

Lab3:

The main idea of this assignment is to provide hands on experience on the following topics

Grep

Pipe

redirection

read

command Line arguments

head,tail,tr

1. Create a file “poem.txt” with the following lines

We have not wings, we cannot soar;
But we have feet to scale and climb
By slow degrees, by more and more,
The cloudy summits of our time.

The mighty pyramids of stone
That wedge-like cleave the desert airs,
When nearer seen and better known,
Are but gigantic flights of stairs.

The distant mountains, that uprear
Their solid bastions of the skies,
Are crossed by pathways that appear
As we to higher levels rise.

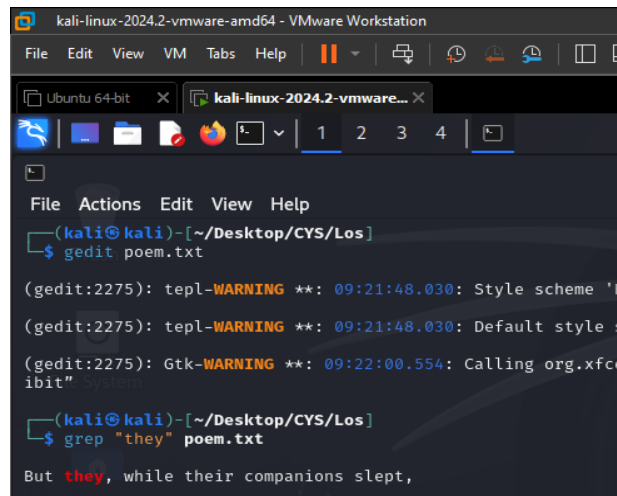
The heights by great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night.

END

Henry Wadsworth Longfellow (1807–1882) was an American poet and educator.

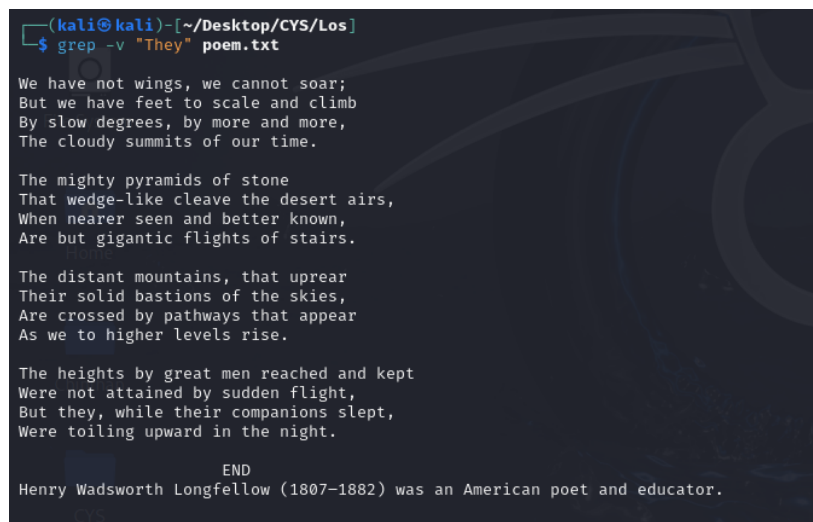
Do the following task using grep command

- a. Print all the lines with the pattern “they”



```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
Ubuntu 64-bit kali-linux-2024.2-vmware...
(kali@kali)~[/Desktop/CYS/Los]
$ gedit poem.txt
(gedit:2275): tepl-WARNING **: 09:21:48.030: Style scheme 'K...
(gedit:2275): tepl-WARNING **: 09:21:48.030: Default style s...
(gedit:2275): Gtk-WARNING **: 09:22:00.554: Calling org.xfce...
(kali@kali)~[/Desktop/CYS/Los]
$ grep "they" poem.txt
But they, while their companions slept,
```

- b. Print all the lines other than pattern “They”



```
(kali@kali)~[/Desktop/CYS/Los]
$ grep -v "They" poem.txt
We have not wings, we cannot soar;
But we have feet to scale and climb
By slow degrees, by more and more,
The cloudy summits of our time.

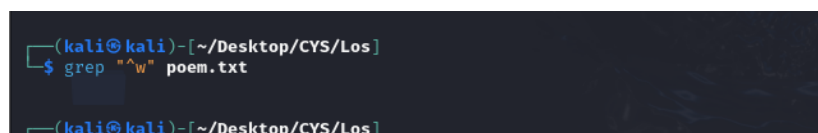
The mighty pyramids of stone
That wedge-like cleave the desert airs,
When nearer seen and better known,
Are but gigantic flights of stairs.

The distant mountains, that uprear
Their solid bastions of the skies,
Are crossed by pathways that appear
As we to higher levels rise.

The heights by great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night.

END
Henry Wadsworth Longfellow (1807-1882) was an American poet and educator.
```

- c. Print all the lines starts with “w”



```
(kali@kali)~[/Desktop/CYS/Los]
$ grep "^w" poem.txt
There are not sentences that start with w.
```

There are not sentences that start with w.

- d. Print the next lines after the pattern “stone” matches
Hint: man grep

```
(kali@kali)~[/Desktop/CYS/Los]
$ grep -A 1 "stone" poem.txt

The mighty pyramids of stone
That wedge-like cleave the desert airs,

(kali@kali)~[/Desktop/CYS/Los]
```

- e. Print the 2 lines above the pattern “stone” matches
Hint: man grep

```
(kali@kali)~[/Desktop/CYS/Los]
$ grep -B 3 "stone" poem.txt

By slow degrees, by more and more,
The cloudy summits of our time.

The mighty pyramids of stone

(kali@kali)~[/Desktop/CYS/Los]
$
```

- f. Search the pattern with exact match

```
(kali@kali)~[/Desktop/CYS/Los]
$ grep -w "we" poem.txt

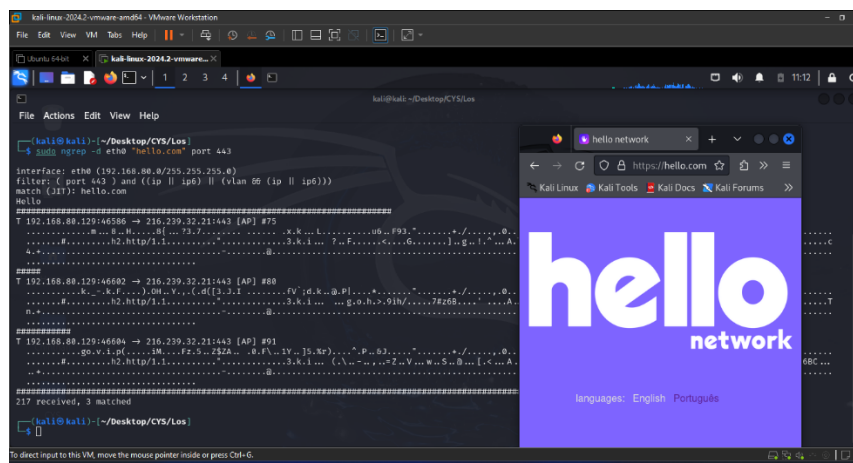
We have not wings, we cannot soar;
But we have feet to scale and climb
As we to higher levels rise.

(kali@kali)~[/Desktop/CYS/Los]
$
```

2. Explore variations of grep command

- a. ngrep

ngrep (network grep) is a network packet analyser that works similarly to grep, but for network traffic.



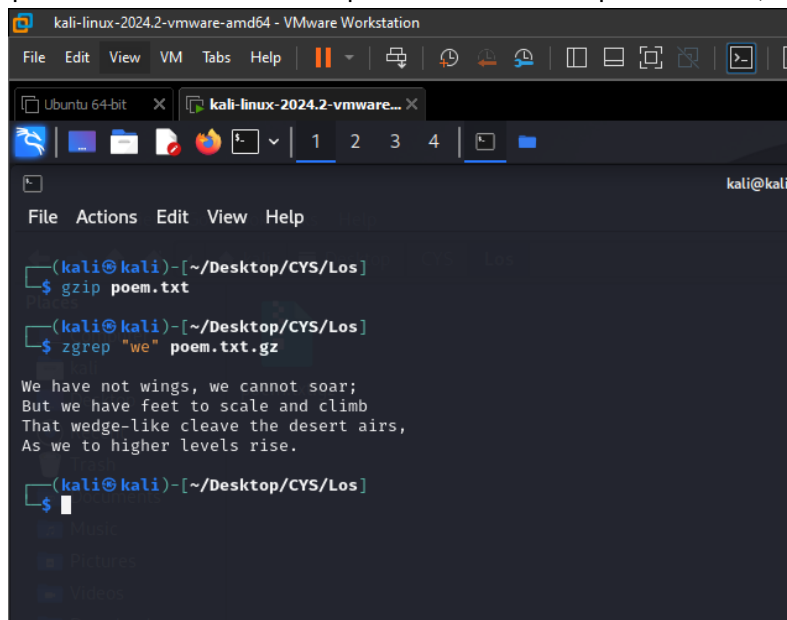
- b. pgrep

pgrep is a command used to search for processes running on the system by name or other attributes.

```
(kali@kali)-[~/Desktop/CYS/Los]
$ pgrep -u root -a
1 /sbin/init splash
2 [kthreadd]
3 [pool_workqueue_release]
4 [kworker/R-rcu_g]
5 [kworker/R-rcu_p]
6 [kworker/R-slub_]
7 [kworker/R-netns]
9 [kworker/0:0H-events_highpri]
11 [kworker/u64:0-ext4-rsv-conversion]
12 [kworker/R-mm_pe]
13 [rcu_tasks_kthread]
14 [rcu_tasks_rude_kthread]
15 [rcu_tasks_trace_kthread]
16 [ksoftirqd/0]
17 [rcu_preempt]
18 [migration/0]
19 [idle_inject/0]
20 [cpuhp/0]
21 [cpuhp/1]
22 [idle_inject/1]
23 [migration/1]
24 [ksoftirqd/1]
27 [cpuhp/2]
28 [idle_inject/2]
29 [migration/2]
30 [ksoftirqd/2]
32 [kworker/2:0H-kblockd]
```

c. **zgrep**

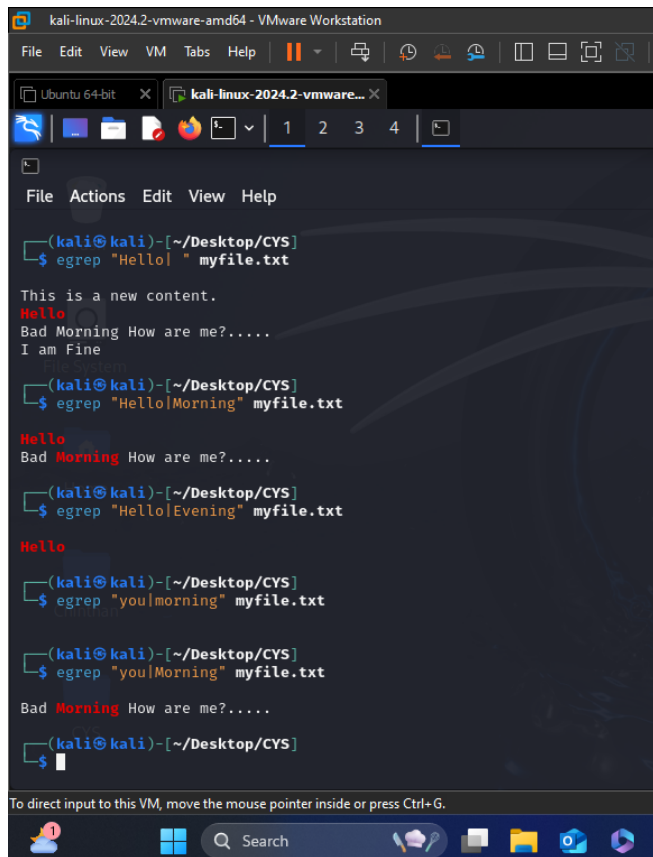
zgrep is used to search for text patterns within compressed files, such as .gz files.



```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
Ubuntu 64-bit x kali-linux-2024.2-vmware... x
1 2 3 4
kali@kali:~$
File Actions Edit View Help
(kali@kali)-[~/Desktop/CYS/Los]
$ gzip poem.txt
(kali@kali)-[~/Desktop/CYS/Los]
$ zgrep "we" poem.txt.gz
We have not wings, we cannot soar;
But we have feet to scale and climb
That wedge-like cleave the desert airs,
As we to higher levels rise.
(kali@kali)-[~/Desktop/CYS/Los]
$
```

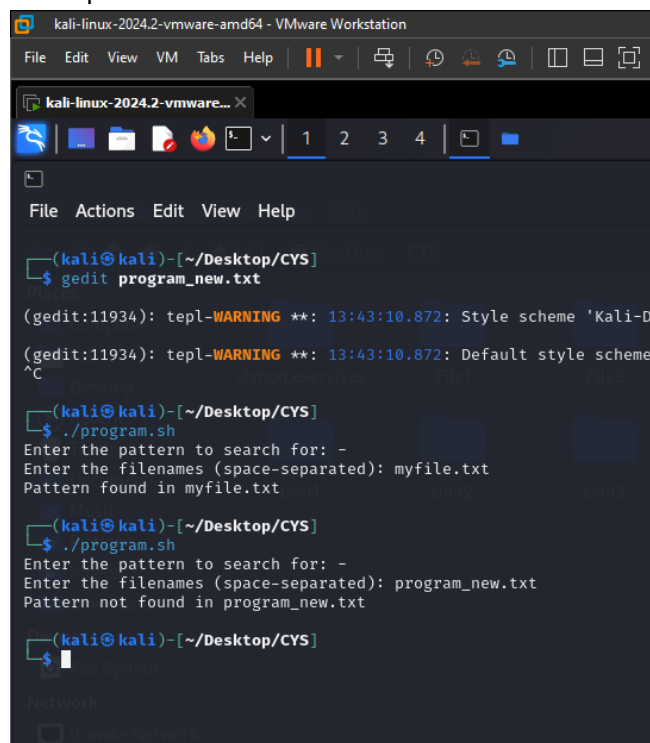
d. **egrep**

egrep (extended grep) is a version of grep that supports extended regular expressions.

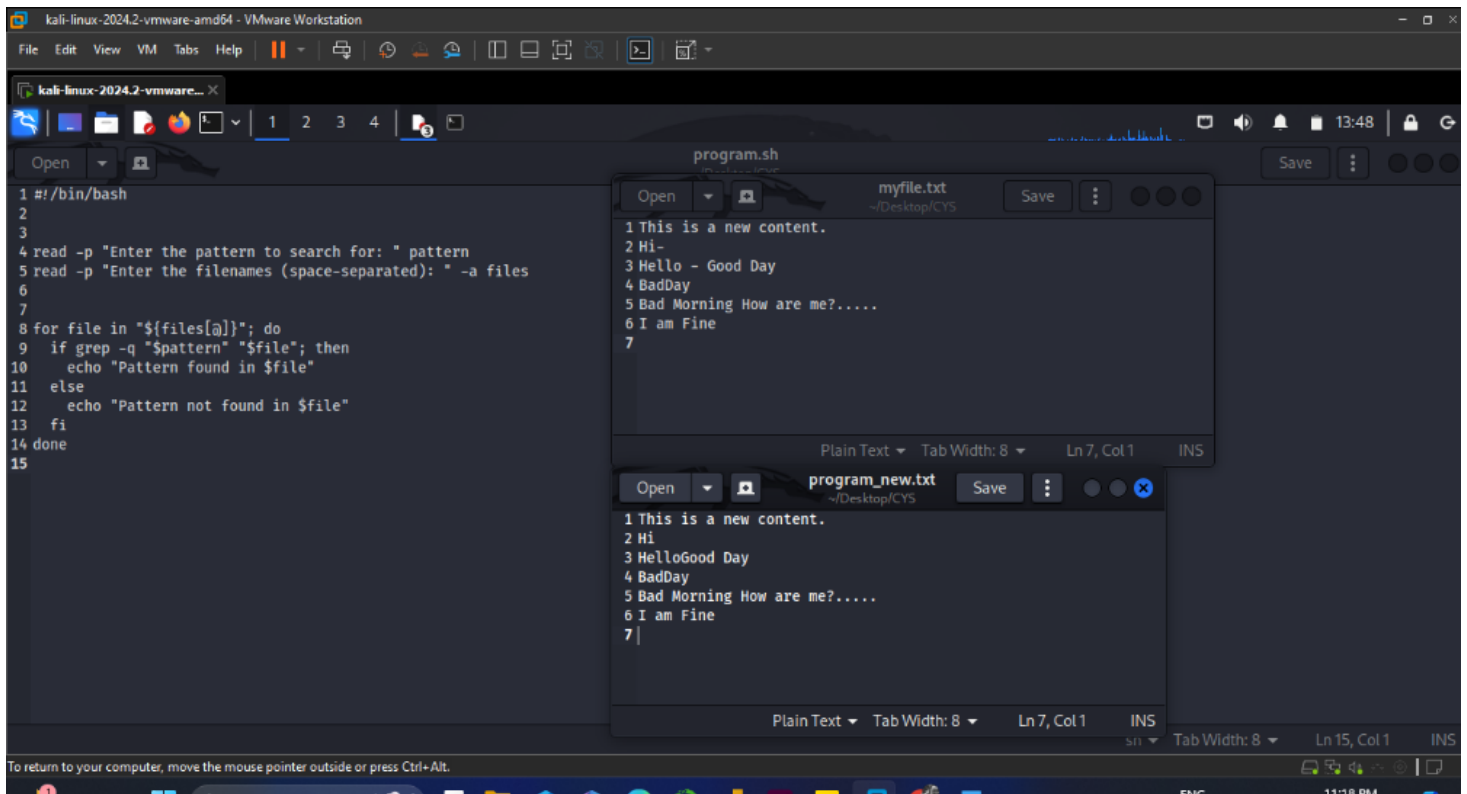


```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
kali-linux-2024.2-vmware...
File Actions Edit View Help
(kali@kali)-[~/Desktop/CYS]
$ egrep "Hello" myfile.txt
This is a new content.
Hello
Bad Morning How are me?.....
I am Fine
(kali@kali)-[~/Desktop/CYS]
$ egrep "Hello|Morning" myfile.txt
Hello
Bad Morning How are me?.....
(kali@kali)-[~/Desktop/CYS]
$ egrep "Hello|Evening" myfile.txt
Hello
(kali@kali)-[~/Desktop/CYS]
$ egrep "you|morning" myfile.txt
(kali@kali)-[~/Desktop/CYS]
$ egrep "you|Morning" myfile.txt
Bad Morning How are me?.....
(kali@kali)-[~/Desktop/CYS]
$
```

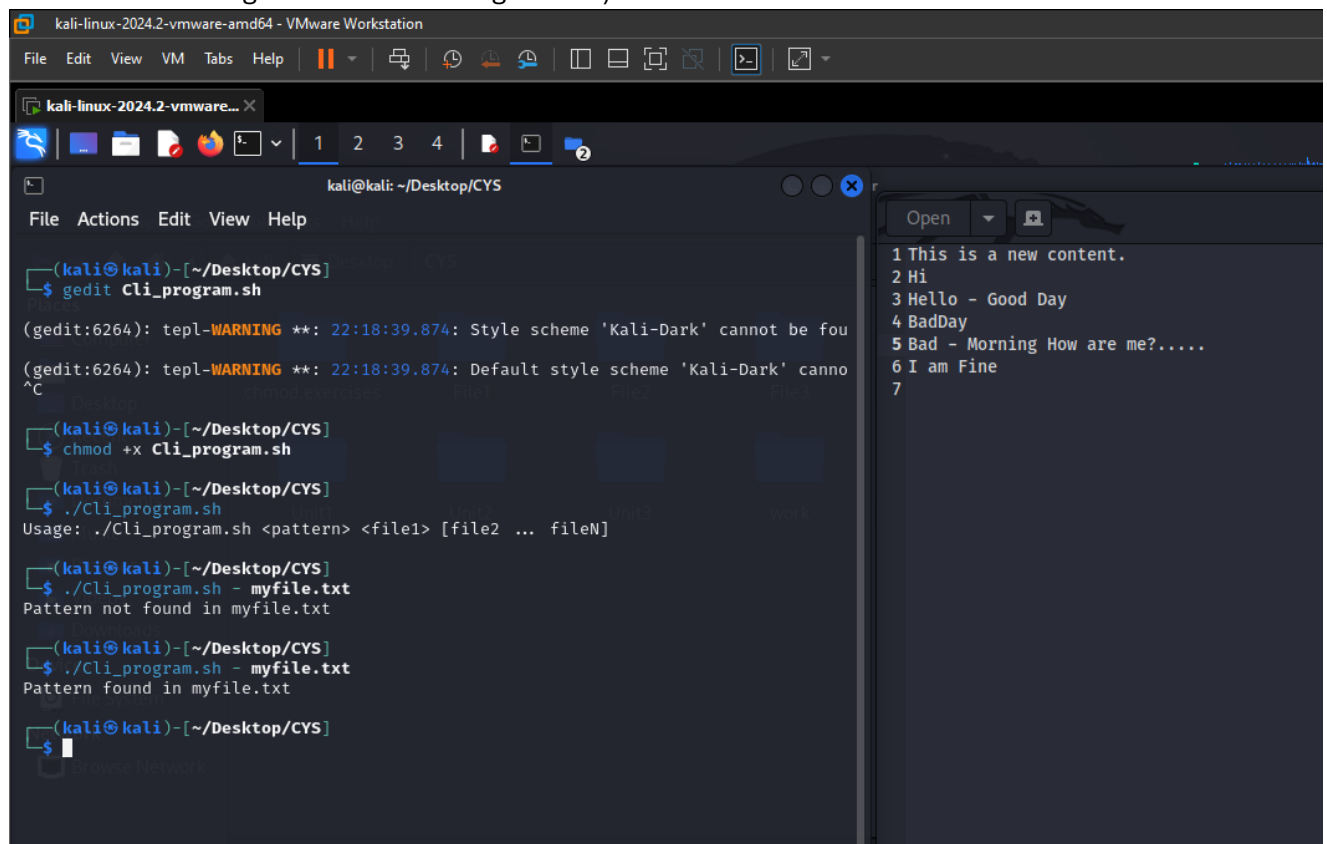
3. Write a shell script to get the pattern and filenames from the user and check whether the pattern is present or not.



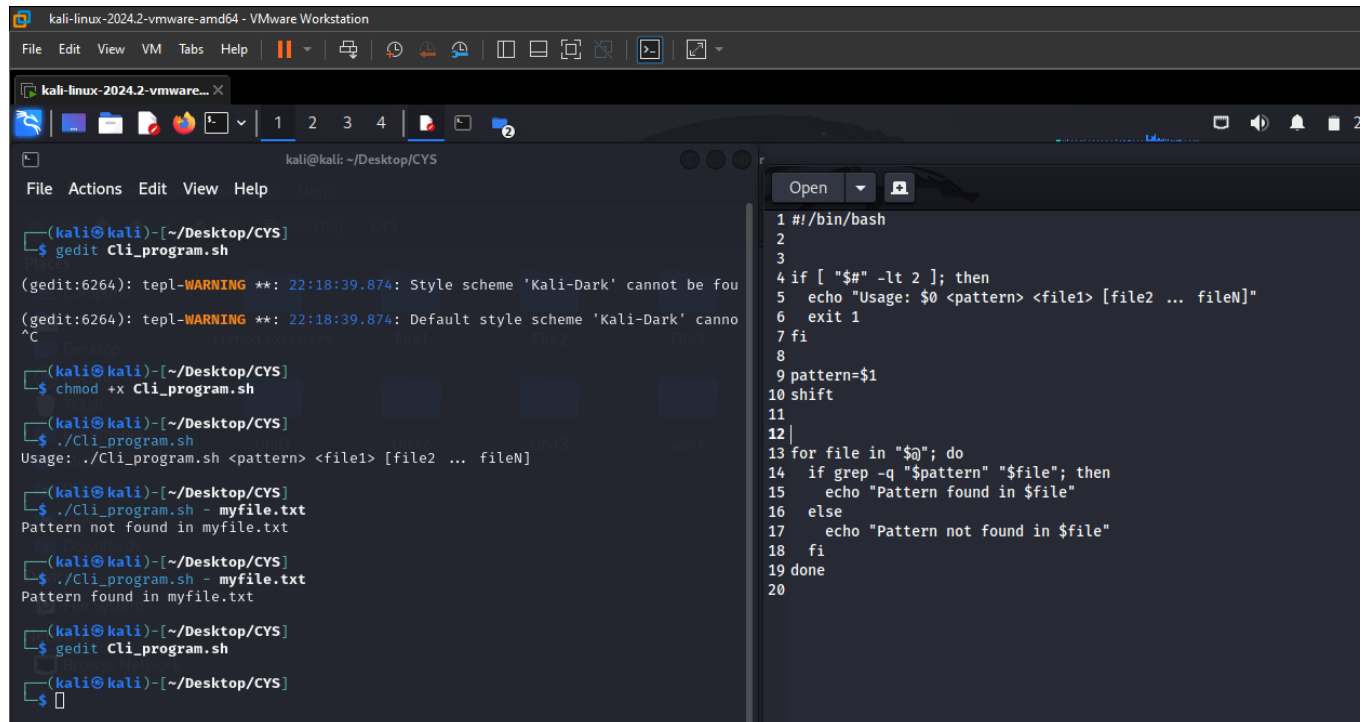
```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
kali-linux-2024.2-vmware...
File Actions Edit View Help
(kali@kali)-[~/Desktop/CYS]
$ gedit program_new.txt
(gedit:11934): tepl-WARNING **: 13:43:10.872: Style scheme 'Kali-D
(gedit:11934): tepl-WARNING **: 13:43:10.872: Default style scheme
^C
(kali@kali)-[~/Desktop/CYS]
$ ./program.sh
Enter the pattern to search for: -
Enter the filenames (space-separated): myfile.txt
Pattern found in myfile.txt
(kali@kali)-[~/Desktop/CYS]
$ ./program.sh
Enter the pattern to search for: -
Enter the filenames (space-separated): program_new.txt
Pattern not found in program_new.txt
(kali@kali)-[~/Desktop/CYS]
$
```



4. Rewrite the above shell script using command line arguments. (pass the pattern and file through command line arguments)



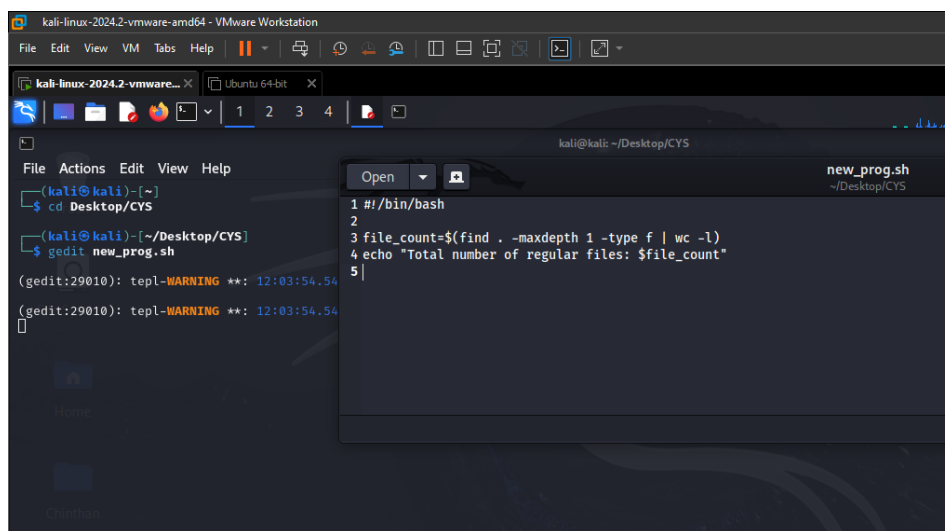
Firstly Tested without '-' in the myfile.txt which gave "Pattern not found".
Then tested with '-' in the myfile.txt which gave "Pattern Found"



```
kali@kali: ~/Desktop/CYS
(gedit:6264): tepl-WARNING **: 22:18:39.874: Style scheme 'Kali-Dark' cannot be found
(gedit:6264): tepl-WARNING **: 22:18:39.874: Default style scheme 'Kali-Dark' cannot be found
^C
(kali@kali)~-[~/Desktop/CYS]
$ gedit Cli_program.sh
(kali@kali)~-[~/Desktop/CYS]
$ chmod +x Cli_program.sh
(kali@kali)~-[~/Desktop/CYS]
$ ./Cli_program.sh
Usage: ./Cli_program.sh <pattern> <file1> [file2 ... fileN]
(kali@kali)~-[~/Desktop/CYS]
$ ./Cli_program.sh - myfile.txt
Pattern not found in myfile.txt
(kali@kali)~-[~/Desktop/CYS]
$ ./Cli_program.sh - myfile.txt
Pattern found in myfile.txt
(kali@kali)~-[~/Desktop/CYS]
$ gedit Cli_program.sh
(kali@kali)~-[~/Desktop/CYS]
$
```

```
1 #!/bin/bash
2
3
4 if [ "$#" -lt 2 ]; then
5   echo "Usage: $0 <pattern> <file1> [file2 ... fileN]"
6   exit 1
7 fi
8
9 pattern=$1
10 shift
11
12 |
13 for file in "$@"; do
14   if grep -q "$pattern" "$file"; then
15     echo "Pattern found in $file"
16   else
17     echo "Pattern not found in $file"
18   fi
19 done
20
```

5. Write a shell script to count total number of regular files in the current working directory.



```
kali@kali: ~/Desktop/CYS
(kali@kali)~-[~]
$ cd Desktop/CYS
(kali@kali)~-[~/Desktop/CYS]
$ gedit new_prog.sh
(gedit:29010): tepl-WARNING **: 12:03:54.54
(gedit:29010): tepl-WARNING **: 12:03:54.54
^C
(kali@kali)~-[~/Desktop/CYS]
$ ./new_prog.sh
Total number of regular files: 5
```

```
1 #!/bin/bash
2
3 file_count=$(find . -maxdepth 1 -type f | wc -l)
4 echo "Total number of regular files: $file_count"
5
```

```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
kali-linux-2024.2-vmware... X Ubuntu 64-bit X
1 2 3 4
kali@kali: ~/Desktop/CYS
File Actions Edit View Help
(kali@kali)-[~]
$ cd Desktop/CYS
(kali@kali)-[~/Desktop/CYS]
$ gedit new_prog.sh
(gedit:29010): tepl-WARNING **: 12:03:54.542: Style scheme 'Kali-Dark' cannot be found, falling back to
(gedit:29010): tepl-WARNING **: 12:03:54.542: Default style scheme 'Kali-Dark' cannot be found, check y
(kali@kali)-[~/Desktop/CYS]
$ ./new_prog.sh
Total number of regular files: 10
(kali@kali)-[~/Desktop/CYS]
$
```

6. pipe

- a) Pick the line from 3 to 5.

```
File Actions Edit View Help
total 36K
-rw-rw-r-- 1 kali kali 5.0K Aug 18 04:20 python_1.py
drwxrwxr-x 2 kali kali 4.0K Aug 24 12:06 Los
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt
-rwxrwxr-x 1 kali kali 285 Aug 21
-rwxrwxr-x 1 kali kali 274 Aug 21
(kali@kali)-[~/Desktop/CYS]
$ ls -ls | head -n 6
total 36
4 -rwxrwxr-x 1 kali kali 274 Aug 2
0 -rw-rw-r-- 1 kali kali 0 Aug 2
4 drwxrwxr-x 2 kali kali 4096 Aug 2
4 -rw-rw-r-- 1 kali kali 92 Aug 2
4 -rwxrwxr-x 1 kali kali 113 Aug 2
(kali@kali)-[~/Desktop/CYS]
$ sed -n '3,5p' poem.txt
By slow degrees, by more and more,
The cloudy summits of our time.
(kali@kali)-[~/Desktop/CYS]
$ gedit poem.txt
(gedit:32592): tepl-WARNING **: 12:
(gedit:32592): tepl-WARNING **: 12:
22 Henry Wadsworth Longfellow (1807-1882) was an American poet and educator.
23
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.
```

- b) List the top 5 largest files in a directory and display their sizes

```
(kali@kali)-[~/Desktop/CYS]
$ ls -ls | head -n 6
total 36
4 -rwxrwxr-x 1 kali kali 274 Aug 21 22:16 Cli_program.sh
0 -rw-rw-r-- 1 kali kali 0 Aug 22 10:43 file.txt
4 drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los
4 -rw-rw-r-- 1 kali kali 92 Aug 21 22:21 myfile.txt
4 -rwxrwxr-x 1 kali kali 113 Aug 22 10:37 new_prog.sh
(kali@kali)-[~/Desktop/CYS]
$
```

- c) Print the last 2 modified file details

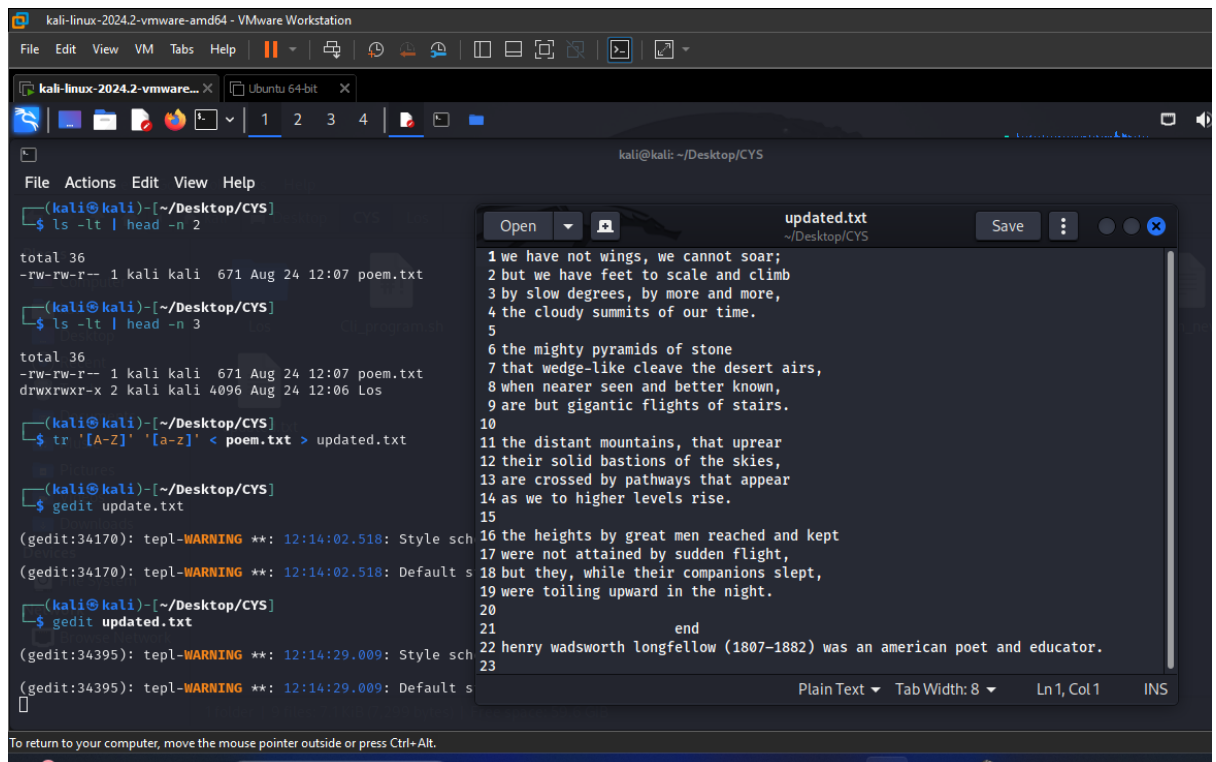

```
(kali㉿kali)-[~/Desktop/CYS]
$ ls -lt | head -n 3

total 36
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt
drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los

(kali㉿kali)-[~/Desktop/CYS]
$
```

7. Redirection

- a) Convert uppercase into lowercase characters



The screenshot shows a Kali Linux terminal window with the following commands and output:

```
(kali㉿kali)-[~/Desktop/CYS]
$ ls -lt | head -n 2
total 36
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt

(kali㉿kali)-[~/Desktop/CYS]
$ ls -lt | head -n 3
total 36
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt
drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los

(kali㉿kali)-[~/Desktop/CYS]
$ tr 'A-Z' 'a-z' < poem.txt > updated.txt

(kali㉿kali)-[~/Desktop/CYS]
$ gedit update.txt
(gedit:34170): tepl-WARNING **: 12:14:02.518: Style sch
(gedit:34170): tepl-WARNING **: 12:14:02.518: Default s

(kali㉿kali)-[~/Desktop/CYS]
$ gedit updated.txt
(gedit:34395): tepl-WARNING **: 12:14:29.009: Style sch
(gedit:34395): tepl-WARNING **: 12:14:29.009: Default s
```

The gedit editor window shows the contents of 'updated.txt':

```
1 we have not wings, we cannot soar;
2 but we have feet to scale and climb
3 by slow degrees, by more and more,
4 the cloudy summits of our time.
5
6 the mighty pyramids of stone
7 that wedge-like cleave the desert airs,
8 when nearer seen and better known,
9 are but gigantic flights of stairs.
10
11 the distant mountains, that uprear
12 their solid bastions of the skies,
13 are crossed by pathways that appear
14 as we to higher levels rise.
15
16 the heights by great men reached and kept
17 were not attained by sudden flight,
18 but they, while their companions slept,
19 were toiling upward in the night.
20
21 end
22 henry wadsworth longfellow (1807-1882) was an american poet and educator.
23
```

- b) List the contents of your current directory, including the ownership and permissions, and redirect the output to a file called contents.txt within your home directory.

```
(kali㉿kali)-[~/Desktop/CYS]
$ ls -l

total 44
-rwxrwxr-x 1 kali kali 274 Aug 21 22:16 Cli_program.sh
-rw-rw-r-- 1 kali kali 0 Aug 22 10:43 file.txt
drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los
-rw-rw-r-- 1 kali kali 92 Aug 21 22:21 myfile.txt
-rwxrwxr-x 1 kali kali 113 Aug 22 10:37 new_prog.sh
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt
-rwxrwxr-x 1 kali kali 416 Aug 24 12:23 program_1.sh
-rw-rw-r-- 1 kali kali 87 Aug 21 13:41 program_new.txt
-rwxrwxr-x 1 kali kali 285 Aug 21 13:39 program.sh
-rw-rw-r-- 1 kali kali 5106 Aug 18 04:20 python_1.py
-rw-rw-r-- 1 kali kali 671 Aug 24 12:13 updated.txt

(kali㉿kali)-[~/Desktop/CYS]
$ ls -l > ~/contents.txt

(kali㉿kali)-[~/Desktop/CYS]
$ ~/contents.txt

zsh: permission denied: /home/kali/contents.txt

(kali㉿kali)-[~/Desktop/CYS]
$ chmod +x ~/contents.txt
```

```
(kali㉿kali)-[~/Desktop/CYS]
$ cat ~/contents.txt

total 44
-rwxrwxr-x 1 kali kali 274 Aug 21 22:16 Cli_program.sh
-rw-rw-r-- 1 kali kali 0 Aug 22 10:43 file.txt
drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los
-rw-rw-r-- 1 kali kali 92 Aug 21 22:21 myfile.txt
-rwxrwxr-x 1 kali kali 113 Aug 22 10:37 new_prog.sh
-rw-rw-r-- 1 kali kali 671 Aug 24 12:07 poem.txt
-rwxrwxr-x 1 kali kali 416 Aug 24 12:23 program_1.sh
-rw-rw-r-- 1 kali kali 87 Aug 21 13:41 program_new.txt
-rwxrwxr-x 1 kali kali 285 Aug 21 13:39 program.sh
-rw-rw-r-- 1 kali kali 5106 Aug 18 04:20 python_1.py
-rw-rw-r-- 1 kali kali 671 Aug 24 12:13 updated.txt

(kali㉿kali)-[~/Desktop/CYS]
$
```

c) Rewrite the shell script (3) using <<

```
kali-linux-2024.2-vmware-amd64 - VMware Workstation
File Edit View VM Tabs Help
kali-linux-2024.2-vmware-amd64 X Ubuntu 64-bit X
1 2 3 4
kali@kali: ~/Desktop/CYS
File Actions Edit View Help
(kali㉿kali)-[~/Desktop/CYS]
$ gedit program_1.sh

(gedit:38541): tepl-WARNING **: 12:22:59.981: Style scheme 'Kali-Dark' cannot be found, falling back to 'Kali-Dark' default style scheme.
(gedit:38541): tepl-WARNING **: 12:22:59.982: Default style scheme 'Kali-Dark' cannot be found, check your installation.
(gedit:38541): Gtk-WARNING **: 12:23:01.628: Calling org.xfce.Session.Manager.Inhibit failed: GDBus.Error:org.freedesktop.DBus.Error.UnknownMethod: No
hibit"

(kali㉿kali)-[~/Desktop/CYS]
$ chmod +x program_1.sh

(kali㉿kali)-[~/Desktop/CYS]
$ ./program_1.sh
Enter the pattern to search for:
-
Enter the filenames (space-separated):
program_1.sh prog_1.sh
Pattern found in program_1.sh
grep: prog_1.sh: No such file or directory
Pattern not found in prog_1.sh

(kali㉿kali)-[~/Desktop/CYS]
$ ls -l
total 44
-rwxrwxr-x 1 kali kali 274 Aug 21 22:16 Cli_program.sh
-rw-rw-r-- 1 kali kali 0 Aug 22 10:43 file.txt
drwxrwxr-x 2 kali kali 4096 Aug 24 12:06 Los
-rw-rw-r-- 1 kali kali 92 Aug 21 22:21 myfile.txt
-rwxrwxr-x 1 kali kali 113 Aug 22 10:37 new_prog.sh

To return to your computer, move the mouse pointer outside or press Ctrl+Alt.
```

```
program_1.sh
~/Desktop/CYS
Open Save
1 #!/bin/bash
2
3 # Use a here document to read user input
4 while : ; do
5   cat <<EOF
6   Enter the pattern to search for:
7   EOF
8   read pattern
9
10  cat <<EOF
11  Enter the filenames (space-separated):
12  EOF
13  read -a files
14
15  for file in "${files[@]}; do
16    if grep -q "$pattern" "$file"; then
17      echo "Pattern found in $file"
18    else
19      echo "Pattern not found in $file"
20    fi
21  done
22
23  # Exit after processing
-Da sh Tab Width: 8 Ln 26, Col 1 INS
```

