CSE1007 – Java Programming – ELA
Winter 2019-20

ASSESSMENT - 1
Date – 10-Dec-2019

17BCE0581
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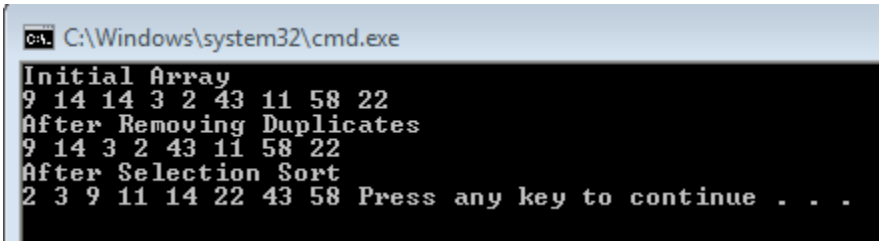
Q. Write a Java program to sort a numerical array using selection sort algorithm and remove all the duplicates from the same array. [Hint: Use single array]

CODE

```
import java.util.*;
import java.io.*;
class SelectionSort {
        public static int removeDuplicateElements(int arr1[], int n){
    if (n==0 || n==1){
       return n;
    }
    int[] temp = new int[n];
    int j = 0;
    for (int i=0; i<n-1; i++){
       if (arr1[i] != arr1[i+1]){
          temp[j++] = arr1[i];
       }
     }
    temp[j++] = arr1[n-1];
    // Changing original array
    for (int i=0; i<j; i++){
       arr1[i] = temp[i];
    }
    return j;
  }

  public static void selectionSort(int[] arr, int n){
    for (int i = 0; i < n - 1; i++)
    {
       int index = i;
       for (int j = i + 1; j < n; j++){
          if (arr[j] < arr[index]){
             index = j;
          }
       }
       int smallerNumber = arr[index];
```

```
            arr[index] = arr[i];
            arr[i] = smallerNumber;
        }
    }

    public static void main(String a[]){
        int[] arr1 = {9,14,14,3,2,43,11,58,22};
        System.out.println("Initial Array");
        for(int i:arr1){
            System.out.print(i+" ");
        }
        int length = arr1.length;
        length = removeDuplicateElements(arr1, length);
        System.out.println();
        System.out.println("After Removing Duplicates");
        for(int i=0; i<length; i++){
            System.out.print(arr1[i]+" ");
        }
        System.out.println();
        selectionSort(arr1,length);//sorting array using selection sort

        System.out.println("After Selection Sort");
        for(int i=0; i<length; i++){
            System.out.print(arr1[i]+" ");
        }
    }
}
```

OUTPUT

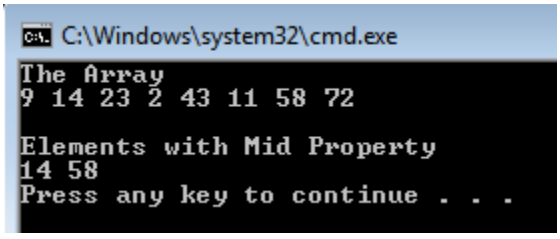


Q. Write a Java program to list out the elements in an array having mid property. An element in an array is said to have the mid property if its left element is lesser than it and also the right element is greater then it.
Eg: ….. , 3, 5, 9, ….
5 is having mid property.

CODE

```
import java.util.*;
import java.io.*;

class MidProperty
{
	public static void main(String args[])
	{
		int[] arr1 = {9,14,23,2,43,11,58,72};
		System.out.println("The Array");
    for(int i:arr1){
      System.out.print(i+" ");
    }
    System.out.println("\n\nElements with Mid Property");
    for (int i = 1; i < arr1.length - 1; i++)
    {
                    if(arr1[i-1] < arr1[i])
                    {
                        if(arr1[i+1] > arr1[i])
                        {
                            System.out.print(arr1[i]+" ");
                        }
                    }
		}
		System.out.println("");
	}
}
```

OUTPUT

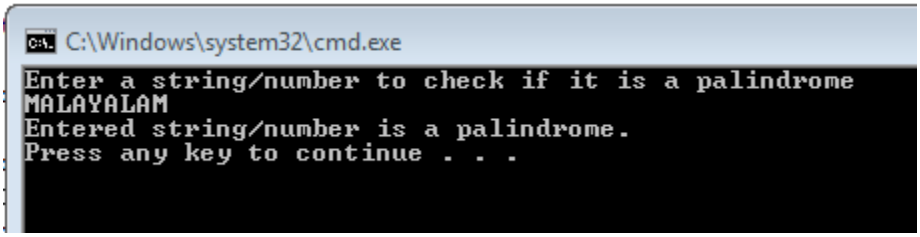


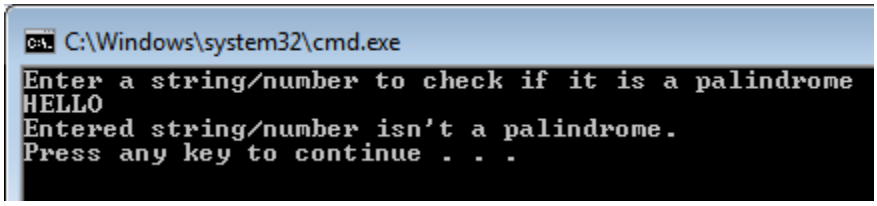
Q. Write a Java program to check the given string is palindrome or not.

CODE

```
import java.util.*;
class PalindromeExample
{
  public static void main(String args[])
  {
    String original, reverse = ""; // Objects of String class
    Scanner in = new Scanner(System.in);
    System.out.println("Enter a string/number to check if it is a palindrome");
    original = in.nextLine();
    int length = original.length();
    for ( int i = length - 1; i >= 0; i-- )
      reverse = reverse + original.charAt(i);
    if (original.equals(reverse))
      System.out.println("Entered string/number is a palindrome.");
    else
      System.out.println("Entered string/number isn't a palindrome.");
  }
}
```

OUTPUT



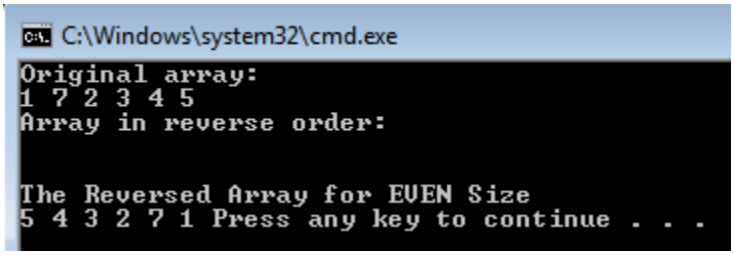


Q. Write a Java program to reverse the contents of the array using different functions for different types of array (without using any secondary array for reversing).

CODE

```
import java.util.*;
import java.io.*;

public class ReverseArray {
	public static void reverse1(int[] arr, int n)
	{
		int temp;
		for(int i = 0; i<n/2; i++)
		{
			temp = arr[i];
			arr[i] = arr[n-1-i];
			arr[n-1-i] = temp;
		}
	}

   public static void main(String[] args) {
      //Initialize array
      int [] arr = new int [] {1, 7, 2, 3, 4, 5};
      System.out.println("Original array: ");
      for (int i = 0; i < arr.length; i++) {
         System.out.print(arr[i] + " ");
      }
      System.out.println();
      System.out.println("Array in reverse order: ");
      //Loop through the array in reverse order
      if(arr.length % 2 != 0)
      {
				reverse1(arr,arr.length);
				System.out.println("\n\nThe Reversed Array for ODD Size");
				for(int i:arr){
					System.out.print(i+" ");
				}
		}
		else
		{
				reverse1(arr,arr.length);
				System.out.println("\n\nThe Reversed Array for EVEN Size");
				for(int i:arr){
					System.out.print(i+" ");
				}
		}

		System.out.println();
   }
}
```

OUTPUT



Q. Write a Java program to find out the greatest common divisor of two input values using a function.

CODE

```
import java.util.*;
import java.io.*;

import java.util.Scanner;
public class GCDOfTwoNumbers {
  public static void main(String args[]){
    int a, b, i, gcd = 0;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter first number :: ");
    a = sc.nextInt();
    System.out.println("Enter second number :: ");
    b = sc.nextInt();

    for(i = 1; i <= a || i <= b; i++) {
      if( a%i == 0 && b%i == 0 )
      gcd = i;
    }
    System.out.println("GCD of given two numbers is ::"+gcd);
  }
}
```

OUTPUT