

# Operating System Practicals

## Assignment 2

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1.

```
#!/bin/bash

shopt -s extglob globasciiranges

if [ -z $1 ]
then
    echo 'No input!'
    exit
elif [ -n $1 ]
then
    ans=$1
fi

case "$ans" in
    *[0-9]) echo 'It is a number!'
    ;;
    *[aeiouAEIOU]) echo 'It is a vowel!'
    ;;
    *[a-z]) echo 'It is a lowercase alphabet!'
    ;;
    *[A-Z]) echo 'It is an uppercase alphabet!'
    ;;
    *) echo 'It is a special character!'
    ;;
esac
```

krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh 5  
It is a number!  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh a  
It is a vowel!  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh b  
It is a lowercase alphabet!  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh c  
It is a lowercase alphabet!  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh C  
It is an uppercase alphabet!  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./1\_1.sh \$  
It is a special character!

2.

```
#!/bin/bash

shopt -s extglob globasciiranges

if [ -z $1 ]
then
    echo 'No input!'
    exit
elif [ -n $1 ]
then
    ans=$1
fi

case $ans in
    '1')
        who
        ;;
    '2')
        cal
        ;;
    '3')
        date
        ;;
    *)
        echo 'Invalid Option!'
esac
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./2.sh 1
krhero :0          2021-01-12 09:04 (:0)
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./2.sh 2
January 2021
Su Mo Tu We Th Fr Sa
                1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./2.sh 3
Tue 12 Jan 16:50:25 IST 2021
```

3.

```
#!/bin/bash

if [ -z $1 ]
then
    echo 'No input!'
    exit
elif [ -n $1 ]
then
    ans=$1
fi

if [ -d $ans ]
then
    echo 'True'
else
    echo 'False'
fi
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./3.sh /mnt/
True
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./3.sh /mnt/asdasd
False
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./3.sh ../
True
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./3.sh ../Assignment1/
True
```

4.

```
#!/bin/bash

if [ -z $1 ]
then
    echo 'No input!'
    exit
elif [ -n $1 ]
then
    ans=$1
fi

if [ -d $ans ]
then
    ls $ans -l | wc -l
else
    echo 'No such directory'
fi

krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./4.sh ./
5
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./4.sh ../
3
```

5.

```
#!/bin/bash

if ! [[ $1 || $2 ]]
then
    echo 'Insufficient args!'
    exit

fi

cat $1 >> $2

echo 'File Copy Complete!'
```

```
krhero@hellblazer:/mnt/0FB81290FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./5.sh ./temp.txt ./templ.t
xt
File Copy Complete!
```

6.

```
#!/bin/bash
```

```
if [[ $1 && $2 ]]
```

```
then
```

```
    num1=$1
```

```
    num2=$2
```

```
    sum=$((num1 + num2))
```

```
    echo $sum
```

```
else
```

```
    echo 'Insufficient input!'
```

```
    exit
```

```
fi
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./5.sh 10 15
```

```
25
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./5.sh -3 -450
```

```
-453
```

7.

```
#!/bin/bash

if ! [[ $1 || $2 || $3 ]]
then
    echo 'Insufficient args'
    exit
fi
if [[ $1 -gt $2 && $1 -gt $3 ]]
then
    echo $1
elif [[ $2 -gt $3 ]]
then
    echo $2
else
    echo $3
fi
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./7.sh 9 8 -20
9
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./7.sh 1 8 -20
8
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./7.sh 1 2 -3
2
```

8.

```
#!/bin/bash

if ! [[ $1 || $2 || $3 ]]
then
    echo 'Insufficient args'
    exit
fi

num1=$1
num2=$2

if [[ $3 = '+' ]]
then
    sum=$((num1 + num2))
    echo $sum
elif [[ $3 = '-' ]]
then
    diff=$((num1 - num2))
    echo $diff
elif [[ $3 = 'x' ]]
then
    mul=$((num1 * num2))
    echo $mul
elif [[ $3 = '/' ]]
then
    if [[ $num2 -eq 0 ]]
    then
        echo 'Division by 0 not possible!'
    else
        div=$((num1/num2))
        echo $div
    fi
else
    echo 'Invalid operator!'
fi
```



```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 *
Invalid operator!
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 x
4
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 +
4
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 -
0
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 /
1
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./8.sh 2 2 a
Invalid operator!
```

9.

```
#!/bin/bash

arr=( "$@" )
n=${#arr[@]}

i=0

while [ $i -lt $n ]
do
    j=$i
    while [ $j -lt $n ]
    do
        if [ ${arr[$i]} -lt ${arr[$j]} ]
        then
            t=${arr[$i]}
            arr[$i]=${arr[$j]}
            arr[$j]=$t
        fi
        j=$((j+1))
    done
    i=$((i+1))
done

printf "%s " "${arr[@]}"
echo ''
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./9.sh 1 2 3 4
4 3 2 1
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./9.sh 1 10 5 4 20 -2 4
20 10 5 4 4 1 -2
```

10.

```
#!/bin/bash

#!/bin/bash

if ! [[ $1 || $2 || $3 ]]
then
    echo 'Insufficient args'
    exit
fi

num1=$1
num2=$2

case "$3" in

'+')
    sum=$((num1 + num2))
    echo $sum
    ;;
'-')
    diff=$((num1 - num2))
    echo $diff
    ;;
'x')
    mul=$((num1 * num2))
    echo $mul
    ;;
'/')
    if [[ $num2 -eq 0 ]]
    then
        echo 'Division by 0 not possible!'
    else
        div=$((num1/num2))
        echo $div
    fi
    ;;
*)
    echo 'Invalid operator!'
    ;;
esac
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./10.sh 2 2 +
4
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./10.sh 2 2 -
0
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./10.sh 2 2 x
4
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./10.sh 2 2 /
1
```

11.

```
#!/bin/bash
if ! [ $1 ]
then
    echo 'Insufficient args'
    exit
fi

num=$1

ans=0

while [ $num -gt 0 ]
do
    rem=$((num%10))
    ans=$((ans*10 + rem))
    num=$((num/10))
done
echo $ans;
```

krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./11.sh 23  
32  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./11.sh 456  
654  
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd\_Year/OS/Assignment2\$ ./11.sh 123045  
540321

12.

```
#!/bin/bash

if ! [ $1 ]
then
    echo 'Insufficient args'
    exit
fi

num=$1

ans=0

while [ $num -gt 0 ]
do
    rem=$((num%10))
    ans=$((ans + rem))
    num=$((num/10))
done
echo $ans;
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./12.sh 32
5
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./12.sh 56620
19
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./12.sh 123
6
```

13.

```
#!/bin/bash

if ! [ $1 ]
then
    echo 'Insufficient args'
    exit
fi

num=$1

ans=1
i=1
while [ $i -le $num ]
do
    ans=$((ans*i))
    i=$((i+1))
done
echo $ans;
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./13.sh 3
6
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./13.sh 5
120
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./13.sh 8
40320
```

14.

```
#!/bin/bash

if ! [ $1 ]
then
    echo 'Insufficient args!'
    exit
fi

num=$1

if [ $num -le 0 ]
then
    exit
elif [ $num -eq 1 ]
then
    echo -ne '0'
elif [ $num -eq 2 ]
then
    echo -ne '0 1'
else
    a=0
    b=1
    i=1
    echo -ne $a ' '
    while [ $i -lt $num ]
    do
        c=$b
        b=$((a+b))
        a=$c
        echo -ne $a ' '
        i=$((i+1))
    done
fi
echo ''
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./14.sh 10
0 1 1 2 3 5 8 13 21 34
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./14.sh 12
0 1 1 2 3 5 8 13 21 34 55 89
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./14.sh 2
0 1
```



15.

```
#!/bin/bash

if ! [[ $1 || $2 ]]
then
    echo 'Insufficient args!'
    exit
fi

num=$1
num1=$2

if [ $num -gt $num1 ]
then
    t = $num
    num1=$num
    num=$t
fi

while [ $num -le $num1 ]
do
    if (( $num % 2 == 0 ))
    then
        echo -ne $num' '
    fi
    num=$((num+1))
done
echo ''

krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./15.sh -2 6
-2 0 2 4 6
```

16.

```
#!/bin/bash
```

```
if ! [ $1 ]
```

```
then
```

```
    echo 'Insufficient args!'
```

```
    exit
```

```
fi
```

```
file=$1
```

```
if ! [ $file ]
```

```
then
```

```
    echo 'File not found!'
```

```
    exit
```

```
fi
```

```
echo -ne 'Number of characters: '
```

```
wc -c $file
```

```
echo -ne 'Number of words: '
```

```
wc -w $file
```

```
echo -ne 'Number of lines: '
```

```
wc -l $file
```

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment2$ ./16.sh ./temp.txt
```

```
Number of characters: 12 ./temp.txt
```

```
Number of words: 6 ./temp.txt
```

```
Number of lines: 6 ./temp.txt
```