Experiment 3:

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a) Write a Shell Script program to find factorial of a number.

Code:

```
#!/bin/sh

echo "enter a number"
VAR=1
read n
for ((i=1; i<n+1; i++))
do
        VAR=$((i*VAR))
done
echo "$VAR"
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./fact.sh
enter a number
6
720
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./fact.sh
enter a number
1
1
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./fact.sh
enter a number
0
1
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./fact.sh
enter a number
4
24
```

b) Write a Shell Script program to sort an array in ascending order.

Code:

```
#!/bin/sh

echo -e "\nEnter the values for array"
echo -e "press ctrl+D once done \n"
while read line
do
        my_array=("${my_array[@]}" $line)
done

l=${#my_array[@]}
echo -n -e "\nlength of array is: "
echo $l

for ((i=0; i <= $((l - 2)); ++i))
    do
        for ((j=((i + 1)); j <= (($l - 1)); ++j))
        do
            if [[ ${my_array[i]} -gt ${my_array[j]} ]]
            then
                # echo $i $j ${my_array[i]} ${my_array[j]}
                tmp=${my_array[i]}
                my_array[i]=${my_array[j]}
                my_array[j]=$tmp
            fi
        done
    done
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./sort.sh

Enter the values for array
press ctrl+D once done

3
21
1
0
43
2
1

length of array is: 7
0 1 1 2 3 21 43
```

c) Write a Shell Script program to display list of user currently logged in.

Code:

```
#!/bin/sh

who
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./user.sh
aadhithan tty2         2021-09-22 13:55 (tty2)
```

d) Write a Shell Script program to display "Hello World".

Code:

```
#!/bin/sh

echo "Hello World"
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./hello.sh
Hello World
```

e) Write a Shell Script program to develop a calculator.

Code:

```
#!/bin/sh

echo -n -e "\n\nEnter 1st number "
read a
echo -n "Enter 2nd number "
read b

echo -e "\n\n\nEnter operation: \n 1.Addition \n 2.Subtraction"
echo -e " 3.Multiplication \n 4.Division"

read x
echo -n -e "\n your choice is: "
echo $x


if [ `expr $x` == 1 ]
then
        echo -n -e "\n Result of addition of numbers: "
        echo $((a+b))

elif [ `expr $x` == 2 ]
then
        echo -n -e "\n Result of subtraction of numbers: "
        echo $((a-b))

elif [ `expr $x` == 3 ]
then
        echo -n -e "\n Result of multiplication of numbers: "
        echo $((a*b))

elif [ `expr $x` == 4 ]
then
        echo -n -e "\n Result of division of numbers: "
        echo $((a/b))
fi
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./calc.sh


Enter 1st number 2
Enter 2nd number 4



Enter operation:
 1.Addition
 2.Subtraction
 3.Multiplication
 4.Division
1

 your choice is: 1

 Result of addition of numbers: 6
```

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./calc.sh


Enter 1st number 3
Enter 2nd number 10



Enter operation:
 1.Addition
 2.Subtraction
 3.Multiplication
 4.Division
3

 your choice is: 3

 Result of multiplication of numbers: 30
```

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./calc.sh


Enter 1st number 3
Enter 2nd number 15



Enter operation:
 1.Addition
 2.Subtraction
 3.Multiplication
 4.Division
2

 your choice is: 2

 Result of subtraction of numbers: -12
```

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./calc.sh


Enter 1st number 10
Enter 2nd number 3



Enter operation:
 1.Addition
 2.Subtraction
 3.Multiplication
 4.Division
4

 your choice is: 4

 Result of division of numbers: 3
```

f) Write a Shell Script program to check whether the given number is even or odd.

Code:

```
#!/bin/sh
echo -n "Enter a number:"
read n
echo -n "RESULT: "
if [ `expr $n % 2` == 0 ]
then
        echo "$n is even"
else
        echo "$n is Odd"
fi
```

Output:

```
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./even.sh
Enter a number:3
RESULT: 3 is Odd
┌─[aadhithan@fedora]─[~/nand/cad/unix]
└──╼ $./even.sh
Enter a number:20
RESULT: 20 is even
```

g) Write a Shell Script program to search whether element is present in the list or not.

Code:

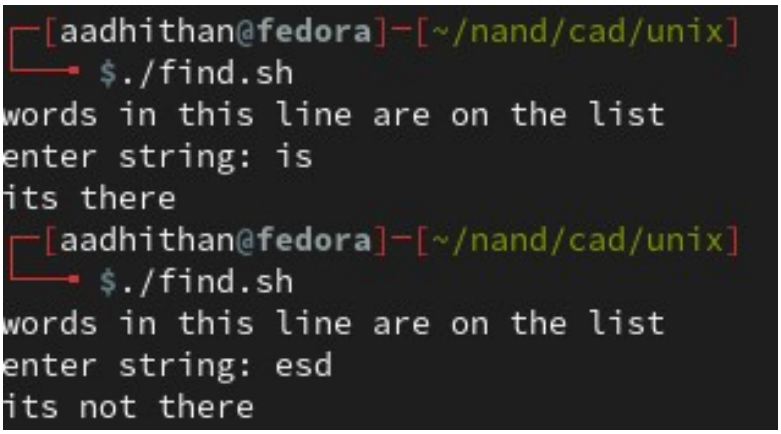
```
#!/bin/sh

list="words in this line are on the list"
echo $list

echo -n -e "enter string: "
read x


if [[ $list =~ $x ]]
then
        echo "its there"
else
        echo "its not there"
fi
```

Output:


[aadhithan@fedora]-[~/nand/cad/unix]
$./find.sh
words in this line are on the list
enter string: is
its there
[aadhithan@fedora]-[~/nand/cad/unix]
$./find.sh
words in this line are on the list
enter string: esd
its not there