

CS251: Software Engineering I

Lecture Practice 8



Cairo University, Faculty of
Computers and Information

Readings and Videos: Lecture 16 and 17 – videos, Readings 10, 11 and 12

Q1: Read this code very well and answer these questions:

- 1- What is the output of this code?
- 2- What pattern is used in this code and how?
- 3- Write a new **Comparator** to compare 2 persons based on date of birth?
- 4- Change the test program to be able to display people sorted by date of birth?
- 5- How easy it is or (difficult) to add new ways of comparing people?
- 6- “Can you use **double** instead of **Double**” on the line that has this comment on it?

```
import java.util.*;
public class Person {
    String    name;
    int      age;
    double   weight;
    Date     dateOfBirth;

    public Person(String name, double weight, Date dateOfBirth) {
        this.name        = name;
        this.weight      = weight;
        this.dateOfBirth = dateOfBirth;
    }

    public String getName() {
        return name;
    }

    public double getWeight() {
        return weight;
    }

    public Date getDoB() {
        return dateOfBirth;
    }
    public String toString() {
        return name + ": DoB " + dateOfBirth.toGMTString().substring
            (0,11) + " & Weight " + weight ;
    }
}
```

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```
-----  
import java.util.*;  
public class NameComparator implements Comparator<Person> {  
    @Override  
    public int compare(Person person1, Person person2) {  
        String name1 = person1.getName();  
        String name2 = person2.getName();  
        return name1.compareTo(name2);  
    }  
}
```

```
-----  
import java.util.*;  
public class WeightComparator implements Comparator<Person> {  
    @Override  
    public int compare(Person person1, Person person2) {  
        Double Weight1 = person1.getWeight(); // can you use double instead?  
        Double Weight2 = person2.getWeight();  
        return Weight1.compareTo(Weight2);  
    }  
}
```

```
-----  
import java.util.*;  
public class TestComparator {  
    public static void main(String[] args) {  
        List<Person> people = new ArrayList<Person>();  
        people.add( new Person("Sami", 8.3, new Date (1980, 12, 17)));  
        people.add( new Person("Lila", 59.1, new Date (1991, 1, 23)));  
        people.add( new Person("Amin", 45, new Date (2001, 4, 30)));  
        people.add( new Person("Mina", 35.8, new Date (2005, 5, 11)));  
  
        // Sort by natural order  
        people.sort(new WeightComparator());  
        System.out.println("Sort by Weight:");  
        int i = 1;  
        for (Person p: people)  
            System.out.println(Integer.toString(i++) + "- " + p);  
  
        people.sort(new NameComparator());  
        System.out.println("\nSort by Name:");  
        i = 1;  
        for (Person p: people)  
            System.out.println((new Integer(i++)).toString() + "- " + p);  
    }  
}
```