LIST OF EXPERIMENTS

1. Study of basic LINUX & Vi Editor command

2. string and numerical handling functions.

    a) Write a shell script to compare two string.

    b) Write a shell script to extract the first and last character from a string.

    b) Write a shell script to find whether the given number is palindrome or not.

3. Loop and Selection constructs

    a) Write a shell script to find the factorial of a given number using for loop.

    b) Write a shell script to find the sum of n numbers using while loop.

    c) Write a shell script to implement menu driven program to perform all arithmetic

    operation using case statement.

    d) Write a shell script to print following pattern.

```
*
* *
* * *
* * * *
```

4. File Handling Functions:

    a) Converting File names from Uppercase to Lowercase

    b) Write a shell script to count the number of characters, words and lines in the file.

    c) Write a shell script to read and check the file exists or not, if not create the file.

5. Manipulate Date/Time/Calendar

6. Showing various system information

7. Implementation of process scheduling mechanism – FCFS, SJF, Priority Queue.

8. Reader – Writer Problem.

9. Dinner's Philosopher Problem.

10. First Fit, Worst Fit, Best Fit allocation strategy.

11. Bankers Algorithm

12. Implement the producer consumer problem using Semaphore

13. Implement some memory management Scheme

EXP. No. 2.a Write a shell script to compare two string.

```
echo "Enter two string"
read a
read b
if [ -z $a ]
then
echo " First String is empty: Null String"
fi
if [ -z $b ]
then
echo " Second String is empty: Null String"
fi
if [ $a = $b ]
then
echo "Strings are equal: strings Matched"
else
echo "Strings are not equal: Strings not match"
fi
```

EXP. No. 2.b Write a shell script to extract the first and last character from a string.

```
a="abcdef"
first="${a:0:1}"
last="${a: -1}"
echo "$first"
echo "$last"
```

EXP. No. 2.c Write a shell script to check whether the number is palindrome or not.

```
echo "Enter the number : "
read n
num=0
a=$n
while [ $n -gt 0 ]
do
num=`expr $num \* 10`
k=`expr $n % 10`
num=`expr $num + $k`
n=`expr $n / 10`
done
if [ $num -eq $a ]
then
echo "Its a Palindrome"
else
echo "Not a Palindrome "
fi
```

EXP. No 3.a write a shell script to find the factorial of a given number.

1. Get a number

2. Use for loop or while loop to compute the factorial by using the below formula

3. fact(n) = n * n-1 * n-2 * .. 1

4. Display the result.

```
echo "Enter the number : "
read n
fact=1
for((i=2;i<=n;i++))
do
fact=$((fact*i))
done
echo "Factorial = $fact"
```

EXP. No 3.b Write a shell script to find the sum of n numbers using while loop.

        1. Get N (Total Numbers).

        2. Get N numbers using loop.

        3. Calculate the sum.

        4. Print the result.

```
echo "Enter the number :"
read n
i=1
sum=0
echo "Enter the numbers "
while [ $i -le $n ]
do
read num
sum=$((sum + num))
i=$((i + 1))
done
echo "sum = $sum"
```

EXP. No 3.c Write a shell script to implement menu driven program to perform all

arithmetic operation using case statement.

```
echo "Enter two numbers :"
read a
read b
echo "MENU  1. Addition  2. Subtraction 3. Multiplication  4. Division"
echo "Enter the choice :"
read c
case $c in
1)echo "Sum=$(expr $a + $b)";;
2)echo "Subtraction=$(expr $a - $b)";;
3)echo "Multiplication=$(expr $a * $b)";;
4)echo "Division=$(expr $a / $b)";;
5)echo ""Invalid Choice: Try Again
esac
```

echo "enter two integer values"

read a

read b

echo –e "Menu \n 1 for Addition \n 2 for Substraction \n 3 for Multiplication \n 4 for

Division \n 5 for Remainder"

```
echo "enter choice"

read ch

case $ch in

1) echo "Sum=$(expr $a + $b)";;

2) echo "Substraction=$(expr $a - $b)";;

3) echo "Multiplication=$(expr $a \* $b)";;

4) echo "Division=$(expr $a / $b)";;

5) echo "Remainder=$(expr $a % $b)";;

6) echo "invalid Choice:Try Again!"

esac
```

EXP. No 3.d **Write a shell script to print following pattern.**

```
*

* *

* * *

* * * *
```

echo " enter number of rows"

read n

i=1

while [$i –le $n]

do

j=1

while [$j –le $i]

do

echo –n "*"

j=$((j + 1))

done

echo

i=$((i + 1))

done

EXP. No. 4.a Converting File names from Uppercase to Lowercase

```
var_name="THIS IS a TEST"
echo "$VAR_NAME" | tr '[:upper:]' '[:lower:]'
name="sathyabama"
echo "$name" | tr '[:lower:]' '[:upper:]'
```

EXP. No. 4.b Write a shell script to count the number of characters, words and lines in the file.

Create a file :

cat > filename

My university name is Sathyabama

My Department is Computer Science

This is Chennai

Program:

```
echo "enter file name"
read file
c=`cat $file | wc -c`
w=`cat $file | wc -w`
l=`grep -c "." $file`
echo "Number of characters is $c"
echo "Number of words is $w"
echo "Number of Lines is $l"
```


EXP. No. 4.c Write a shell script to read and check the file exists or not, if not create the file.

```
echo "enter name of file"

read filename

if [ -f $filename ]

then

echo "File $filename Exits!"

else

touch $filename

fi
```

EXP. No. 5 Write a shell script to Manipulate Date/Time/Calendar.

```
echo "Date in various forms"
echo $(date)
echo "Today is $(date +'%m/%d/%y')"
echo "Today is $(date +'%Y-%m-%d')"
echo "Calender is various form"
echo $(cal 9 2024)
echo $(cal 2024)
echo $(cal -m May)
echo "Time in various formats"
echo $(date +"%T")
echo $(date +"%r")
echo $(date +"%I:%S:%M")
```


EXP. No. 6 Write a shell script Showing various system information

```
echo "SYSTEM INFORMATION"
echo "Hello ,$LOGNAME"
echo "Current Date is = $(date)"
echo "User is 'who I am'"
echo "Current Directory = $(pwd)"
echo "Network Name and Node Name = $(uname -n)"
echo "Kernal Name =$(uname -s)"
echo "Kernal Version=$(uname -v)"
echo "Kernal Release =$(uname -r)"
echo "Kernal OS =$(uname -o)"
echo "Proessor Type = $(uname -p)"
echo "Kernel Machine Information = $(uname –m)"
echo "All Information =$(uname -a)"
```