Assignment-2

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CODE:
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// Batch: AIML-A1
/*
This is a Java code that performs several operations. It has 4 classes, Assignment_2, even_odd,
distance, and convert.
The Assignment_2 class is the main class that contains the main method. It creates objects of other
classes and calls their methods. The even_odd class takes 10 numbers from the user and separates
them into two arrays, one for even numbers and one for odd numbers. The display method of
the even_odd class displays the even and odd numbers.
The distance class calculates and displays the two numbers in an array with the smallest distance
between them. The convert class has two methods, one to convert an array to an ArrayList, and the
other to convert an ArrayList to an array.
In conclusion, the code performs the operations of accepting numbers from the user, separating them
into even and odd numbers, finding the two numbers with the smallest distance, and converting an
array to an ArrayList and vice versa.
 */

package com.College;
import java.util.Scanner;
import java.util.ArrayList;

public class Assignment_2 {
    public static void main(String arg[])
    {
        even_odd obj1 = new even_odd();
        obj1.accept();
        obj1.display();
        distance obj2 = new distance();
        obj2.smallest_distance();
        convert obj3 = new convert();
        obj3.array_list();
        obj3.array_list_2();
    }
}

class even_odd
{
    int even[] = new int[10];
    int odd[] = new int[10];
    int i, j, k;
    void accept()
    {
        Scanner obj = new Scanner(System.in);
        System.out.println("Enter 10 numbers: ");
        for(i = 0; i < 10; i++)
        {
            System.out.print("Enter a number: ");
            int a = obj.nextInt();
            if(a % 2 == 0)
            {
                even[j] = a;
                j++;
            }
            else
            {
                odd[k] = a;
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                        k++;
                }
            }
            System.out.println("\n");
        }
        void display()
        {
            System.out.println("Even numbers: ");
            for(i = 0; i < j; i++)
            {
                System.out.println(even[i]);
            }
            System.out.println("Odd numbers: ");
            for(i = 0; i < k; i++)
            {
                System.out.println(odd[i]);
            }
            System.out.println("\n");
        }
}


class distance
{

    void smallest_distance() {
        Scanner obj = new Scanner(System.in);
        int a[] = new int[10];
        System.out.println("Enter 10 numbers: ");
        for (int i = 0; i < 10; i++) {
            System.out.print("Enter a number: ");
            a[i] = obj.nextInt();
        }
        int i, j, min = 1000, index1 = 0, index2 = 0;
        for (i = 0; i < 10; i++) {
            for (j = i + 1; j < 10; j++) {
                if (Math.abs(a[i] - a[j]) < min) {
                    min = Math.abs(a[i] - a[j]);
                    index1 = i;
                    index2 = j;
                }
            }
        }
        System.out.println("The 2 numbers with the smallest distance are: " + a[index1] + " and " + a[index2]);
        System.out.println("The index of the first number is: " + index1);

        System.out.println("\n");
    }
}


class convert
{
    void array_list()
    {
        System.out.println("Converting array to array list");
        int a[] = {1, 2, 3, 4, 5};
        ArrayList<Integer> ar = new ArrayList<Integer>();
        for(int i = 0; i < a.length; i++)
        {
            ar.add(a[i]);
        }
        System.out.println("Array list: "+ ar);
        System.out.println("\n");
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        }

    void array_list_2()
    {
        //array list into array
        ArrayList<Integer> ar = new ArrayList<Integer>();
        for (int i= 0 ; i < 5; i++)
        {
            ar.add(i);
        }
        int a[] = new int[ar.size()];
        for (int i = 0; i < ar.size(); i++)
        {
            a[i] = ar.get(i);
        }
        System.out.println("Converting array list to array");
        System.out.println("Array: " );
        for (int i = 0; i < a.length; i++)
        {
            System.out.print(a[i] + " ");
        }
    }
}
```

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OUTPUT:
Enter 10 numbers:
Enter a number: 5
Enter a number: 2
Enter a number: 7
Enter a number: 1
Enter a number: 9
Enter a number: 22
Enter a number: 9
Enter a number: 12
Enter a number: 14
Enter a number: 19


Even numbers:
2
22
12
14
Odd numbers:
5
7
1
9
9
19


Enter 10 numbers:
Enter a number: 2
Enter a number: 13
Enter a number: 56
Enter a number: 89
Enter a number: 12
Enter a number: 11
Enter a number: 54
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Enter a number: 32
Enter a number: 99
Enter a number: 108
The 2 numbers with the smallest distance are: 13 and 12
The index of the first number is: 1


Converting array to array list
Array list: [1, 2, 3, 4, 5]

Converting array list to array
Array:
0 1 2 3 4
```