echo requests to a network host

```
animikha@LAPTOP-PUGUNFUJ:~$ ping -c 5 www.geeksforgeeks.org
PING a1991.dscr.akamai.net (203.171.247.211) 56(84) bytes of data.
64 bytes from node-203-171-247-211.alliancebroadband.in (203.171.247.211): icmp_seq=1 ttl=59 time=3.80 ms
64 bytes from node-203-171-247-211.alliancebroadband.in (203.171.247.211): icmp_seq=2 ttl=59 time=7.42 ms
64 bytes from node-203-171-247-211.alliancebroadband.in (203.171.247.211): icmp_seq=3 ttl=59 time=5.78 ms
64 bytes from node-203-171-247-211.alliancebroadband.in (203.171.247.211): icmp_seq=4 ttl=59 time=6.12 ms
64 bytes from node-203-171-247-211.alliancebroadband.in (203.171.247.211): icmp_seq=5 ttl=59 time=5.73 ms

--- a1991.dscr.akamai.net ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 3.804/5.769/7.416/1.157 ms
```

3. wget: Download files from the web

```
animikha@LAPTOP-PUGUNFUJ:~$ wget http://info.cern.ch/
--2023-05-28 15:48:07-- http://info.cern.ch/
Resolving info.cern.ch (info.cern.ch)... 188.184.21.108, 2001:1458:d00:34::100:125
Connecting to info.cern.ch (info.cern.ch)|188.184.21.108|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 646 [text/html]
Saving to: 'index.html'

index.html                               100%[=====>]          646  --.-KB/s   in 0s

2023-05-28 15:48:08 (6.27 MB/s) - 'index.html' saved [646/646]
```


System Administration

1. sudo: Execute commands with superuser privileges

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo -V
Sudo version 1.8.31
Sudoers policy plugin version 1.8.31
Sudoers file grammar version 46
Sudoers I/O plugin version 1.8.31
animikha@LAPTOP-PUGUNFUJ:~$
```

2. apt-get: Package management for Debian-based distributions

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo apt-get check
[sudo] password for animikha:
Sorry, try again.
[sudo] password for animikha:
Reading package lists... Done
Building dependency tree
Reading state information... Done
animikha@LAPTOP-PUGUNFUJ:~$
```

3. systemctl: Manage system services

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo systemctl mask mysqld
Created symlink /etc/systemd/system/mysqld.service → /dev/null.
animikha@LAPTOP-PUGUNFUJ:~$ sudo systemctl unmask mysqld
Removed /etc/systemd/system/mysqld.service.
animikha@LAPTOP-PUGUNFUJ:~$
```

4. crontab: Schedule recurring tasks

```
animikha@LAPTOP-PUGUNFUJ:~$ crontab -u animikha -l
no crontab for animikha
animikha@LAPTOP-PUGUNFUJ:~$ crontab -l
no crontab for animikha
animikha@LAPTOP-PUGUNFUJ:~$
```

5. useradd: Add a new user

```
animikha@LAPTOP-PUGUNFUJ:~$ useradd Kitty
useradd: Permission denied.
useradd: cannot lock /etc/passwd; try again later.
animikha@LAPTOP-PUGUNFUJ:~$
animikha@LAPTOP-PUGUNFUJ:~$ sudo useradd Kitty
animikha@LAPTOP-PUGUNFUJ:~$
```

6. passwd: Change user password

```
animikha@LAPTOP-PUGUNFUJ:~$ sudo useradd Kitty
animikha@LAPTOP-PUGUNFUJ:~$
animikha@LAPTOP-PUGUNFUJ:~$ passwd
Changing password for animikha.
Current password:
New password:
Retype new password:
Password unchanged
```