In-class Test 2

MSc/ICY Software Workshop

Assessed In-class Test: 15% of this term's continuous assessment mark.

Submission: Friday, 5 December 2014, 9:50 hours
No late submission

Usual examination conditions apply. You may not use any material during this in-class test.

<u>Exercise 1:</u> (Basic, 40%)   Let a class `Exercise` be given as follows:

```
public class Exercise {

    private String difficulty;
    private String text;

    public Exercise(String difficulty, String text) {
        this.difficulty = difficulty;
        this.text = text;
    }
/////////////////////////////////[getters omitted]
    public String toString() {
        return String.format("Exercise (%s):\n%s",
                             getDifficulty(), getText());
    }
}
```

Write a subclass `AssessedExercise` of this class which has the additional field variable `maximalMarks`. Write the field variable(s), the constructor and the `toString()` method. Make use of inheritance as far as possible.

Exercise 2: (Medium, 30%)   Let a list of type `int` be given. Write a **recursive** static method `public static int min(List list)` that returns the smallest element in the list. Note that if the list is empty, the method should throw an `IllegalStateException`.

Exercise 3: (Advanced, 30%)   Write under each of the three classes what Java will do:

```java
public class A {
private int weight;
private String unit;

public A(int weight,
        String unit) {
    this.weight = weight;
    this.unit = unit;
}

public int getWeight() {
    return weight;
}

public String getUnit() {
    return unit;
}

public String toString() {
    return this.weight +
        getUnit();
}

public static void
    main(String[] args) {
    A a = new A(5, " kg ");
    System.out.println(a);
}
}
```

```java
public class B extends A {

public int size;
public String unit;

public B(int weight,
        String wUnit,
        int size, String unit){
    super(weight, wUnit);
    this.size = size;
    this.unit = unit;
}

private int getSize() {
    return size;
}

public String getUnit() {
    return unit;
}

public String toString() {
    return super.toString() +
        getSize() + getUnit();
}

public static void
    main(String[] args) {
    B b = new B(4, " kg ",
        5, " cbm ");
    System.out.println(b);
}
}
```

```java
public class C extends B {

public String colour;

public C(int weight,
        String wUnit,
        int size,
        String sUnit,
        String colour) {
    super(weight, wUnit,
        size, sUnit);
    this.colour = colour;
}

public String toString() {
    return colour + " "
        + getSize() ;
}

public static void
    main(String[] args) {
    C c = new C(3, " kg ",
        4, " cbm ", " blue");
    System.out.println(c);
}
}
```