**Arrays 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

solution::

#!/bin/bash

for (( i=0; i<= 5; i++))

do

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

done

echo ${val[@]}

secLarge=${val[0]}

firstLarge=${val[0]}

count=${#val[@]}

secSmall=${val[0]}

firstSmall=${val[0]}

count2=${#val[@]}

echo "Finding Second Large value "

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

do

if [[ ${val[i]} -gt $firstLarge ]]

then

secLarge=$firstLarge

firstLarge=${val[i]}

elif [[ ${val[i]} -gt $secLarge ]]

then

secLarge=${val[i]}

fi

done

echo "Second Large value is " $secLarge

echo "Finding Second smallest value"

for (( i=0; i<(($count2)); i++))

do

if [[ ${val[i]} -lt $firstSmall ]]

then

secSmall=$firstSmall

firstSmall=${val[i]}

elif [[ ${val[i]} -lt $secSmall ]]

then

secSmall=${val[i]}

fi

done

echo "Second Smallest value is " $secSmall

output::

$ ./randomArray.sh

698 441 351 207 735 461

Finding Second Large value

Second Large value is 698

Finding Second smallest value

Second Smallest value is 351

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

and the 2nd smallest element.

Solution::

#!/bin/bash

for (( i=0; i<= 9; i++))

do

val[$i]=$(( (RANDOM%899) + 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 Smallest" ${val[1]}

echo "Second Largest" ${val[(($count-2))]}

output::

$ ./randomArraySort.sh

568 214 555 516 520 737 360 330 391 490

sorted array 214 330 360 391 490 516 520 555 568 737

Second Smallest 330

Second Largest 568

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3. Extend the Prime Factorization Program to store all the Prime Factors of a

number n into an array and finally display the output.

Solution::

#!/bin/bash

read -p "enter any number " num

if [ $num -lt 2 ]

then

echo "invailid input"

else

count=0

while [ $(($num%2)) -eq 0 ]

do

prime[((count++))]-2

num=$(($num/2))

done

for (( i=3; $(($i\*$i))<=$num; i=(($i+2)) ))

do

while [ $(($num%$i)) -eq 0 ]

do

prime[((count++))]=$i

num=$(($num/$i))

done

done

if [ $num -gt 2 ]

then

prime[((count++))]=$num

fi

fi

echo "prime factor of num in array"

echo ${prime[@]}

output

$ ./primeFactor.sh

enter any number 913

prime factor of num in array

11 83

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

Solution::

#!/bin/bash

for (( i=0; i<5 ; i++))

do

val[$i]=$(( (RANDOM%7) - 3))

done

echo ${val[@]}

size=${#val[@]}

found=$true

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

do

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

do

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

do

if [[ $((${val[i]}+${val[j]}+${val[k]})) -eq 0 ]]

then

echo $((${val[i]} + ${val[j]} + ${val[k]}))

echo "true"

else

# echo ${val[i]} + ${val[j]} + ${val[k]}

echo "false"

fi

done

done

done

output::

$ ./sumOf3Array.sh

1 -1 -2 0 0

false

0

true

0

true

FOUND EN ERROR:

./sumOf3Array.sh: line 17: 1+-1+: syntax error: operand expected (error token is "+")

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5. Take a range from 0 – 100, find the digits that are repeated twice like 33, 77,

etc and store them in an array

solution ::

#!/bin/bash

rev=0

rmdr=0

strt=1

end=100

for (( num=$strt; num<=$end; num++ ))

do

tmp=$num

rev=0

while [[ $tmp -ne 0 ]]

do

rmdr=$(($tmp%10))

tmp=$(($tmp/10))

rev=$(($rev\*10+$rmdr))

done

if [[ $num -gt 10 && $num -eq $rev ]]

then

arr[$num]=$rev

fi

done

echo ${arr[@]}

output:

$ sh ./repeatDig.sh

11 22 33 44 55 66 77 88 99