Lab 10 Array-2- Solutions:

Q1) arrayOps1

```
import java.util.Scanner;
public class arrayOps1 {
public static void main(String[] args) {
      Scanner input = new Scanner(System.in );
      final int Max_Size = 50;
      int ar[]= new int[Max_Size];
      // Reading the elements
      System.out.print("Please enter the numbers: ");
      int i = 0;
      int x = input.nextInt();
      while (x != -1) { ar[i++] = x; x = input.nextInt(); }
      int size = i;
      // Search
      System.out.print("Please enter an element to search for: ");
      x = input.nextInt();
      // Search using boolean
      boolean found =false;
      i = 0;
      while (!found && i < size) if (ar[i++] == x) found = true;

      if (!found) System.out.println("Sorry "+x+" is not in the Array");
      else System.out.println("The number "+x+" found at index "+(i-1));

      // Printing
      System.out.print("The elements of the array are: ");
      for (i=0; i<size; i++) System.out.print(ar[i]+" ");
      System.out.println();

      // Shift Right one position
      int temp = ar[size-1];
      for (i=size-1; i > 0; i--)
            ar[i]=ar[i-1];
      ar[0] = temp;

      // Printing
      System.out.print("The elements after rightShift: ");
      for (i=0; i<size; i++) System.out.print(ar[i]+" ");
      System.out.println();
      } // main
} // Class arrayOps
```

Q2) arrayOps2

```
import java.util.Scanner;
public class arrayOps2 {
	static Scanner input = new Scanner(System.in );
public static void main(String[] args) {
	final int Max_Size = 50;
	int ar[]= new int[Max_Size];
	int i = 0;int x;
	System.out.print("Please enter the numbers: ");
	do { x=input.nextInt();
		if (x!= -1) ar[i++]=x;
		} while (x != -1);
	int size = i;
	System.out.println("The number of elements is: "+size);
	System.out.print("Please enter a choice: \n1)Search\t2)Print "
			+ "\n3)shiftRight\t4)quit\nYour Choice:> ");
	int choice = input.nextInt();
	while (choice != 4) {
		if (choice == 1) {
		System.out.print("Please enter a number to search for: ");
		int s = input.nextInt();
		if (search(ar,s,size) == -1) System.out.println("Number was not
found");
		else System.out.println("Number was found at "+search(ar,s,size));
		} else if (choice == 2) print(ar, size);
		else if (choice == 3) shiftRight(ar,size);
		System.out.print("Please enter a choice: \n1)Search\t2)Print "
				+ "\n3)shiftRight\t4)quit\nYour Choice:> ");
		choice = input.nextInt();
	}
	System.out.println("GoodBye");
} // main

public static int search(int[] a, int x, int size) {
	// Search without boolean
	// method returns element location if found.
	// Otherwise it returns -1
	int index=-1;
	int i = 0;
	while (index ==-1 && i < size) {
		if (a[i] == x) index =i;
		i++;
	}
	return index;
}

public static void shiftRight(int[] a, int size) {
```

```
        int temp = a[size-1];
        for (int i = size-1; i>0; i--)  a[i] = a[i-1];
        a[0] = temp;
}

public static void print(int[] a, int size) {
        System.out.print("Printing the elements: ");
        int i = 0;
        while (i < size) { System.out.print(a[i]+" "); i++; }
        System.out.println();
}
}// Class arrayOps2
```

arrayOps3 (Added the reading as a method)

```
// Added read as a method
// To read the elements of the array
// Changed Scanner to static Variable outside of main.
import java.util.Scanner;
public class arrayOps3 {
	static Scanner input = new Scanner(System.in );
public static void main(String[] args) {
	final int Max_Size = 50;
	int ar[]= new int[Max_Size];
	int size = read(ar);
	System.out.println("The number of elements is: "+size);
	System.out.print("Please enter a choice: \n1)Search\t2)Print "
			+ "\n3)shiftRight\t4)quit\nYour Choice:> ");
	int choice = input.nextInt();
	while (choice != 4) {
		if (choice == 1) {
		System.out.print("Please enter a search number: ");
		int s = input.nextInt();
		if (search(ar,s,size) == -1) System.out.println("Number was not
found");
		else System.out.println("Number was found at "+search(ar,s,size));
		} else if (choice == 2) print(ar, size);
		else if (choice == 3) shiftRight(ar,size);
		System.out.print("Please enter a choice: \n1)Search\t2)Print "
				+ "\n3)shiftRight\t4)quit\nYour Choice:> ");
		choice = input.nextInt();
	}
	System.out.println("GoodBye");
} // main

public static int read(int[] a) {
	System.out.print("Please enter the numbers: ");
	int i = 0;
	int x;
	do { x=input.nextInt(); if (x!= -1) a[i]=x;
				i++; } while (x != -1);
	return i-1;
}

public static int search(int[] a, int x, int size) {
	int index=-1;
	int i = 0;
	while (index ==-1 && i < size) {
		if (a[i] == x) index =i;
		i++;
	}
	return index;
}
```

```
public static void shiftRight(int[] a, int size) {
      int temp = a[size-1];
      for (int i = size-1; i>0; i--)  a[i] = a[i-1];
      a[0] = temp;
}
public static void print(int[] a, int size) {
      System.out.print("Printing the elements: ");
      int i = 0;
      while (i < size) { System.out.print(a[i]+" "); i++; }
      System.out.println();
}
} // Class arrayOps3
```

Q4) uniqueArray

```
import java.util.Scanner;
public class uniqueArray {
public static void main(String[] args) {
      Scanner input = new Scanner(System.in );
      System.out.print("Please enter how many numbers: ");
      int N = input.nextInt();
      int ar[]= new int[N];
      System.out.print("Please enter the numbers:");
      int size = 0;
      for (int i=0; i< N; i++) {
            int newElement = input.nextInt();
            boolean found = false;
            int j = 0;
            while (!found && j < size)
                  if (ar[j++] == newElement) found = true;


            if (found == false)   ar[size++] = newElement;
            else System.out.println("Sorry the number "+newElement+" Has been
added before");
      }
      System.out.println("Array size is "+size);
      System.out.print("The elements of the array are: ");
      for (int i=0; i < size; i++)
            System.out.print(ar[i]+" ");
      System.out.println();
      }
}  // Class uniqueArray
```

uniqueArray – using a search method

```
import java.util.Scanner;
public class uniqueArray2 {
public static void main(String[] args) {
      Scanner input = new Scanner(System.in );
      System.out.print("Please enter how many numbers: ");
      int N = input.nextInt();
      int ar[]= new int[N];
      System.out.print("Please enter the numbers:");
      int size = 0;
      for (int i=0; i< N; i++) {
            int newElement = input.nextInt();
            if (search(ar, newElement,size) == -1) ar[size++] = newElement;
            else System.out.println("Sorry the number "+newElement+" is a
repeat and will not be added");
      }
      System.out.println("Array size is "+size);
      System.out.print("The elements of the array are: ");
      for (int i=0; i < size; i++)
            System.out.print(ar[i]+" ");
      System.out.println();
      }

public static int search(int[] a, int x, int size) {
      // Returns element x location if found in a[].
      // Otherwise it returns -1
      int index=-1;
      int i = 0;
      while (index ==-1 && i < size) {
            if (a[i] == x) index =i;
            i++;
      }
      return index;
}
}  // Class uniqueArray
```