**ASSIGNMENT-9**

**Question-1**

**Problem Statement:** WAP to create a class MyArray having member variables as an integer array and it’s size.

Allocate memory for the array as per the size specified and initialize it to zero using constructor.

Design methods to perform the following operations for MyArray objects:

=> Input required elements into the array.

=> To display the array elements.

=> Calculate sum and average of elements.

=> Swap the max and min elements.

=> Find the occurrence of all unique elements.

=> Make three digit numbers by taking values from three consecutive indexes starting from zero to end. If the value at any index is not a single digit then make it a single digit by adding the digits repeatedly. If the array index is not sufficient to make three digit number then add zeros to the right to make it three digit. Find the greatest number out of these new numbers.

(Ex:Original values: 3, 7, 4, 25, 190, 2, 87. New values are: 374, 712, 600 and the greatest value is 712.)

**Source Code**

// Class MyArray

import java.util.\*;

public class MyArray

{

int arr[],size;

ArrayOP(int size) //Parameterized constructor to initialize the array to 0

{

this.size=size;

arr=new int[size];

for(int i=0;i<size;i++)

{

arr[i]=0;

}

}

public void inputElements() //method to input elements in the array

{

Scanner sc=new Scanner(System.in);

System.out.println("Enter elements in the array");

for(int i=0;i<size;i++)

{

arr[i]=sc.nextInt();

}

}

public void display() //method to display elements in the array

{

System.out.println("Array elements:");

for(int i=0;i<size;i++)

{

System.out.print(arr[i]+" ");

System.out.println();

}

}

public int calcSum() //method to calculate sum of all array elements

{

int sum=0;

for(int i=0;i<size;i++)

{

sum+=arr[i];

}

return sum;

}

public double calcAvg() //method to calculate avg of all array elements

{

int sum=calcSum();

return (double) sum/size;

}

public void swapMinMax() //method to swap min and max elements in the array

{

int min=0,max=0;

for(int i=1;i<size;i++)

{

if(arr[i]<arr[min])

min=i;

if(arr[i]>arr[max])

max=i;

}

int temp=arr[min];

arr[min]=arr[max];

arr[max]=temp;

}

public void occurences() //Display occurences of all unique eleemnts

{

int elem[]=arr.clone();

Arrays.sort(elem);

int current=elem[0];

int count=1;

System.out.println("Elements:Occurences");

for(int i=1;i<size;i++)

{

if(elem[i]==current)

count++;

else

{

System.out.println(current+":"+count);

current=elem[i];

count=1;

}

}

System.out.println(current+":"+count);

}

public int findGreatestThreeDigitNo() //generate three digits numbers from existing array and find the greatest among them

{

int max=0,k=0;

//int test[]=new int[3];

for(int i=0;i<=size;i=i+3) //forming 3-digit numbers by taking three arr elements from left to right

{

int num = getSingleDigitSum(arr[i]) \* 100

+ getSingleDigitSum((i + 1 < arr.length) ? arr[i + 1] : 0) \* 10 //checking if index is out of bounds, if yes then pass 0 to the calling function

+ getSingleDigitSum((i + 2 < arr.length) ? arr[i + 2] : 0);

//test[k++]=num;

if(num>max && num<1000)

{

max=num;

}

}

//for(int i=0;i<3;i++)

//System.out.println(test[i]);

return max;

}

public int getSingleDigitSum(int num) //function that returns a single digit from a multi digit no by repeatedly adding it.

{

while(num>=10)

{

int sum=0;

while(num!=0)

{

sum+=num%10;

num/=10;

}

num=sum;

}

return num;

}

public static void main(String args[])

{

MyArray obj=new MyArray(7);

obj.inputElements();

obj.display();

System.out.println("Sum of elements in the array:"+obj.calcSum());

System.out.println("Average of elements in the array:"+obj.calcAvg());

obj.swapMinMax();

System.out.println("Array after swapping the min and max element:");

obj.display();

obj.occurences();

System.out.println("Greatest number:"+obj.findGreatestThreeDigitNo());

}

}

**OUTPUT:**

Enter elements in the array

3

7

4

25

2

190

87

Array elements:

3

7

4

25

2

190

87

Sum of elements in the array:318

Average of elements in the array:45.42857142857143

Array after swapping the min and max element:

Array elements:

3

7

4

25

190

2

87

Elements:Occurences

2:1

3:1

4:1

7:1

25:1

87:1

190:1

Greatest number:712