Array practice problems

1)Write a program in the following steps

a. Generates 10 Random 3 Digit number.

b. Store this random numbers into a array.

c. Then find the 2nd largest and the 2nd smallest element without sorting the array.

Ans

```
#!/bin/bash -x
min=1000
max=1
smin=1000
smax=1
for (( i=0; i <= 10; i++ ))
do
     num=$(( RANDOM % 999 + 100 ))
      Array[i]=$num

        if [ $num -gt $max ]
       then
           max=$num
        fi
         if [ $num -lt $min ]
         then
            min=$num
         fi
done

for (( i=0; i<10; i++ ))
do
      val=${array[i]}
      if [ $val -eq $min  || $val -eq $max]
       then
          continue
       fi
       if [ $val-gt$smax ]
       then
          smax=$val
       fi
       if [ $val-lt$smin ]
        then
           smin=$val
         fi

done
```

```
echo ${val[@]}
echo "second samallest $smin |  second largest element $smax"
```

2)**Extend the above program to sort the array and then find the 2nd largest and the 2nd smallest element.**

ans)

```
#!/bin/bash

for (( i=0;i<=9; i++ ))
do
   val[$i]=$(( RANDOM % 999 +100 ))

done

echo ${val[@]}
a=0
count=${#val[@]}

   for  (( i=0; i<(($count)); i++ ))
   do
        k=$(($i+1))
       for (( j=$k; j<(($count)); j++ ))
         do
           if [[ ${val[i]} > ${val[j]} ]]
             then

                  a=${val[i]}
                  val[i]=${val[j]}
                 val[j]=$a
            fi
           done
      done

echo "sorted array"  ${val[@]}
echo  "second smaller number" ${val[1]}
echo  "second largest" ${val[(($count-2))]}
```

3)**Extend the Prime Factorization Program to store all the Prime Factors of a number n into an array and finally display the output.**

Ans

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

```
echo "enter any number "
read  num
if [ $num -lt 2 ]
then
    echo "invalid entry"
else
     counter=0
      while [ $(( $num%2 )) -eq 0 ]
       do
        prime[(( counter++ ))]=2
        num=$(( $num/2 ))
        done

      for (( i=3; $(($i*$i))<=num; ((i+=2)) ))
      do
        while [ $(( $num%$i )) -eq 0 ]
        do
         prime[(( counetr++ ))]=$i
         num=$(( $num/$i ))
        done
      done
      if [ $num -gt 2 ]
       then
        prime[((counter++))]=$num
       fi
       echo "prime factors of storing in an array"
       echo ${prime[@]}
fi
```

4)**Write a Program to show Sum of three Integer adds to ZERO**

ans)

```
#!/bin/bash
echo "enter 1st number"
read a
echo "enter 2nd number"
read b
echo "enter 3rd number"
read c

z=$(( $a+$b+$c ))
```

```
   echo $z
w=$(( $z-$z ))
echo $w
if [ $z -eq 0 ]
then
    echo  "number is zero"
else
     echo "invalid"
fi
repeated[$z]=”zero”
Echo ${!repeated}
```

5)**Take a range from 0 – 100, find the digits that are repeated twice like 33, 77,etc and store them in an array**

Ans)

```
        #!/bin/bash
        a=11
        for (( i=0;i<=100;i++ ))
          do
          z=$(( $i % $a ))
          if [ $z -eq 0 ]
          then
          echo "repeated" $i
          fi
done
repeated[$i]=”double digit”
Echo ${!repeated}
```