

Assignment 2

Array and arraylist:

```
// ArrayAndArrayList.java
package Assign1;

import java.io.IOException;
import java.util.*;

public class ArrayAndArrayList {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Prompt the user to enter the size of the array
        System.out.println("Enter the size of array: ");

        // Read the size from user input
        int size = sc.nextInt();

        // Get the primitive double array from user input using UserInput
class
        double[] array = UserInput.inputArray(size);

        // Close the Scanner to avoid resource leaks
        sc.close();

        // Print the primitive double array using Arrays.toString
        System.out.println(Arrays.toString(array));

        // Convert the primitive double array to an ArrayList<Double>
        List<Double> arrlist =
Arrays.asList(Arrays.stream(array).boxed().toArray(Double[]::new));

        // Print the elements of the ArrayList using a for-each loop
        for (Double element : arrlist) {
            System.out.println(element);
        }
    }
}
```

Output:

```
Enter the size of array:
4
Enter the array elements separated by spaces:
9 5 8 3
[9.0, 5.0, 8.0, 3.0]
9.0
5.0
8.0
3.0
PS C:\Users\Suyash Tambe\Desktop\PIJ>
```

Neighbours

```
// Neighbours.java
package Assign1;

import java.io.IOException;
import java.util.Scanner;

public class Neighbours {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Prompt the user to enter the size of the array
        System.out.println("Enter the size of the array: ");

        // Read the size of the array from user input
        int size = sc.nextInt();

        // Get the array input from the user using the UserInput class
        double[] array = UserInput.inputArray(size);
        sc.close();

        // Find and print the index of the nearest neighbours in the array
        System.out.println("Index of Nearest Neighbours: " +
            findNearestNeighbours(array));
    }

    // Method to find the index of nearest neighbours in the array
    public static int findNearestNeighbours(double[] arr) {
        double minDistance = Double.MAX_VALUE;
        int index = -1;
    }
}
```

```

        // Iterate through the array and calculate distances between adjacent
elements
        for (int i = 0; i < arr.length - 1; i++) {
            double distance = Math.abs(arr[i] - arr[i + 1]);

            // Update the index if the current distance is smaller than the
minimum distance
            if (distance < minDistance) {
                minDistance = distance;
                index = i;
            }
        }

        // Return the index of the nearest neighbours
        return index;
    }
}

```

Output:

```

Enter the size of the array:
4
Enter the array elements separated by spaces:
1 9 8 3
Index of Nearest Neighbours: 1
PS C:\Users\Suyash Tambe\Desktop\PIJ>

```

Odd and Even

```

// OddEven.java
package Assign1;

import java.io.IOException;
import java.util.Arrays;
import java.util.Scanner;

public class OddEven {
    public static void main(String[] args) throws IOException {
        // Create a Scanner object to read user input
        Scanner sc = new Scanner(System.in);

        // Declare arrays for even and odd numbers
        double[] even;
        int j = 0;
    }
}

```

```

    int k = 0;
    double[] odd;

    // Prompt the user to enter the number of elements
    System.out.println("Enter the number of elements to enter:");

    // Read the size from user input
    int size = sc.nextInt();

    // Initialize arrays for even and odd numbers based on the user-
defined size
    even = new double[size];
    odd = new double[size];

    // Get the array input from the user using the UserInput class
    double[] array = UserInput.inputArray(size);

    // Close the Scanner to avoid resource leaks
    sc.close();

    // Separate even and odd numbers into their respective arrays
    for (int i = 0; i < size; i++) {
        if (array[i] % 2 == 0) {
            even[j] = array[i];
            j++;
        } else {
            odd[k] = array[i];
            k++;
        }
    }

    // Print even elements
    System.out.println("Even elements:");
    System.out.println(Arrays.toString(even));

    // Print odd elements
    System.out.println("Odd elements:");
    System.out.print(Arrays.toString(odd));
}

// Method to print elements of an array
public static void print(double[] array, int size) {
    for (int i = 0; i < size; i++) {
        System.out.println(array[i]);
    }
}
}

```

Output:

```
Enter the number of elements to enter:
6
Enter the array elements separated by spaces:
1 3 5 7 9 4
Even elements:
[4.0, 0.0, 0.0, 0.0, 0.0, 0.0]
Odd elements:
[1.0, 3.0, 5.0, 7.0, 9.0, 0.0]
PS C:\Users\Suyash Tambe\Desktop\PIJ>
```

Userinput

```
// UserInput.java
package Assign1;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;

public class UserInput {
    // Method to get an array input from the user
    public static double[] inputArray(int size) throws IOException {
        // Create a BufferedReader to read user input
        BufferedReader br = new BufferedReader(new
        InputStreamReader(System.in));

        // Prompt the user to enter the array elements
        System.out.println("Enter the array elements separated by spaces: ");

        // Read the array input as a string
        String array = br.readLine();

        // Initialize an array to store the input elements
        double[] arrayInput = new double[size];

        // Split the input string and convert each element to double
        String[] input = array.trim().split("\\s+");

        // Populate the array with the converted elements
        for (int i = 0; i < size; i++) {
            arrayInput[i] = Double.parseDouble(input[i]);
        }
    }
}
```

```
}  
  
// Return the array containing user-input elements  
return arrayInput;  
}  
}
```

Github link: <https://github.com/suyashtambe/PIJ/tree/main/Assign1>