Programowanie w języku JAVA

Laboratorium 2

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Grupa 11

Triple.java

import java.util.Comparator;  
import java.util.Objects;  
  
public class Triple<T1 extends Comparable<T1>, T2 extends Comparable<T2>, T3 extends Comparable<T3>>  
 implements Comparable<Triple<T1, T2, T3>> {  
  
 private final T1 first;  
 private final T2 second;  
 private final T3 third;  
  
 public Triple(T1 first, T2 second, T3 third) {  
 this.first = first;  
 this.second = second;  
 this.third = third;  
 }  
  
 public T1 getFirst() {  
 return first;  
 }  
  
 public T2 getSecond() {  
 return second;  
 }  
  
 public T3 getThird() {  
 return third;  
 }  
  
 @Override  
 public String toString() {  
 return "Triple<" + first + ", " + second + ", " + third + ">";  
 }  
  
 @Override  
 public boolean equals(Object o) {  
 if (this == o) return true;  
 if (!(o instanceof Triple)) return false;  
  
 Triple<?, ?, ?> triple = (Triple<?, ?, ?>) o;  
  
 return first.equals(triple.first) &&  
 second.equals(triple.second) &&  
 third.equals(triple.third);  
 }  
  
 @Override  
 public int hashCode() {  
 return Objects.*hash*(first, second, third);  
 }  
  
 @Override  
 public int compareTo(Triple<T1, T2, T3> o) {  
 int compareFirst = first.compareTo(o.first);  
 if (compareFirst != 0) return compareFirst;  
  
 int compareSecond = second.compareTo(o.second);  
 if (compareSecond != 0) return compareSecond;  
  
 return third.compareTo(o.third);  
 }  
  
 public static <T1 extends Comparable<T1>, T2 extends Comparable<T2>, T3 extends Comparable<T3>> Comparator<Triple<T1, T2, T3>> reverseOrderComparator() {  
 return new Comparator<Triple<T1, T2, T3>>() {  
 @Override  
 public int compare(Triple<T1, T2, T3> triple1, Triple<T1, T2, T3> triple2) {  
 int compareFirst = triple2.getFirst().compareTo(triple1.getFirst());  
 if (compareFirst != 0) {  
 return compareFirst;  
 }  
  
 int compareSecond = triple2.getSecond().compareTo(triple1.getSecond());  
 if (compareSecond != 0) {  
 return compareSecond;  
 }  
  
 return triple2.getThird().compareTo(triple1.getThird());  
 }  
 };  
 }  
  
}

Main.java

import java.util.ArrayList;  
import java.util.Collections;  
import java.util.List;  
  
public class Main {  
  
 public static void main(String[] args) {  
  
 Triple<Integer, Double, String> triple1 = new Triple<>(1, 2.5, "A");  
 Triple<Integer, Double, String> triple2 = new Triple<>(3, 2.5, "B");  
 Triple<Integer, Double, String> triple3 = new Triple<>(2, 3.25, "C");  
 Triple<Integer, Double, String> triple4 = new Triple<>(1, 3.3, "D");  
 Triple<Integer, Double, String> triple5 = new Triple<>(1, 2.5, "A");  
  
 System.*out*.println(triple1);  
  
 System.*out*.println("Czy triple1 jest równy triple2? " + triple1.equals(triple2));  
 System.*out*.println("Czy triple1 jest równy triple5? " + triple1.equals(triple5));  
  
 List<Triple<Integer, Double, String>> list = new ArrayList<>();  
 list.add(triple1);  
 list.add(triple2);  
 list.add(triple3);  
 list.add(triple4);  
 list.add(triple5);  
  
 // Comparable  
 Collections.*sort*(list);  
 System.*out*.println("Posortowana lista:");  
 for (Triple<Integer, Double, String> triple : list) {  
 System.*out*.println(triple);  
 }  
  
 // Comparator  
 Collections.*sort*(list, Triple.*reverseOrderComparator*());  
 System.*out*.println("Lista posortowana odwrotnie:");  
 for (Triple<Integer, Double, String> triple : list) {  
 System.*out*.println(triple);  
 }  
 }  
}