Riza Satria Perdana, S.T., M.T.

Teknik Informatika - STEI ITB

Collections

Collections Algorithm

Pemrograman Berorientasi Objek

Algorithm

- Sorting, mengurutkan elemen
- Shuffling, kebalikan dari sorting (mengacak urutan)
- Routine Data Manipulation: reverse, fill, copy, swap, addAll
- Searching, mencari elemen
- Composition: frequency, disjoint
- Finding Extreme Value: min, max

Contoh

```
import java.util.*;

public class SetTest {
    public static void main(String[] args) {
        String[] list = { "John", "Penelope", "April", "Zachary", "George" };
        System.out.println("entry order: " + Arrays.toString(list) + "\n");

        Set<String> people;

        people = new HashSet<String>();          // put into a HashSet
        for (String elt: list) people.add(elt);
        System.out.println("HashSet order: " + people);

        // print the set by iteration
        for (String person: people)
            System.out.println("\t" + person);
        System.out.println();

        people = new LinkedHashSet<String>();    // put into a LinkedHashSet
        for (String elt: list) people.add(elt);
        System.out.println("LinkedHashSet order: " + people + "\n");

        people = new TreeSet<String>();          // put into a TreeSet
        for (String elt: list) people.add(elt);
        System.out.println("TreeSet order: " + people);
    }
}
```

Contoh

```
import java.util.*;

public class MapTest {
    static class Pair<T1,T2> {   // declared static to work within main
        T1 first; T2 second;
        Pair(T1 first, T2 second) { this.first = first; this.second = second; }
        public String toString() {   return first + "=" + second; }
    }

    public static void main(String[] args) {
        List<Pair<String,Integer>> list = new ArrayList<Pair<String,Integer>>();
        list.add(new Pair<String,Integer>("John",33));
        list.add(new Pair<String,Integer>("Stephen",71));
        list.add(new Pair<String,Integer>("Melissa",15));
        list.add(new Pair<String,Integer>("George",40));
        list.add(new Pair<String,Integer>("Alison",27));

        System.out.println("entry order: " + list + "\n");

        Map<String,Integer> age;

        age = new LinkedHashMap<String,Integer>();   // as a LinkedHashMap
        for (Pair<String,Integer> p: list) age.put(p.first, p.second);

        System.out.println("LinkedHashMap order: " + age.entrySet());
        System.out.println("          keys order: " + age.keySet() + "\n");
```

Contoh

```
        System.out.println("iteration type 1");      // iterate on the entrySet
        for (Map.Entry<String,Integer> entry: age.entrySet())
            System.out.println("\tkey=" + entry.getKey() + "\tvalue=" + entry.getValue());
        System.out.println();

        System.out.println("iteration type 2");      // iterate on the keySet
        for (String key: age.keySet())
            System.out.println("\tkey=" + key + "\tvalue=" + age.get(key));
        System.out.println();

        age = new HashMap<String,Integer>();     // as a HashMap
        for (Pair<String,Integer> p: list) age.put(p.first, p.second);
        System.out.println("HashMap order: " + age.entrySet());

        age = new TreeMap<String,Integer>();     // as a TreeMap
        for (Pair<String,Integer> p: list) age.put(p.first, p.second);
        System.out.println("TreeMap order: " + age.entrySet());
    }
}
```

Contoh

```java
import java.util.*;

public class SortTest {

    public static void main(String[] args) {
        // create list of random integers and sort them
        Random r = new Random();

        List<Integer> list = new ArrayList<Integer>();

        for (int i=0; i<10; i++)
            list.add(new Integer(r.nextInt() % 100));

        System.out.print("the list: ");  System.out.println(list);

        Collections.sort(list);
        System.out.print("sorted: "); System.out.println(list);

    }
}
```

Terima Kasih