Lab3:

**grep**: A powerful text search tool used to find specific patterns in files or output.
**Pipe** (|): Allows you to chain commands together, using the output of one command as input for the next.
**Redirection:** Lets you control where input comes from and where output goes, using symbols like >, <, and >>.
**read command**: Used to accept user input in shell scripts.
**Line arguments:** Parameters passed to a script or command when it's executed.
**head:** Displays the beginning of a file (by default, the first 10 lines).
**tail:** Shows the end of a file (by default, the last 10 lines).
**tr:** Used for translating or deleting characters.

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"

```
┌──(kali㊀kali)-[~/nithesh]
└─$ grep "they" poem.txt
But they, while their companions slept,

┌──(kali㊀kali)-[~/nithesh]
└─$ cat > 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. ^C

┌──(kali㊀kali)-[~/nithesh]
└─$ grep "they" poem.txt
But they, while their companions slept,
```

b. Print all the lines other than pattern "They"

```
┌──(kali㊀kali)-[~/nithesh]
└─$ 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,
```

c. Print all the lines starts with "w"

```
┌──(kali㊀kali)-[~/nithesh]
└─$ grep -i "^w" poem.txt

We have not wings, we cannot soar;
When nearer seen and better known,
Were not attained by sudden flight,
```

d. Print the next lines after the pattern "stone" matches
   Hint: man grep

```
┌──(kali㊀kali)-[~/nithesh]
└─$ grep -A 1 "stone" poem.txt

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

e. Print the 2 lines above the pattern "stone" matches
   Hint: man grep

```
┌──(kali㊀kali)-[~/nithesh]
└─$ grep -B 2 "stone" poem.txt

By slow degrees, by more and more,
The cloudy summits of our time.
The mighty pyramids of stone
```

f. Search the pattern with exact match

```
┌──(kali㊀kali)-[/home/kali/nithesh]
└─PS> grep -w "stone" poem.txt
The mighty pyramids of stone
```

2. Explore variations of grep command
   a. Ngrep

```
┌──(kali⊛kali)-[/home/kali/nithesh]
└─PS> ngrep "pattern" interface
any: You don't have permission to perform this capture on that device (socket: Operation not permitted): Operation no
exit
0 received, 0 matched
```

b. Pgrep

```
┌──(kali⊛kali)-[/home/kali/nithesh]
└─PS> pgrep ssh
1253
```

c. Zgrep

```
┌──(kali⊛kali)-[/home/kali/nithesh]
└─PS> zgrep "pattern" poem.txt
```

d. egrep

```
──(kali⊛kali)-[/home/kali/nithesh]
─PS> egrep pattern poem.txt

──(kali⊛kali)-[/home/kali/nithesh]
─PS> egrep "error|warning"poem.txt
```

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

```
#!/bin/bash

read -p "Enter the pattern to search: " pattern
read -p "Enter the filename: " filename

if grep -q "$pattern" "$filename"; then
    echo "Pattern found in the file."
else
    echo "Pattern not found in the file."
fi
~
```

```
┌──(kali⊛kali)-[/home/kali/nithesh]
└─PS> chmod +x search_greo.sh

┌──(kali⊛kali)-[/home/kali/nithesh]
└─PS> ./search_greo.sh
Enter the pattern to search: file
Enter the filename: pipefile
```

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

```
#!/bin/bash

if [ $# -ne 2 ]; then
    echo "Usage: $0 <pattern> <filename>"
    exit 1
fi

pattern=$1
filename=$2

if grep -q "$pattern" "$filename"; then
    echo "Pattern found in the file."
else
    echo "Pattern not found in the file."
fi
```

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

```
#!/bin/bash
# This script counts the number of regular files in the current working directory.

file_count=$(find . -maxdepth 1 -type f | wc -l)
echo "Total number of regular files in the current directory: $file_count"
~
```

```
┌──(kali㊞kali)-[~]
└─$ cd nithesh

┌──(kali㊞kali)-[~/nithesh]
└─$ nano count_files.sh


┌──(kali㊞kali)-[~/nithesh]
└─$ chmod +x count_files.sh


┌──(kali㊞kali)-[~/nithesh]
└─$ ./count_files.sh

Total number of regular files in the current directory: 15
```

6.  pipe
  a)  Pick the line from 3 to 5.

```
┌──(kali㊞kali)-[~/nithesh]
└─$ sed -n '3,5p' poem.txt

By slow degrees, by more and more,
The cloudy summits of our time.
The mighty pyramids of stone
```

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

```
┌──(kali㊞kali)-[~/nithesh]
└─$ cd ~/nithesh

┌──(kali㊞kali)-[~/nithesh]
└─$ du -ah . | sort -rh | head -n 5

160K    .
48K     ./cys
12K     ./.god.txt.swp
12K     ./cys/Unit2
12K     ./cys/Unit1
```

  c)  Print the last 2 modified file details

```
┌──(kali㊞kali)-[~/nithesh]
└─$ ls -lt | head -n 3

total 88
-rwxrwxr-x 1 kali kali  220 Aug 23 10:40 count_files.sh
-rw-rw-r-- 1 kali kali  221 Aug 23 10:37 shell.sh
```

7.  Redirection
a)  Convert uppercase into lowercase characters
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.
c)  Rewrite the shell script (3) using <<

```
┌──(kali㊀kali)-[~]
└─$ cd nithesh

┌──(kali㊀kali)-[~/nithesh]
└─$ cat 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,

┌──(kali㊀kali)-[~/nithesh]
└─$ tr '[:upper:]' '[:lower:]' < poem.txt > poem_lowercase.txt

┌──(kali㊀kali)-[~/nithesh]
└─$ cat poem_lowercase.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,
```

```
┌──(kali㊀kali)-[~/nithesh]
└─$ ls -l > ~/contents.txt


┌──(kali㊀kali)-[~/nithesh]
└─$ cat ~/contents.txt

total 100
drwxrwxr-x 2 kali kali 4096 Aug 16 10:43 *[[:alnum:]]*
drwxrwxr-x 2 kali kali 4096 Aug 16 10:42 alnum
drwxrwxr-x 2 kali kali 4096 Aug 16 10:49 *[[:alpha:]]*
drwxrwxr-x 2 kali kali 4096 Aug 16 10:49 *[[:alpha:]]*,ls
drwxr-xr-x 4 kali kali 4096 Aug  6 13:22 CLI
-rw-rw-r-- 1 kali kali  244 Aug 23 10:26 command.sh
-rwxrwxr-x 1 kali kali  220 Aug 23 10:40 count_files.sh
drwxr-xr-x 8 kali kali 4096 Aug 12 10:24 cys
drwxrwxr-x 2 kali kali 4096 Aug 16 10:49 *[[:digit:]]*,ls
-rw-r--r-- 1 kali kali    0 Aug  6 12:30 example.txt
-rw-rw-r-- 1 kali kali    0 Aug 12 10:18 file1
-rw-r--r-- 1 kali kali    0 Aug 12 10:18 file2
-rw-rw-r-- 1 kali kali    0 Aug 12 10:18 file3
-rw-r--r-- 1 kali kali    0 Aug  6 12:38 file_name
-rw-r--r-- 1 kali kali    0 Aug  5 12:34 filename
-rwxrwxr-x 1 kali kali  230 Aug 23 10:16 grep.txt
prw-r--r-- 1 kali kali    0 Aug  9 14:09 hacker
drwxr-xr-x 2 kali kali 4096 Aug 10 05:56 hello1
drwxrwxr-x 2 kali kali 4096 Aug 16 10:49 *[[:lower:]]*
drwxrwxr-x 2 kali kali 4096 Aug 16 10:46 ls
drwxr-xr-x 2 kali kali 4096 Aug  6 14:06 new_folder
drwxr-xr-x 2 kali kali 4096 Aug  6 11:11 nithesh
-rw-rw-r-- 1 kali kali  531 Aug 23 10:49 output.txt
drwxr-xr-x 3 kali kali 4096 Aug  6 14:06 parent_foldder
-rw------- 1 kali kali    1 Aug 21 06:20 passwd.save
prw-r--r-- 1 kali kali    0 Aug  9 14:08 pipefile
prw-r--r-- 1 kali kali    0 Aug  9 14:08 pipefile.gz
-rw-rw-r-- 1 kali kali  531 Aug 23 10:58 poem_lowercase.txt
-rw-rw-r-- 1 kali kali  531 Aug 23 04:02 poem.txt
-rwxrwxr-x 1 kali kali  230 Aug 23 10:18 search_greo.sh
-rwxrwxr-x 1 kali kali  565 Aug 23 10:51 search_script.sh
-rw-rw-r-- 1 kali kali  221 Aug 23 10:37 shell.sh
drwxr-xr-x 2 kali kali 4096 Aug 10 06:00 testdir
-rw-r--r-- 1 kali kali    0 Aug  6 12:54 time
drwxrwxr-x 2 kali kali 4096 Aug 16 10:46 *[[:upper:]]*

┌──(kali㊀kali)-[~/nithesh]
└─$ nano search_script.sh


┌──(kali㊀kali)-[~/nithesh]
└─$ chmod +x search_script.sh


┌──(kali㊀kali)-[~/nithesh]
└─$ ./search_script.sh

Enter the pattern to search:
poem
Enter the filename:
search_script.sh
./search_script.sh: line 10: warning: here-document at line 9 delimited by end-of-file (wanted `EOF')
```

"You don't have to see the whole staircase, just take the first step."

— **Martin Luther King Jr.**