Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum		
D T 0 0 7 G	T 1 0 4	2 0 1 9	- 0 3	- 2 0
Kursnamn	Datateknik GR (A), Java II			
Provnamn	Tentamen - Sundsvall			
Ort	Sundsvall			
Termin	VT2019			
Ämne	Datateknik			

Tentamen

dt007g Java II

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2019-03-20

Instructions

Carefully read the questions before you start answering them. Note the time limit of the exam and plan your answers accordingly. Only answer the question, do not write about subjects remotely related to the question.

Write your answers on separate sheets, not on the exam paper. Only write on one side of the sheets. Start each question on a new sheet.

Make sure you write your answers clearly, if I cannot read an answer the answer will be awarded no points – even if the answer is correct. The questions are *not* sorted by difficulty.

Time 5 hours, no breaks.

Aids None.

Maximum points 50

Questions 13

Preliminary grades

E ≥ 50%, D ≥ 60%, C ≥ 70%, B ≥ 80%, A ≥ 90%.

Questions

(5p) 1. Describe how a java program is transformed from a source, `.java` format to an executing application.

I.e., given java source code, what are the necessary steps to execute that program.

(4p) 2. Provide code that creates a scanner object with a file source `File f`. Assume f is a valid object.

With the method `Scanner.nextLine():String`, read the entire contents of the file and put it in a `List<String>` out. Assume out is a valid object.

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(6p) 3. Provide code that shows how to implement a Timer that prints the current time every second. Show how to implement and start the Timer by specializing Thread, as well as by implementing a Runnable.

`LocalDateTime.now().toString()` is a compact way to get the current time in text form.

(3p) 4. Java makes a distinction between primitive types and reference types.

Describe how these types differ.

(3p) 5. When reading from a `BufferedReader br;` there is a particular compound while-condition that is necessary to read each `String line;` to the end of the datasource.

What is the condition?

(4p) 6. Describe the design principle "Single responsibility principle".

Why is this principle desirable?

(4p) 7. Describe the differences between a HashMap and a TreeMap.

(7p) 8. There is an interface definition:

```
/** interface Stepper
* Represents a sequence of steps.
*/
public interface Stepper{
    public int isStarted();
    public int doStep();
    public int isFinished();
}
```

Provide a *complete* and sensible implementation for the following `getStepper` method

```
public class ExamQ{
    public static Stepper getStepper(int steps){
        ...
    }
}
```

(3p) 9. What is the relationship between the types KeyListener and KeyAdapter?

(2p) 10. Why is there no adapter class for the ActionListener interface?

(3p) 11. List two or more classes that implements the interface java.util.List.

(5p) 12. Describe the process that is required for a java network client to connect to a java network server using sockets.

Your description should contain a chronological list och what happens on both the client as well as the server.

Your description only needs to contain statements about the java code. The networking protocols can be safely disregarded.

Inlude a reasonable amount of error handling in your description. Name the involved relevant classes.

(1p) 13. What was the language named before it was called java? (2 correct possibilities)

Good luck,
Martin