

Advanced Aspects of Object-Oriented Programming (SS 2011)

Practice Sheet 12

Date of Issue: 5.07.11
Deadline: 12.07.11
(until 10 a.m. as PDF via E-Mail)

Exercise 1 Questions

- a) Add one or more questions to the document at <http://bit.ly/1Gbs2v>.

Exercise 2 Calculator

- a) Take the calculator example of the lecture and implement it with Swing according to the MVC-Pattern. Implement also division and multiplication.
- b) Extend the calculator, such that it only allows the input of numerical data and handles errors. Which kinds of errors are handled in which parts of the MVC-Pattern?

Exercise 3 Swing

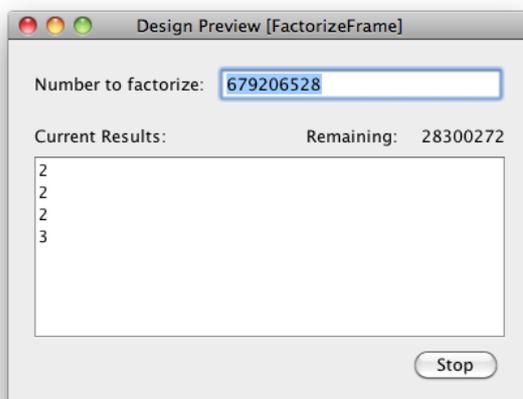
As the Swing-Framework is not thread-safe, two rules apply to each swing-application (from the javadoc):

- *Time-consuming tasks should not be run on the Event Dispatch Thread. Otherwise the application becomes unresponsive.*
- *Swing components should be accessed on the Event Dispatch Thread only.*

SwingWorker is designed for situations where you need to have a long running task run in a background thread and provide updates to the UI either when done, or while processing.

- a) Write a factorization program with the following properties:
- Calculate a prime factorization of the input
 - Print the intermediate results into the GUI
 - The user should be able to stop the calculation whenever he wants.

The GUI may look like the following:



Exercise 4 MVC

In the following we will look at a program to organize a ladder.

- a) Download the source from the lectures website and sketch the architecture of the program. Which parts can be considered to be a model, a view or a controller and how do they interact and reference each other?
- b) The program does not follow the Model-View-Controller pattern, where does it differ? Change the program to obey the MVC pattern.
- c) Add a second frame to the program, it should display a textual representation of the current ladder. Open both windows simultaneously and keep them in sync, i.e. changing the ladder in one window, also changes the presentation in the other window. Does the usage of the MVC Pattern simplify this task?