1. Write a program in the following steps
   1. Generates 10 Random 3 Digit number.
   2. Store this random numbers into a array.
   3. Then find the 2nd largest and the 2nd smallest element without sorting the array.

Shell code:

##!/bin/bash -x

echo "Enter the Total no you want to enter:"

read n

i=0

while [ $i -lt $n ]

do

a[$i]=$((RANDOM%899+100))

i=`expr $i + 1`

done

echo "Output :"

echo "${a[@]}"

max=0

smax=0

min=10000

smin=10000

for i in "${a[@]}"

do

if [ $i -gt $max ]

then

smax=$max

max=$i

elif [ $i -gt $smax ]

then

smax=$i

fi

if [ $i -lt $min ]

then

smin=$min

min=$i

elif [ $i -lt $smin ]

then

smin=$i

fi

done

echo "Maximum number is : $max"

echo "Minimum number is : $min"

echo "Maximum second number is : $smax"

echo "Minimum second number is : $smin"

Output :

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$ ./maxminnum.sh

Enter the Total no you want to enter:

10

Output :

241 547 726 692 370 471 649 685 388 622

Maximum number is : 726

Minimum number is : 241

Maximum second number is : 692

Minimum second number is : 370

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

Shell code:

##!/bin/bash -x

echo "Enter the Total no you want to enter:"

read n

i=0

while [ $i -lt $n ]

do

a[$i]=$((RANDOM%899+100))

i=`expr $i + 1`

done

echo "Output :"

echo "Original array : ${a[@]}"

for((i=0;i<$n;i++))

do

for((j=0;j<$n-$i-1;j++))

do

if [ ${a[j]} -gt ${a[$((j+1))]} ]

then

temp=${a[j]}

a[$j]=${a[$((j+1))]}

a[$((j+1))]=$temp

fi

done

done

echo "Sorted array : "${a[@]}

echo "Maximum number is : .................. ${a[$((n-1))]}"

echo "Minimum number is : .................. ${a[0]}"

echo "Maximum second number is : .......... ${a[$((n-2))]}"

echo "Minimum second number is : .......... ${a[1]}"

Output :

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$ ./sortminmax.sh

Enter the Total no you want to enter:

10

Output :

Original array : 518 656 829 943 404 218 107 364 607 293

Sorted array : 107 218 293 364 404 518 607 656 829 943

Maximum number is : .................. 943

Minimum number is : .................. 107

Maximum second number is : .......... 829

Minimum second number is : .......... 218

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

Shell code:

##!/bin/bash -x

echo "Enter the number to print prime factors : "

read n

g=0

echo "Prime factor of $n is : "

for ((i=2;i<=$n;i++))

do

if(($n%i==0))

then

isprime=1

for ((j=2;j<=$i/2;j++))

do

if(($i%$j==0))

then

isprime=0

break

fi

done

if (($isprime==1))

then

echo $i

a[$g]=$i

g=$((g+1))

fi

fi

done

echo "how many prime factors : " $g

echo "${a[@]}"

Output :

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$ ./primefacstore.sh

Enter the number to print prime factors :

70

Prime factor of 70 is :

2

5

7

how many prime factors : 3

2 5 7

1. Write a Program to show Sum of three Integer adds to ZERO

Shell code:

##!/bin/bash -x

arr=(0 -1 2 -3 1)

echo "Array elements : { " ${arr[@]} " }"

b=${#arr[@]}

echo "size of array : " $b

f=1

for((i=0;i<$b-2;i++))

do

for((j=$i+1;j<$b-1;j++))

do

for((k=$j+1;k<$b;k++))

do

if(($((${arr[$i]}+${arr[$j]}+${arr[$k]}))==0))

then

echo "${arr[$i]} ${arr[$j]} ${arr[$k]}"

f=0

fi

done

done

done

Output :

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$ ./threeaddzero.sh

Array elements : { 0 -1 2 -3 1 }

size of array : 5

0 -1 1

2 -3 1

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

Shell code:

##!/bin/bash -x

l=0

for((i=1;i<=100;i++))

do

if(($(($i%11))==0))

then

a[$l]=$i

l=$((l+1))

fi

done

echo "same digit number in between 0-100 : { ${a[@]} }"

Output :

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$ ./samedigitno.sh

same digit number in between 0-100 : { 11 22 33 44 55 66 77 88 99 }