**OOPS Assignment 5**

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Code:

import java.util.\*;

public class Assignment5 {

    public static void main(String[] args) {

        // ArrayList operations

        ArrayList<Integer> list1 = new ArrayList<>();

        for (int i = 0; i < 4; i++) {

            list1.add(i);

        }

        System.out.println("All the elements in the list: " + list1);

        // Adding item to ArrayList after removing an item and setting an item

        list1.remove(2); // Removing item at index 2

        System.out.println("After removing item at index 2: " + list1);

        list1.add(2, 10); // Adding item '10' at index 2

        System.out.println("After adding '10' at index 2: " + list1);

        list1.set(1, 6); // Setting item at index 1 to '6'

        System.out.println("After setting item at index 1 to '6': " + list1);

        // Iterating through ArrayList

        System.out.println("Iterating through ArrayList:");

        for (Integer integer : list1) {

            System.out.println(integer);

        }

        // HashMap operations

        Map<String, Integer> map = new HashMap<>();

        map.put("a", 100);

        map.put("b", 200);

        map.put("c", 300);

        map.put("d", 400);

        System.out.println(map);

        // Removing an item from HashMap and adding a new item

        map.remove("a"); // Removing item with key "a"

        System.out.println("After removing item with key 'a': " + map);

        map.put("e", 500); // Adding item with key "e" and value '500'

        System.out.println("After adding item with key 'e' and value '500': " + map);

        // Checking if HashMap contains a specific value

        System.out.println("Does the map contain value '200'? " + map.containsValue(200));

        // Getting the hash code of the HashMap

        int hash = map.hashCode();

        System.out.println("Hash code of the map: " + hash);

        Vector<String> vector = new Vector<>();

        vector.add("Apple");

        vector.add("Banana");

        vector.add("Orange");

        System.out.println("Vector: " + vector);

        vector.remove(1); // Removing item at index 1

        System.out.println("After removing item at index 1: " + vector);

        vector.add(1, "Mango"); // Adding item 'Mango' at index 1

        System.out.println("After adding 'Mango' at index 1: " + vector);

        vector.set(0, "Grapes"); // Setting item at index 0 to 'Grapes'

        System.out.println("After setting item at index 0 to 'Grapes': " + vector);

        System.out.println(vector.capacity());

        // Iterating through Vector

        System.out.println("Iterating through Vector:");

        for (String fruit : vector) {

            System.out.println(fruit);

        }

        // Set operations

        Set<Integer> set = new HashSet<>();

        set.add(10);

        set.add(20);

        set.add(30);

        System.out.println("Set: " + set);

        set.remove(20); // Removing item '20'

        System.out.println("After removing item '20': " + set);

        set.add(40); // Adding item '40'

        System.out.println("After adding item '40': " + set);

        // Iterating through Set

        System.out.println("Iterating through Set:");

        for (Integer num : set) {

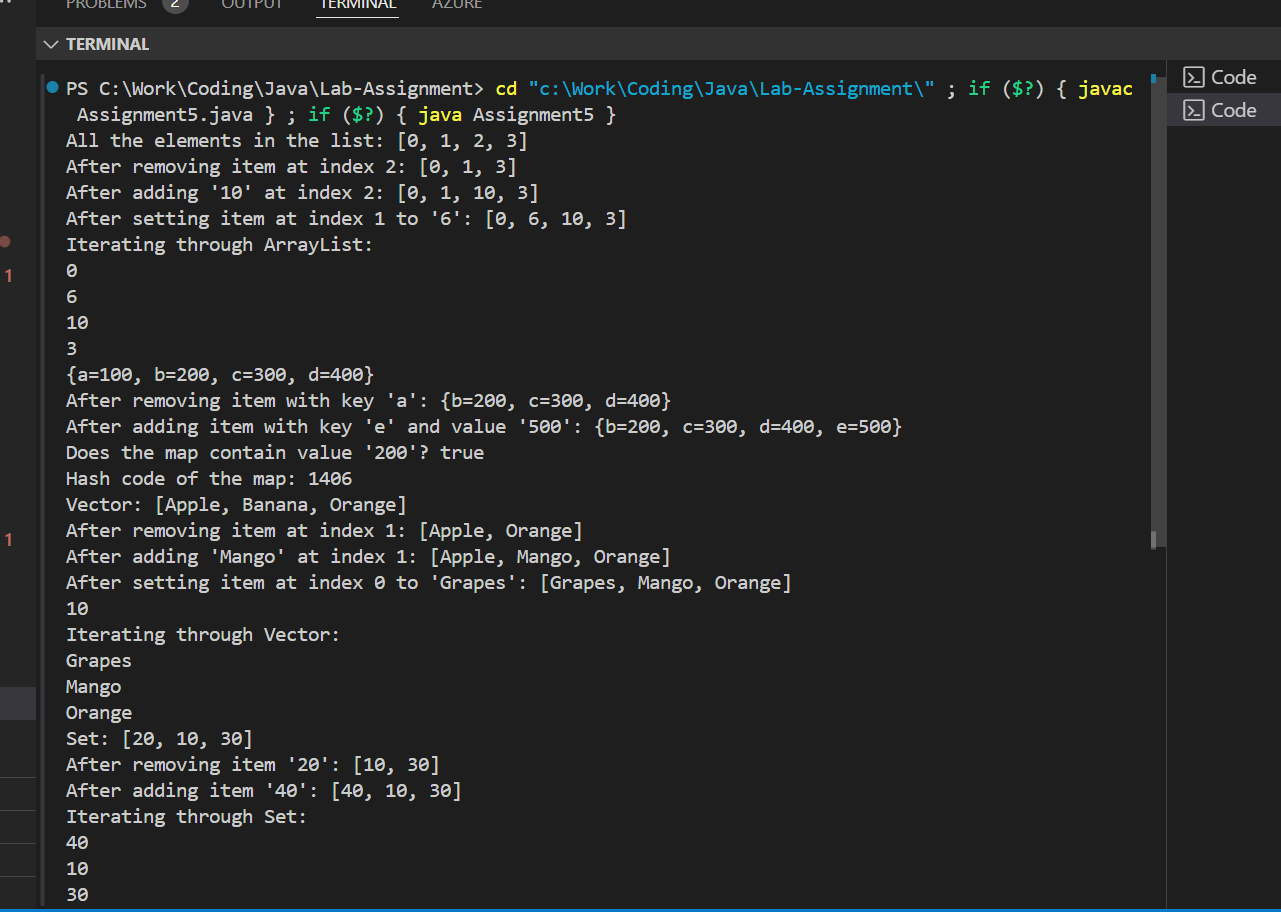
            System.out.println(num);

        }

    }

}

**OUTPUT:**

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