Week 4

1. Given the following Java program:

```
import java.util.*;
public class Main
{
public static void main(String[] args) {
List num = new ArrayList(Arrays.asList(23, 16, 14, 33, 19, 6, 1));
System.out.println("List is "+num);
}
}
```

a. Give the index values of all the odd numbers assuming zero-based indexing

Ans: -23(0), 16(1), 14(2), 33(3), 19(4), 6(5), 1(6)

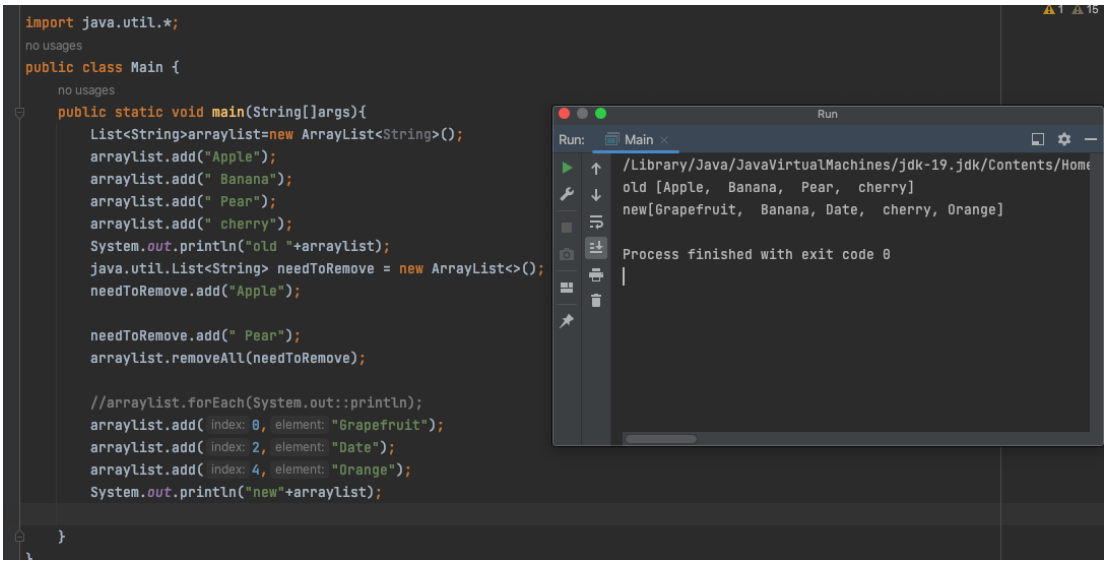
b. How many elements would be looked at when the list is traversed (from start to finish) until the value 19 was found?

Ans: The number of elements that would be looked at is 4.

2. Which of the following lists are syntactically correct in Java?
Try them out in to see if you were correct.

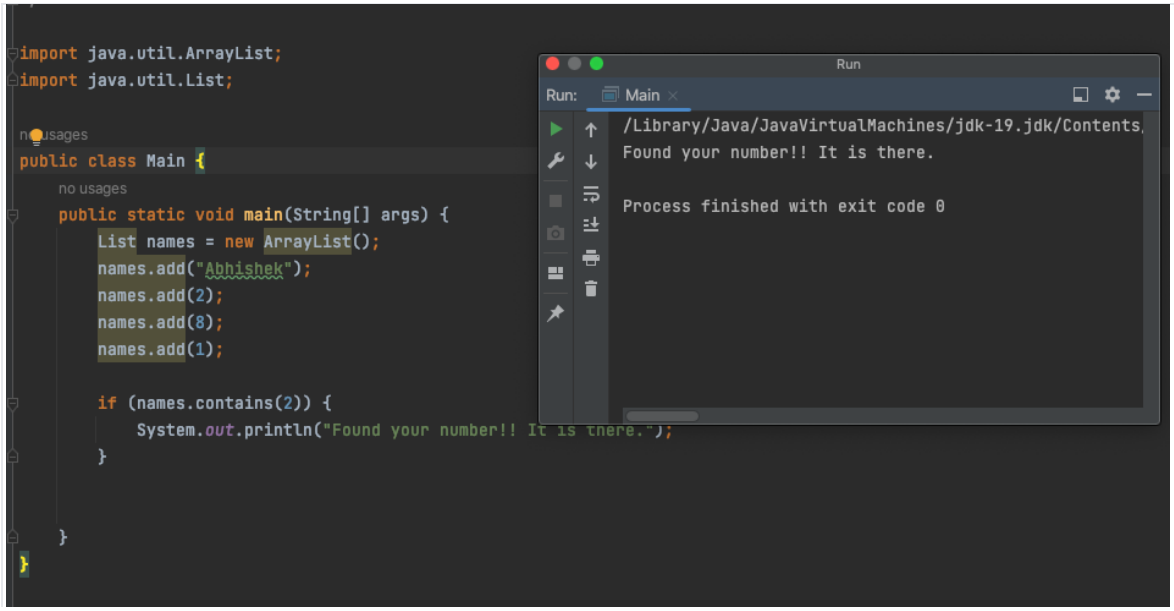
a. List num = new ArrayList(Arrays.asList(1, 2, 3, 'four'));
b. List num = new ArrayList(Arrays.asList(1, 2, [3, 4]));

3. Perform a series of list operations on the following list:
List fruit = new ArrayList (Arrays.asList('apple', 'banana', 'pear', 'cherry'));
to produce this updated list:
['Grapefruit', 'banana', 'Date', 'cherry', 'Orange']



Group B

1. Write a program to find out whether a given integer is present in an array or not.



2. Calculate the average marks from an array containing marks of all students in physics using a for-each loop.

```
public class Hello {
    no usages
    public static void main(String args[]) {
        int[] numArray = {98, 89, 79, 69, 59, 49};
        double sum = 0.0;
        for (double num : numArray) {
            sum += num;
        }
        double average = sum / numArray.length;
        System.out.format("The average is: " + average);
    }
}
```

```
The average is: 73.83333333333333
```

3. Write a Java program to reverse an array.

```
    }
}*/


no usages
public class Main {
    no usages
    public static void main(String[] args) {
        int [] arr = new int [] {1, 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: ");
        for (int i = arr.length-1; i >= 0; i--) {
            System.out.print(arr[i] + " ");
        }
    }
}
```

```
Run
Run:  Main
/Library/Java/JavaVirtualMachines/jdk-19.jdk/Contents/
Original array:
1 2 3 4 5
Array in reverse order:
5 4 3 2 1
Process finished with exit code 0
```

4. Write a Java program to find the maximum element in an array.

```
public class Hello {
    no usages
    public static void main(String args[]) {
        int[] a = {4, 3, 5, 2, 1, 6};
        int max = a[0];
        for (int i = 1; i < a.length; i++) {
            if (max < a[i]) {
                max = a[i];

            }
            System.out.println("maximum element is " + max);
        }
    }
}
```

```
maximum element is 4
maximum element is 5
maximum element is 5
maximum element is 5
maximum element is 6
```

5. Write a Java program to find whether an array is sorted or not.

```java
public class Main {
    no usages
    public static void main(String[] args) {

        int[] arr = new int[] { 1, 2, 3, 100, 80 };
        int max = 4;

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

            if (arr[i] > max){
                max = arr[i];
            }
            System.out.print("max is " + max + "    ");
            System.out.println(" array is " + arr[i]);
        }
        System.out.println(" maximum element in an array is:  " + max);

    }
}
```

```
Run
Run:  Main
/Library/Java/JavaVirtualMachines/jdk-19.jdk/Contents
max is 4    array is 1
max is 4    array is 2
max is 4    array is 3
max is 100    array is 100
max is 100    array is 80
 maximum element in an array is:  100

Process finished with exit code 0
```

Group C

1. Write a Java program to append the specified element to the end of a hash set.

```java
import java.util.*;
no usages
public class Main{
    no usages
    public static void main(String [] args){
        HashSet <String> colors = new HashSet<>();
        colors.add("red");
        colors.add("blue");
        colors.add(" yellow");
        colors.add("grey");


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

```
Run
Run: Main
/Library/Java/JavaVirtualMachines/jdk-19.jdk/Contents
[red, blue,  yellow, grey]

Process finished with exit code 0
```

2. Write a Java program to compare two sets and retain elements which are same on both sets.

```java
        System.out.println(colors);
    }
}*/
import java.util.*;
no usages
public class Main{
    no usages
    public static void main(String [] args){
        HashSet <String> colors1 = new HashSet<>();
        colors1.add("red");
        colors1.add("yellow");
        colors1.add("green");
        System.out.println("colors from first HashSet is " + colors1);

        HashSet <String> colors2 = new HashSet<>();
        colors2.add("red");
        colors2.add("purple");
        colors2.add("grey");
        System.out.println("colors from second HashSet is " + colors2);
        colors1.retainAll(colors2);
        System.out.println("The same colors are "+ colors1 );

    }
}
```

```
Run
Run: Main
/Library/Java/JavaVirtualMachines/jdk-19.jdk/Cont
colors from first HashSet is [red, green, yellow]
colors from second HashSet is [red, purple, grey]
The same colors are [red]

Process finished with exit code 0
```

3. Write a Java program to count the number of key-value mappings in a hash table

```java
import java.util.*;
no usages
public class Hello {
    no usages
    public static void main(String args[]) {
        HashMap<Integer, String> hash_map = new HashMap<Integer, String>();
        hash_map.put(1, "Red");
        hash_map.put(2, "Blue");
        hash_map.put(3, "White");
        hash_map.put(4, "Black");
        hash_map.put(5, "Pink");
        System.out.println("Size of the hash map: " + hash_map.size());
    }
}
```

```
Size of the hash map: 5
```

4. Write a Java program to get a collection view of the values contained in this map

```java
        System.out.println("The same colors are "+ colors1 )

    }
}*/
import java.util.*;
no usages
public class Main {
    no usages
    public static void main(String args[]){
        HashMap<Integer,String> animal = new HashMap<>();
        animal.put(1, "cow");
        animal.put(3, "dog");
        animal.put(8, "cat");
        animal.put(13, "elephant");
        animal.put(2, "hipo");
        System.out.println(animal);
        System.out.println(" Number of key-value mappings in a hashtable is: "+animal.size());
        System.out.println("The value is " + animal.values());
    }
}
```

```
Run
Run: Main
/Library/Java/JavaVirtualMachines/jdk-19.jdk/Contents/Home
{1=cow, 2=hipo, 3=dog, 8=cat, 13=elephant}
 Number of key-value mappings in a hashtable is: 5
The value is [cow, hipo, dog, cat, elephant]

Process finished with exit code 0
```