# **Main class**

// name Shivansh Nautiyal

// class AI-ML-B1

// prn 21070126086

// Import necessary packages

import java.util.\*;

import java.util.ArrayList;

import java.util.Arrays;

// Main class that extends Input class

public class Main extends Input

{

// Main method

public static void main(String[] args)

{

// Create a scanner object to read user input

Scanner so=new Scanner(System.in);

// Call the input method from Input class to get an array from the user

int arr[]=input();

// Get the length of the array

int n=arr.length;

// Ask the user if they want even or odd numbers from the array

System.out.println("Enter 1 if you want to get the even numbers in the array and 2 for odd:");

int x=so.nextInt();

// Call the even\_or\_odd method from Function class to get the required numbers from the array

int arr1[]=even\_or\_odd(n,arr,x);

// Print the even or odd numbers obtained from the array

for(int i=0;i<arr1.length;i++)

System.out.println(arr1[i]);

// Call the neighobor method from Function class to find the pair of neighboring elements with the smallest absolute difference

neighobor(n,arr);

// Convert array to ArrayList

// Converting array to ArrayList

String[] array = {"apple", "banana", "cherry", "date"};

ArrayList<String> arrayList = new ArrayList<>(Arrays.asList(array));

System.out.println("ArrayList: " + arrayList);

// Converting ArrayList to array

String[] newArray = arrayList.toArray(new String[0]);

System.out.println("Array: " + Arrays.toString(newArray));

}

}

# User inputs

import java.util.\*;

class Input extends Function

{

// This method prompts the user to enter an integer array and returns the resulting array.

public static int[] input()

{

// Create a Scanner object to read input from standard input.

Scanner so = new Scanner(System.in);

// Declare variables to hold the size of the array and the array itself.

int arr[];

System.out.println("enter the size of the array");

int n = so.nextInt();

arr = new int[n];

// Read in the elements of the array from standard input.

System.out.println("enter the array");

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

{

arr[i] = so.nextInt();

}

// Return the resulting integer array.

return arr;

}

}

# All the functions in function class

import java.util.\*;

class Function

{

public static int[] even\_or\_odd(int n, int arr[], int x)

{

// Declare variables to hold the index of the next available position in the even and odd arrays

int a, b;

a = b = 0;

// Declare arrays to hold the even and odd elements of the input array

int odd[] = new int[n];

int even[] = new int[n];

// Loop through the input array

for (int i = 0; i < n; i++) {

// If the current element is even, add it to the even array

if (arr[i] % 2 == 0) {

even[a] = arr[i];

a++;

}

// Otherwise, add it to the odd array

else {

odd[b] = arr[i];

b++;

}

}

// If x is 1, return the even array; otherwise, return the odd array

if (x == 1)

return even;

else

return odd;

}

static void neighobor(int n, int arr[])

{

// Initialize variables to hold the minimum difference value and its corresponding index

int x = 984456548;

int index = 0;

// Loop through the input array up to the second-to-last element

for (int i = 0; i < n - 1; i++) {

// Calculate the absolute difference between the current element and the next element

int temp = Math.abs(arr[i] - arr[i + 1]);

// If the absolute difference is smaller than the current minimum value, update the minimum value and index

if (temp < x) {

x = temp;

index = i;

}

}

// Print the index of the pair of neighboring elements with the smallest absolute difference

System.out.println("index = " + index);

}

}

# **OUTPUT**

