

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”

```
$ grep "they" poem.txt  
But they, while their companions slept,
```

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

```

$ 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”

```

$ grep '^w' poem.txt

```

- d. Print the next lines after the pattern “stone” matches

Hint: man grep

```

$ grep -A 50 'stone' poem.txt
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.

```

- e. Print the 2 lines above the pattern “stone” matches

Hint: man grep

```

$ 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

```

$ grep -w 'they' poem.txt
But they, while their companions slept,

```

2. Explore variations of grep command
 - a. ngrep – network grep
 - b. pgrep - look up, signal, or wait for processes based on name and other attributes
 - c. zgrep - search possibly compressed files for a regular expression
 - d. egrep - print lines that match patterns
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
echo "Enter the pattern to search for:"
read pattern

echo "Enter the filenames to search (space-separated):"
read -a filenames

# Loop through each file and check if the pattern is present
for file in "${filenames[@]}"
do
    if [[ -f $file ]]; then
        if grep -q "$pattern" "$file"; then
            echo "Pattern '$pattern' found in $file"
        else
            echo "Pattern '$pattern' not found in $file"
        fi
    else
        echo "$file does not exist."
    fi
done

$ vi search_pattern.sh

$ ./search_pattern.sh
Enter the pattern to search for:
They
Enter the filenames to search (space-separated):
poem.txt
Pattern 'They' not found in poem.txt
```

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

```
#!/bin/bash

# Check if at least two arguments are passed (pattern + at least one filename)
if [ "$#" -lt 2 ]; then
    echo "Usage: $0 pattern filename [filename ...]"
    exit 1
fi

# The first argument is the pattern
pattern=$1

# The remaining arguments are the filenames
shift # Shift the arguments to exclude the pattern from $@
filenames=("$@")

# Loop through each file and check if the pattern is present
for file in "${filenames[@]}"
do
    if [[ -f $file ]]; then
        if grep -q "$pattern" "$file"; then
            echo "Pattern '$pattern' found in $file"
        else
            echo "Pattern '$pattern' not found in $file"
        fi
    else
        echo "$file does not exist."
    fi
done

$ vi search_pattern1.sh

$ ./search_pattern1.sh they poem.txt
Pattern 'they' found in poem.txt
```

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

```
#!/bin/bash
# Count the number of regular files in the current directory
file_count=$(find . -maxdepth 1 -type f | wc -l)

# Display the count
echo "Total number of regular files in the current directory: $file_count"

$ vi count_files.sh

$ chmod +x count_files.sh

$ ./count_files.sh
Total number of regular files in the current directory: 18

$ ls
Commands.txt  Commands2.txt  File2  count_files.sh  file2  fileA  fileAB  lab3.sh  search_pattern.sh
Commands1.txt  File1  File3  file1  file33  fileAAA  filea  poem.txt  search_pattern1.sh
```

6. pipe

- a) Pick the line from 3 to 5.

```
$ sed -n '3,5p' poem.txt
By slow degrees, by more and more,
The cloudy summits of our time.
The mighty pyramids of stone
```

OR

```
$ 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

```
$ find . -type f -exec du -h {} + | sort -rh | head -n 5
4.0K  ./search_pattern1.sh
4.0K  ./search_pattern.sh
4.0K  ./poem.txt
4.0K  ./lab3.sh
4.0K  ./count_files.sh
```

- c) Print the last 2 modified file details

```
$ ls -lt | head -n 3
total 24
-rwxrwxr-x 1 bhoomika bhoomika 220 Aug 25 08:21 count_files.sh
-rwxrwxr-x 1 bhoomika bhoomika 713 Aug 25 08:18 search_pattern1.sh
```

7. Redirection

- a) Convert uppercase into lowercase characters

```
$ tr 'A-Z' 'a-z' < file1 > file2

$ cat file2
hello

$ cat file1
HELLO
```

- 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.

```
$ ls -l > ~/content.txt

$ cd
```

```

$ cat content.txt
total 32
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 Commands.txt
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 Commands1.txt
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 Commands2.txt
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 19:44 File1
-rwxrwxr-x 1 bhoomika bhoomika 22 Aug 24 05:51 File2
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 File3
-rwxrwxr-x 1 bhoomika bhoomika 220 Aug 25 08:21 count_files.sh
-rwx----- 1 bhoomika bhoomika 6 Aug 25 08:31 file1
-rw-rw-r-- 1 bhoomika bhoomika 6 Aug 25 08:32 file2
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 file33
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 fileA
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 fileAAA
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 fileAB
-rw-rw-r-- 1 bhoomika bhoomika 0 Aug 20 18:54 filea
-rwxrwxr-x 1 bhoomika bhoomika 4 Aug 25 07:54 lab3.sh
-rw-rw-r-- 1 bhoomika bhoomika 667 Aug 21 18:10 poem.txt
-rwxrwxr-x 1 bhoomika bhoomika 1210 Aug 25 08:14 search_pattern.sh
-rwxrwxr-x 1 bhoomika bhoomika 713 Aug 25 08:18 search_pattern1.sh

```

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

```

#!/bin/bash

# Prompt the user for a pattern
read -p "Enter the pattern to search for: " pattern

# Prompt the user for filenames
echo "Enter the filenames to search (space-separated):"
read -a filenames

# Loop through each file and check if the pattern is present
for file in "${filenames[@]}"
do
    if [[ -f $file ]]; then
        grep "$pattern" "$file" <<EOF
        Pattern '$pattern' found in $file
        EOF
        if [ $? -eq 0 ]; then
            echo "Pattern '$pattern' found in $file"
        else
            echo "Pattern '$pattern' not found in $file"
        fi
    else
        echo "$file does not exist."
    fi
done

```

```

$ vi search_pattern.sh

```

```

$ chmod +x search_pattern.sh

```

```

$ ./search_pattern.sh
Enter the pattern to search for: hello
Enter the filenames to search (space-separated):
file2
hello
Pattern 'hello' found in file2

```

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

— Martin Luther King Jr.