

a) Screenshot of shell script

```
#!/bin/bash

function quicksort()
{
    left=$1
    right=$2

    if [[ $1 -lt $2 ]]
    then
        pivot=${array[$1]}
        while(( $left < $right ))
        do
            while(( ${array[$left]} <= $pivot && $left < $2 ))
            do
                left=$((left + 1))
            done
            while(( ${array[$right]} > $pivot ))
            do
                right=$((right-1))
            done

            if [[ $left -lt $right ]]
            then
                temp=${array[$left]}
                array[$left]=${array[$right]}
                array[$right]=$temp
            fi

            done
            temp=${array[$right]}
            array[$right]=${array[$1]}
            array[$1]=$temp
            temp=$right

            quicksort $1 $((right-1)) array
            quicksort $((temp+1)) $2 array
        fi
    fi
}
```

```

count=0
array=("$@")

#Task-1
for i in "${array[@]}";
do
    ((count=$count+1))
    if ! [[ $i =~ ^[0-9]+$ ]]
    then
        echo Please enter an integer instead of $i
        read array[$count-1]
    fi
done

#Task-2
if [[ $count == 0 ]]
then
    echo Array is Empty. Please enter a new set of numbers.
    echo Number of elements in your array:
    read count
    echo Enter the elements in the array:
    for((i=0;i<$count;i++))
    do
        read array[i]
        if ! [[ ${array[$i]} =~ ^[0-9]+$ ]]
        then
            echo Please enter the last input as an integer:
            i=$i-1
        fi
    done
fi

quicksort 0 $((count-1)) array

echo Sorted array elements after are :
for((i=0;i<count;i++))
do
    echo ${array[$i]}
done

```

b) Screenshot of successful sort

```
farhan@Farhan-Laptop:~$ ./Sorting_Shell_180041120.sh 6 4 8 1 2
Sorted array elements after are :
1
2
4
6
8
```

c) Screenshot of an execution considering “Special Case – i”

```
farhan@Farhan-Laptop:~$ ./Sorting_Shell_180041120.sh 6 4 8 a 2
Please enter an integer instead of a
5
Sorted array elements after are :
2
4
5
6
8
```

d) Screenshot of an execution considering “Special Case – ii”

```
farhan@Farhan-Laptop:~$ ./Sorting_Shell_180041120.sh
Array is Empty. Please enter a new set of numbers.
Number of elements in your array:
4
Enter the elements in the array:
4
5
1
3
Sorted array elements after are :
1
3
4
5
```

- e) Screenshot of an execution considering both “Special Case – i” & “Special Case – ii”

```
farhan@Farhan-Laptop:~$ ./Sorting_Shell_180041120.sh
Array is Empty. Please enter a new set of numbers.
Number of elements in your array:
4
Enter the elements in the array:
5
6
a
Please enter the last input as an integer:
2
1
Sorted array elements after are :
1
2
5
6
farhan@Farhan-Laptop:~$
```