

Advanced Aspects of Object-Oriented Programming (SS 2010)

Practice Sheet 12

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Exercise 1 Calculator

- Take the calculator example of the lecture and implement it with Swing according to the MVC-Pattern. Implement also division and multiplication.
- Extend the calculator, such that it only allows the input of numerical data and handles errors.

Exercise 2 Swing

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

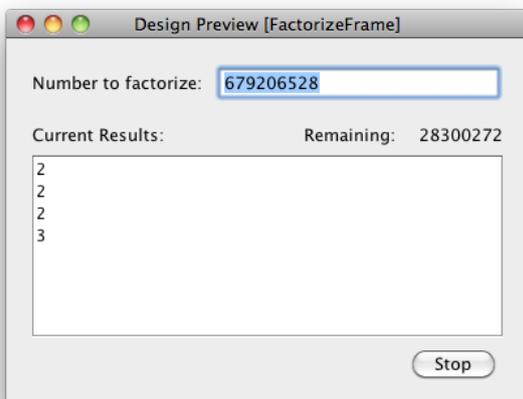
- Time-consuming tasks should not be run on the Event Dispatch Thread. Otherwise the application becomes unresponsive.
- Swing components should be accessed on the Event Dispatch Thread only.

To simplify the usage of swing when the complexity, when doing time consuming calculations, Java 6 introduced the `SwingWorker`.

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 3 Eclipse as Program Framework

- a) Inform yourself about the plugin architecture of eclipse. The eclipse homepage or <http://www.vogella.de/articles/EclipsePlugIn/article.html> may be good sites to start with.
- b) Implement a plugin that extends the package explorer with a mail action. When activated, the plugin should ask for a mail address and send an email to it, with the the object on which the plugin has been called as attachment. To send mails, use the JavaMail package provided by Sun at <http://java.sun.com/products/javamail/>.

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?