**Unit-1 Assignment-I**

**1. Create a file called**example1.txt**using the**cat**command:**

cat > example1.txt

*Then type the following lines (press Enter after each line):*

water, water everywhere

and all the boards did shrink;

water, water everywhere,

No drop to drink.

*Then press Ctrl + D to save and exit.*

**2. Show the number of words in**example1.txt**:**

wc -w example1.txt

**3. List the text files in your current directory:**

ls \*.txt

**4. Make a copy of**example1.txt**and name it**example2.txt**:**

cp example1.txt example2.txt

**5. Rename**example1.txt**to**example.txt**:**

mv example1.txt example.txt

**6. Delete**example2.txt**:**

rm example2.txt

**7.**ls -l**and count the number of files using**wc

ls -l | wc -l

⚠️ Note: This counts the total lines, including the header line total N. To get the number of actual files, subtract 1:

expr $(ls -l | wc -l) - 1

**8. Set a file to be read-only using**chmod**and interpret**ls -l**permissions**

**Set a file (e.g.,**example.txt**) to read-only:**

chmod 444 example.txt

**View permissions:**

ls -l example.txt

**Output Example:**

-r--r--r-- 1 user user 85 Jun 19 10:00 example.txt

* - : Regular file
* r--r--r-- : Owner, group, and others all have **read-only** permissions
* No write (w) or execute (x) permissions

**9. Create**city1.txt**and**city2.txt**, compare with**diff**, and show lines 4 to 6 of**city1.txt

**Create files (using**cat**or any editor):**

cat > city1.txt

*Type:*

Delhi

Mumbai

Kolkata

Chennai

Bangalore

Hyderabad

*Then press Ctrl + D*

cat > city2.txt

*Type:*

Kolkata

Pune

Mumbai

Ahmedabad

Delhi

Surat

*Then press Ctrl + D*

**Compare the two files:**

diff city1.txt city2.txt

**Display lines 4 to 6 from**city1.txt**:**

sed -n '4,6p' city1.txt

**10. List files that contain the city named "Kolkata"**

grep -l "Kolkata" \*.txt

This lists all .txt files in the current directory that contain the string **"Kolkata"**.

**Unit-1 Assignment-II**

**1. Check if a triangle can be formed with 3 sides**

#!/bin/bash

echo "Enter 3 sides of a triangle:"

read a b c

if [ $((a + b)) -gt $c ] && [ $((a + c)) -gt $b ] && [ $((b + c)) -gt $a ]; then

echo "A triangle can be formed."

else

echo "A triangle cannot be formed."

fi

**2. Accept a string and check if it has at least 5 characters (including symbols)**

#!/bin/bash

echo "Enter a string:"

read str

length=${#str}

if [ $length -lt 5 ]; then

echo "String must be at least 5 characters long."

else

echo "String is valid."

fi

**3. Accept a word and check if it has at least 5 characters (only word characters)**

#!/bin/bash

echo "Enter a word:"

read word

# Check if input is a word and at least 5 characters

if [[ "$word" =~ ^[A-Za-z]+$ ]]; then

if [ ${#word} -lt 5 ]; then

echo "Word must be at least 5 characters long."

else

echo "Word is valid."

fi

else

echo "Invalid input. Please enter a word with alphabetic characters only."

fi

**4. Convert all characters in a file to lowercase**

#!/bin/bash

if [ $# -eq 0 ]; then

echo "Usage: $0 filename"

exit 1

fi

tr '[:upper:]' '[:lower:]' < "$1"

Save this as tolower.sh and run with:

bash tolower.sh yourfile.txt

**5. Combine three text files into one**

#!/bin/bash

if [ $# -ne 3 ]; then

echo "Usage: $0 file1.txt file2.txt file3.txt"

exit 1

fi

cat "$1" "$2" "$3" > combined.txt

echo "Files combined into combined.txt"

Here are the shell scripts and commands for questions 6 to 10. These can all be saved as .sh files and executed via terminal.

**6. Split even and odd numbered lines into separate files**

#!/bin/bash

if [ $# -ne 1 ]; then

echo "Usage: $0 filename"

exit 1

fi

file=$1

awk 'NR % 2 == 1 { print > "oddfile.txt" } NR % 2 == 0 { print > "evenfile.txt" }' "$file"

echo "Lines split into oddfile.txt and evenfile.txt"

**7. Display ODD, EVEN, and PRIME numbers in a range**

#!/bin/bash

if [ $# -ne 2 ]; then

echo "Usage: $0 start end"

exit 1

fi

start=$1

end=$2

echo "Odd Numbers:"

for ((i=start; i<=end; i++)); do

if (( i % 2 != 0 )); then

echo -n "$i "

fi

done

echo

echo "Even Numbers:"

for ((i=start; i<=end; i++)); do

if (( i % 2 == 0 )); then

echo -n "$i "

fi

done

echo

echo "Prime Numbers:"

for ((i=start; i<=end; i++)); do

if (( i < 2 )); then continue; fi

is\_prime=1

for ((j=2; j\*j<=i; j++)); do

if (( i % j == 0 )); then

is\_prime=0

break

fi

done

if (( is\_prime == 1 )); then

echo -n "$i "

fi

done

echo

**8. Display last modification time of a file**

#!/bin/bash

if [ $# -ne 1 ]; then

echo "Usage: $0 filename"

exit 1

fi

if [ -f "$1" ]; then

echo "Last modification time of $1:"

stat -c %y "$1"

else

echo "File does not exist."

fi

**9. Show all non-directory files in current directory**

#!/bin/bash

echo "Non-directory files:"

for file in \*; do

if [ -f "$file" ]; then

echo "$file"

fi

done

**10. Basic calculator supporting multiple operators**

#!/bin/bash

if [ $# -eq 0 ]; then

echo "Usage: $0 \"expression\""

echo "Example: $0 \"5 + 3 \* 2\""

exit 1

fi

expr="$\*"

# Replace ^ with \*\* for power (if used)

expr=${expr//^/\*\*}

# Evaluate expression using bc

result=$(echo "scale=4; $expr" | bc -l)

echo "Result: $result"

To calculate square root:

bash calc.sh "sqrt(49)"

To calculate with multiple operations:

bash calc.sh "5 + 3 \* 2 ^ 2"