SHELL SCRIPTING

1. (output to terminal)Write a script to print:

a. “Welcome to Intelligrape”

echo Welcome To Intelligrape is command to print

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ cat >> print.sh
#!/bin/bash
echo Welcome To Intelligrape
^C
┌─fahad@fahad ~/shell  ‹master*›
└─➤ chmod +x print.sh
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./print.sh
Welcome To Intelligrape
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

b. <username>@<hostname>:<your present wowrking directory>

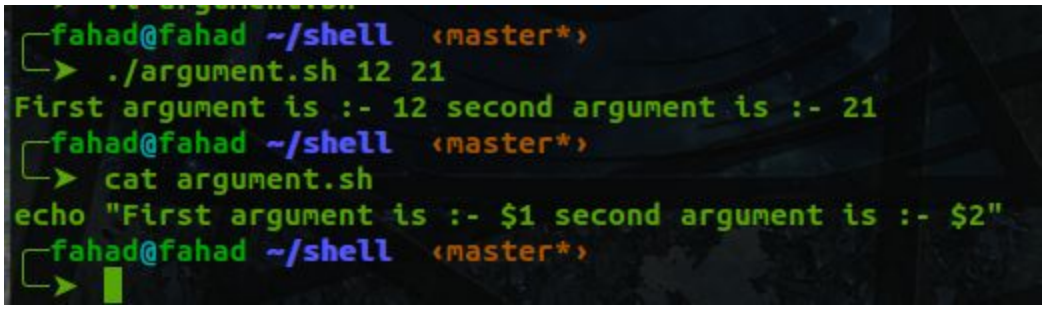
echo `uname -n`@`hostname` : `pwd` is a command to show this

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ cat >> print.sh
 echo `uname -n`@`hostname` : `pwd`
^C
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./print.sh
Welcome To Intelligrape
fahad@fahad : /home/fahad/shell
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

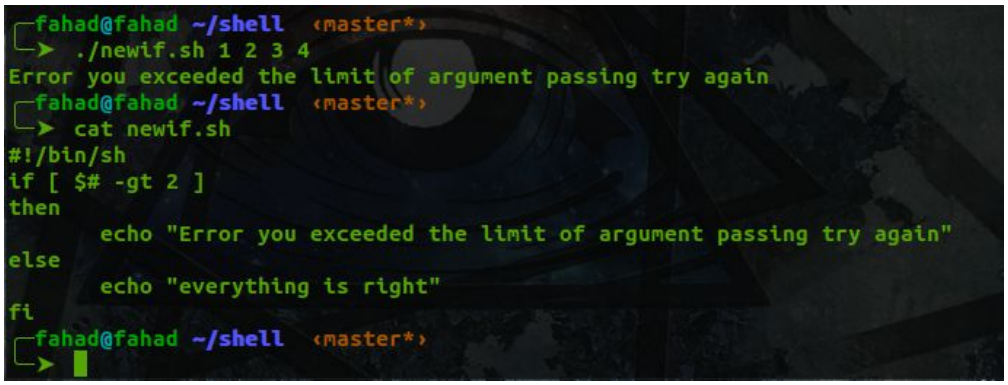
2 (arguments)Write a script

a. which takes in two arguments and print those arguments.

```
echo -n "Enter number : "
read n
echo -n "Enter another number"
read m
echo "First no. $n second no. is $m"
```

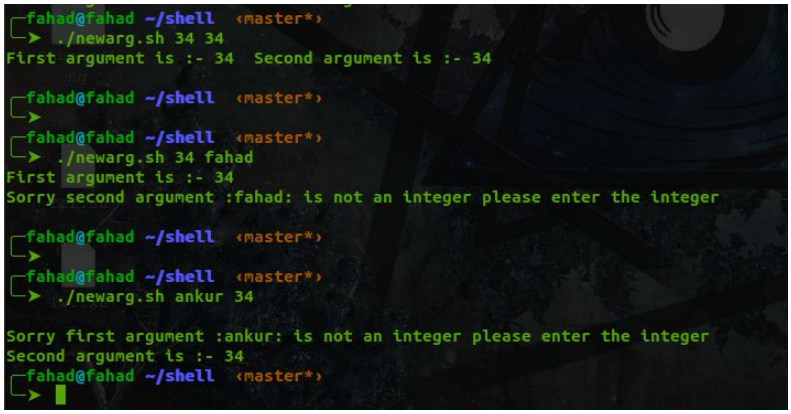


b. which checks the number of arguments passed and if the number is greater than two print ERROR message along with printing the number of arguments.



3. Continue with the above script

a. check the two arguments are only integer values and if these are not integers print the proper error on terminal and also log it into a file.




```
#!/bin/bash
if ! [ "$1" -eq "$1" ] 2> /dev/null
then
  echo  "\nSorry first argument :$1: is not an integer please enter the integer" >> '/tmp/mylogs'
        echo -e "\nSorry first argument :$1: is not an integer please enter the integer"
else
        echo -n "First argument is :- $1  "
fi
if ! [ "$2" -eq "$2" ] 2> /dev/null
then
  echo -e "\nSorry second argument :$2: is not an integer please enter the integer" >> '/tmp/mylogs'
        echo -e "\nSorry second argument :$2: is not an integer please enter the integer"
else
        echo  "Second argument is :- $2"
```

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ cat newarg.sh
#!/bin/bash

if ! [ "$1" -eq "$1" ] 2> /dev/null
then
   echo  "\nSorry first argument :$1: is not an integer please enter the integer" >> '/tmp/mylogs'
    echo -e "\nSorry first argument :$1: is not an integer please enter the integer"
else
       echo -n "First argument is :- $1  "
fi
if ! [ "$2" -eq "$2" ] 2> /dev/null
then
   echo -e "\nSorry second argument :$2: is not an integer please enter the integer" >> '/tmp/mylogs'
    echo -e "\nSorry second argument :$2: is not an integer please enter the integer"
else
       echo  "Second argument is :- $2"
fi
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

Logs are store in a /tmp/mylogs

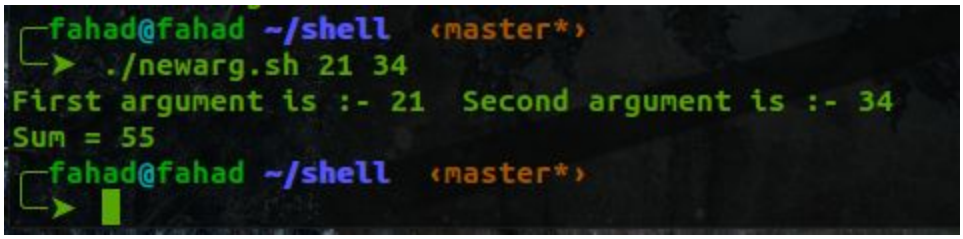
```
┌─fahad@fahad /tmp
└─➤ cat mylogs
Sorry :a: is not an integer
Sorry :bcd: is not an integer please enter the integer
Sorry:fahad: is not an integer please enter the integer
Sorry :ankur: is not an integer please enter the integer
Sorry :t34ak: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :3: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry :av: is not an integer please enter the integer
Sorry first argument :av: is not an integer please enter the integer
Sorry second argument :av: is not an integer please enter the integer
Sorry first argument :av: is not an integer please enter the integer
Sorry second argument :av: is not an integer please enter the integer
Sorry second argument :av: is not an integer please enter the integer
Sorry second argument :av: is not an integer please enter the integer
Sorry first argument :av: is not an integer please enter the integer
Sorry first argument :av: is not an integer please enter the integer
\nSorry first argument :av: is not an integer please enter the integer
\nSorry first argument :av: is not an integer please enter the integer

Sorry second argument :av: is not an integer please enter the integer

Sorry second argument :fahad: is not an integer please enter the integer
\nSorry first argument :ankur: is not an integer please enter the integer
┌─fahad@fahad /tmp
└─➤
```

b. perform addition on the two arguments and print result on screen. Use function for this.

```
function add()
{
        sum=$(($1 + $2))
        echo "Sum = $sum"
}
add $1 $2
```



4. Create a calculator using the above script which would perform addition,subtraction,division and multliplication.

```
# !/bin/bash
echo "Enter First numbers : "
read a
echo "Enter Second number :"
read b

echo "Enter Choice :"
echo "1. Addition"
echo "2. Subtraction"
echo "3. Multiplication"
echo "4. Division"
read opr

if [ $opr = "1" ]
   then
      echo $((a+b))
elif [ $opr = "2" ]
   then
      echo $((a-b))
elif [ $opr = "3" ]
   then
      echo $((a*b))
elif [ $opr = "4" ]
   then
       echo $((a/b))
```

a. the script should ask user which operation the user wants to perform:+,-,*,/

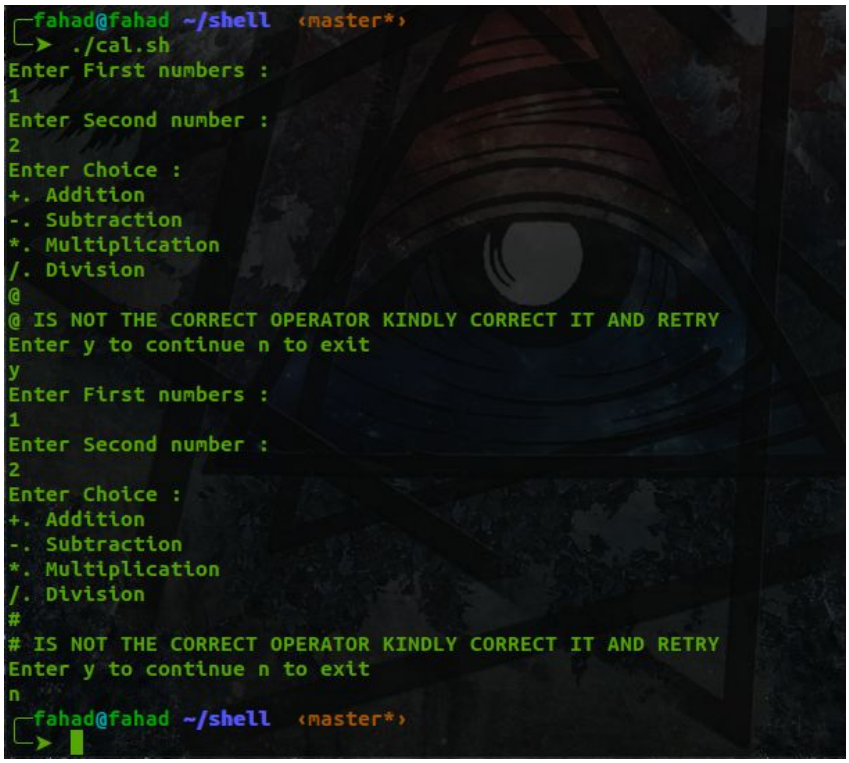
```
# !/bin/bash
echo "Enter First numbers : "
read a
echo "Enter Second number :"
read b
echo "Enter Choice :"
echo "+. Addition"
echo "-. Subtraction"
echo "*. Multiplication"
echo "/. Division"
read ch
case $ch in
  +)res=`echo $a + $b | bc1;;
  -)res=`echo $a - $b | bc`;;
  /)res=`echo "scale=2; $a / $b" | bc`;;
  *)res=`echo $a \* $b | bc`;;
esac
echo "Result : $res"
```

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ vi calculator.sh
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./calculator.sh
Enter First numbers :
2
Enter Second number :
3
Enter Choice :
+. Addition
-. Subtraction
*. Multiplication
/. Division
+
Result : 5
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./calculator.sh
Enter First numbers :
3
Enter Second number :
2
Enter Choice :
+. Addition
-. Subtraction
*. Multiplication
/. Division
-
Result : 1
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./calculator.sh
Enter First numbers :
3
Enter Second number :
4
Enter Choice :
+. Addition
-. Subtraction
*. Multiplication
/. Division
*
Result : 12
```

b. if user enters other than “+.-,*,/”, print a proper message on the terminal and keep on asking for correct input(use while loop to accomplish this).

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤  ./cal.sh
Enter First numbers :
1
Enter Second number :
2
Enter Choice :
+. Addition
-. Subtraction
*. Multiplication
/. Division
@
@ IS NOT THE CORRECT OPERATOR KINDLY CORRECT IT AND RETRY
Enter y to continue n to exit
y
Enter First numbers :
1
Enter Second number :
2
Enter Choice :
+. Addition
-. Subtraction
*. Multiplication
/. Division
#
# IS NOT THE CORRECT OPERATOR KINDLY CORRECT IT AND RETRY
Enter y to continue n to exit
n
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

c. Use case statement instead of if.



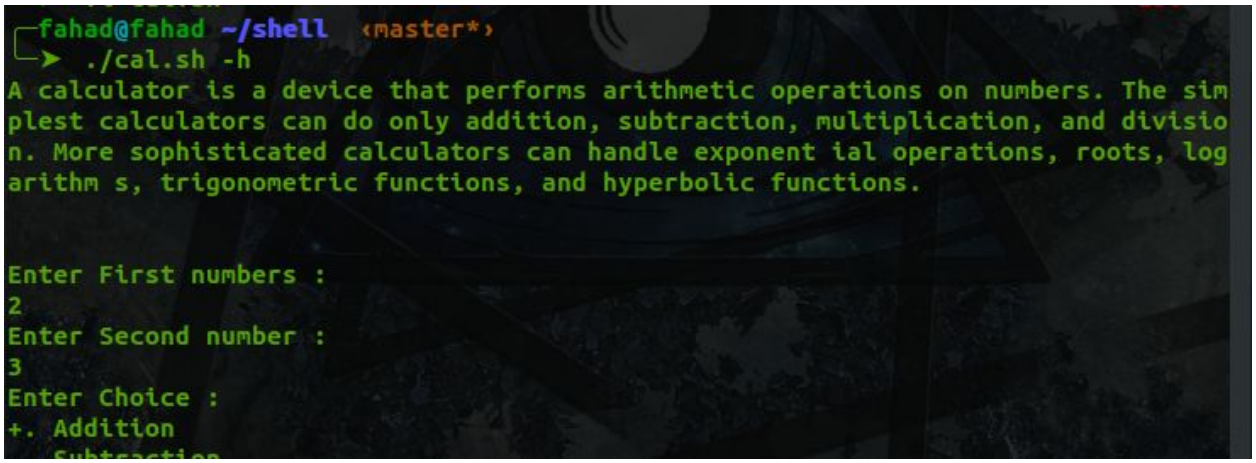

```
# !/bin/bash
while true;
do
        echo "Enter First numbers : "
        read a
        echo "Enter Second number : "
        read b
        echo "Enter Choice :"
        echo "+. Addition"
        echo "-. Subtraction"
        echo "*. Multiplication"
        echo "/. Division"
        read ch
        case $ch in
        +)res=`echo $a + $b | bc`
        ;;
        -)res=`echo $a - $b | bc`
        ;;
        /)res=`echo "scale=2; $a / $b" | bc`
        ;;
        \*)res=`echo $a \* $b | bc`
        ;;
        *)echo "$ch IS NOT THE CORRECT OPERATOR KINDLY CORRECT IT AND RETRY"
        ;;
```

```
        esac
        echo "Enter y to continue n to exit"
        read f
        if [ "$f" = "n" ]
        then
                exit
        fi
done
```

5. Write proper help documentation and print it with -h for above script.

```
# !/bin/bash
if [ "$1" = "-h" ]
then
        echo "A calculator is a device that performs arithmetic operations on numbers.
The simplest calculators can do only addition, subtraction, multiplication, and division.
More sophisticated calculators can handle exponent ial operations, roots, logarithm s,
trigonometric functions, and hyperbolic functions.\n\n"
fi
while true;
do
        echo "Enter First numbers : "
        read a
        echo "Enter Second number : "
        read b
        echo "Enter Choice :"
        echo "+. Addition"
        echo "-. Subtraction"
        echo "*. Multiplication"
        echo "/. Division"
        read ch
        case $ch in
        +)res=`echo $a + $b | bc`
        ;;
        -)res=`echo $a - $b | bc`
        ;;
        /)res=`echo "scale=2; $a / $b" | bc`
        ;;
        \*)res=`echo $a \* $b | bc`
        ;;
        *)echo "$ch IS NOT THE CORRECT OPERATOR KINDLY CORRECT IT AND RETRY"
```

```
        ;;
        esac
        echo "Enter y to continue n to exit"
        read f
        if [ "$f" = "n" ]
        then
        exit
        fi
done
```



6. Create a script which takes input of "/etc/passwd" file and find out and print the sum of uids and gids. The script should tell which sum of greater.

```
#!/bin/bash
cat /etc/passwd|awk -F: '{print $3}' > uid_listing
uid=`awk '{ sum += $1 } END { print sum }' uid_listing`
cat /etc/passwd|awk -F: '{print $4}' > gid_listing
gid=`awk '{ sum += $1 } END { print sum }' gid_listing`
echo "SUM of UIDs :- $uid "
echo "SUM of GIDs :- $gid "
if [ "$uid" -gt "$gid" ]
then
        echo "SUM OF UIDs :- $uid is greater "
else
        echo "SUM OF GIDs :- $gid is greater "
fi
```

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ vi sum_u+g.sh
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./sum_u+g.sh
SUM of UIDs :- 72840
SUM of GIDs :- 465366
SUM OF GIDs :- 465366 is greater
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

7. A directory contains files and sub-directories. Move files to destination1 and directories to destination2

```
#!/bin/bash
for i in `ls`
do
        if [[ "$i" != "dst1" && "$i" != "dst2" && "$i" != "dectory.sh" ]]
        then
        if [ -f $i ]
        then
                mv $i dst1/$i
        fi
        if [ -d $i ]
        then
                mv $i dst2/$i
        fi
        fi
Done
```

Before in shell directory

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ls
'='   abc.sh                flr..          list.sh          sum_u+g.sh
1     argument.sh           flr.sh         newarg.sh        t34
2     aws                   flr..sh        newif.sh         t34ak
2]    aws-iam-authenticator for.sh         no_of_digit.sh   uid_listing
3     calculator.sh         gid_listing    print.sh
4     cal.sh                home_size.sh   second_letter.sh
5     dectory.sh            if.sh          sed.sh
a     fahad                 kubectl        sum.sh
```

After executing the dectory.sh script shell directory

```
dectory.sh  dst1  dst2
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./dectory.sh
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ls
dectory.sh  dst1  dst2
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ls dst1
'='   abc.sh                  flr.sh        list.sh            sum.sh
 1    argument.sh             flr..sh       newarg.sh          sum_u+g.sh
 2    aws-iam-authenticator   for.sh        newif.sh           t34
 2]   calculator.sh           gid_listing   no_of_digit.sh     t34ak
 3    cal.sh                  home_size.sh  print.sh           uid_listing
 4    fahad                   if.sh         second_letter.sh
 5    flr..                   kubectl       sed.sh
```

8. Create a script which take three arguments, append first argument to every line in a file and second argument to the end of every line of the same file.

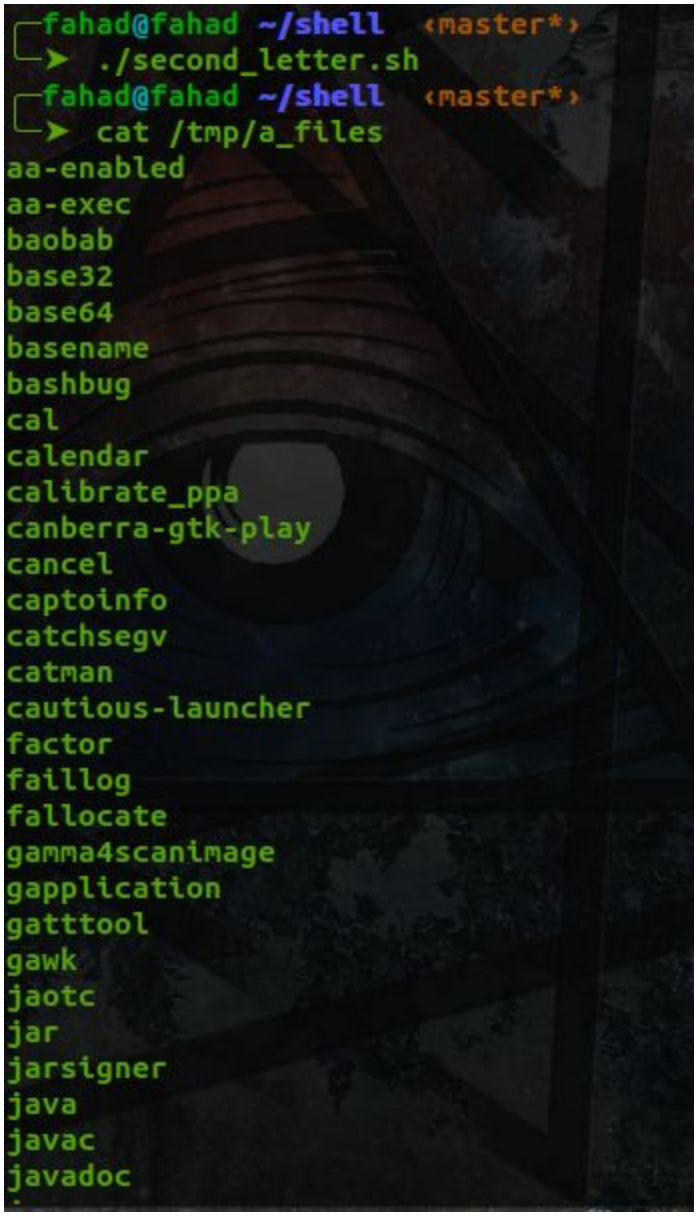
sed -i "s/^/${1} / ; s/$/ ${2}/ " $3

```
┌─fahad@fahad ~/shell  ‹master*›
└─➤ cat t34ak
WE
ARE
WATCHING
OUT
FOR
YOU
┌─fahad@fahad ~/shell  ‹master*›
└─➤ ./sed.sh fahad khan t34ak

┌─fahad@fahad ~/shell  ‹master*›
└─➤
┌─fahad@fahad ~/shell  ‹master*›
└─➤ cat t34ak
fahad WE khan
fahad ARE khan
fahad WATCHING khan
fahad OUT khan
fahad FOR khan
fahad YOU khan
┌─fahad@fahad ~/shell  ‹master*›
└─➤
```

9. Make a list of files in /usr/bin that have the letter "a" as the second character. Put the result in a temporary file.

```
#!/bin/bash
ls /usr/bin | grep "^.a" > /tmp/a_files
```



10. List all files in your home directory and print name and size in a table format.

```
#!/bin/bash
echo -e "NAME \t\t\t\t\t SIZE"
ls -l /home | awk '{printf "%-40s|%-18s\n" ,$9,$5}'
```