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**Universiteti Politeknik i Tiranës**

Fakulteti i Teknologjisë së Informacionit

Dega: Inxhinieri Informatike

Grupi: III-B

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**Punë laboratori nr. 3**

Lënda: Algoritmike dhe programim i avancuar

Punoi: Piro Gjidhima Pranoi:Msc Alba Haveriku

**Laborator 3**

**Finite mathematical sets.** Your goal is to develop an implementation of the following

API for processing finite mathematical sets (use the HashSet class):

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**Klasa MathSET**

*package Laboratore.Lab3;  
  
import java.util.HashSet;  
  
public class MathSET<Key> {  
 public Key[] universeArray;  
 public HashSet<Key> universe;  
 public HashSet<Key> set;  
  
 public MathSET(Key[] universe) {  
 this.universeArray = universe;  
 this.universe = new HashSet<>();  
 for (Key key : universe) {  
 this.universe.add(key);  
 }  
 this.set = new HashSet<>();  
 }  
  
 public void add(Key key) {  
 if (!universe.contains(key)) {  
 throw new IllegalArgumentException("Celesi " + key + " nuk eshte pjese e universit");  
 } else {  
 set.add(key);  
 }  
 }  
  
 public MathSET<Key> complement() {  
 MathSET<Key> complement = new MathSET<>(this.universeArray);  
 for (Key key : universe) {  
 if (!set.contains(key)) {  
 complement.add(key);  
 }  
 }  
 return complement;  
  
 }  
  
 void union(MathSET<Key> a) {  
 if (!universe.equals(a.universe)) {  
 for (Key key : a.universe) {  
 universe.add(key);  
 }  
 }  
 for (Key key : a.set) {  
 set.add(key);  
 }  
 }  
  
 void intersection(MathSET<Key> a) {  
 for (Key key : set) {  
 if (!a.set.contains(key)) {  
 set.remove(key);  
 }  
 }  
 }  
  
 void delete(Key key) {  
 if (!universe.contains(key)) {  
 throw new IllegalArgumentException("Celesi " + key + " nuk eshte pjese e universit");  
 }  
 if (set.contains(key)) {  
 set.remove(key);  
 } else {  
 throw new IllegalArgumentException("Celesi " + key + " nuk eshte pjese e Setit");  
 }  
  
 }  
  
 boolean contains(Key key) {  
 return set.contains(key);  
 }  
  
 boolean isEmpty() {  
 return set.isEmpty();  
 }  
  
 int size() {  
 return set.size();  
 }  
  
}*

}  
 *if* (set.contains(key)) {  
 set.remove(key);  
 } *else* {  
 *throw new* IllegalArgumentException("Celesi " + key + " nuk eshte pjese e Setit");  
 }  
  
 }  
  
 *boolean* contains(Key key) {  
 *return* set.contains(key);  
 }  
  
 *boolean* isEmpty() {  
 *return* set.isEmpty();  
 }  
  
 *int* size() {  
 *return* set.size();  
 }  
  
}

**Output:**

**Klasa Lab3**

*package* Laboratore.Lab3;  
  
*public class* Lab3 {  
 *public static void* main(String[] args) {  
 MathSET<Integer> mathSet = *new* MathSET<>(*new* Integer[]{1,2,3,4,5,6,7,8,9,10});  
 *for* (*int* i = 1; i < 7; i++){  
 mathSet.add(i);  
 }  
 System.out.println("Universi: "+mathSet.universe);  
 System.out.println("Seti: "+mathSet.set);  
 System.out.println("Complementari: "+mathSet.complement().set);  
  
 mathSet.delete(2);a  
 mathSet.delete(5);  
 mathSet.delete(3);  
 System.out.println("Pas Fshirjes");  
 System.out.println("Universi: "+mathSet.universe);  
 System.out.println("Seti: "+mathSet.set);  
 System.out.println("Complementari: "+mathSet.complement().set);  
  
 }  
}

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